

A DESCRIPTION OF DRIFTER TRAJECTORIES IN THE  
NEIGHBOURHOOD OF CURRENT METERS IN THE  
SOUTHERN PART OF THE NORTH SEA  
NEAR THE COAST OF TEXEL

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by

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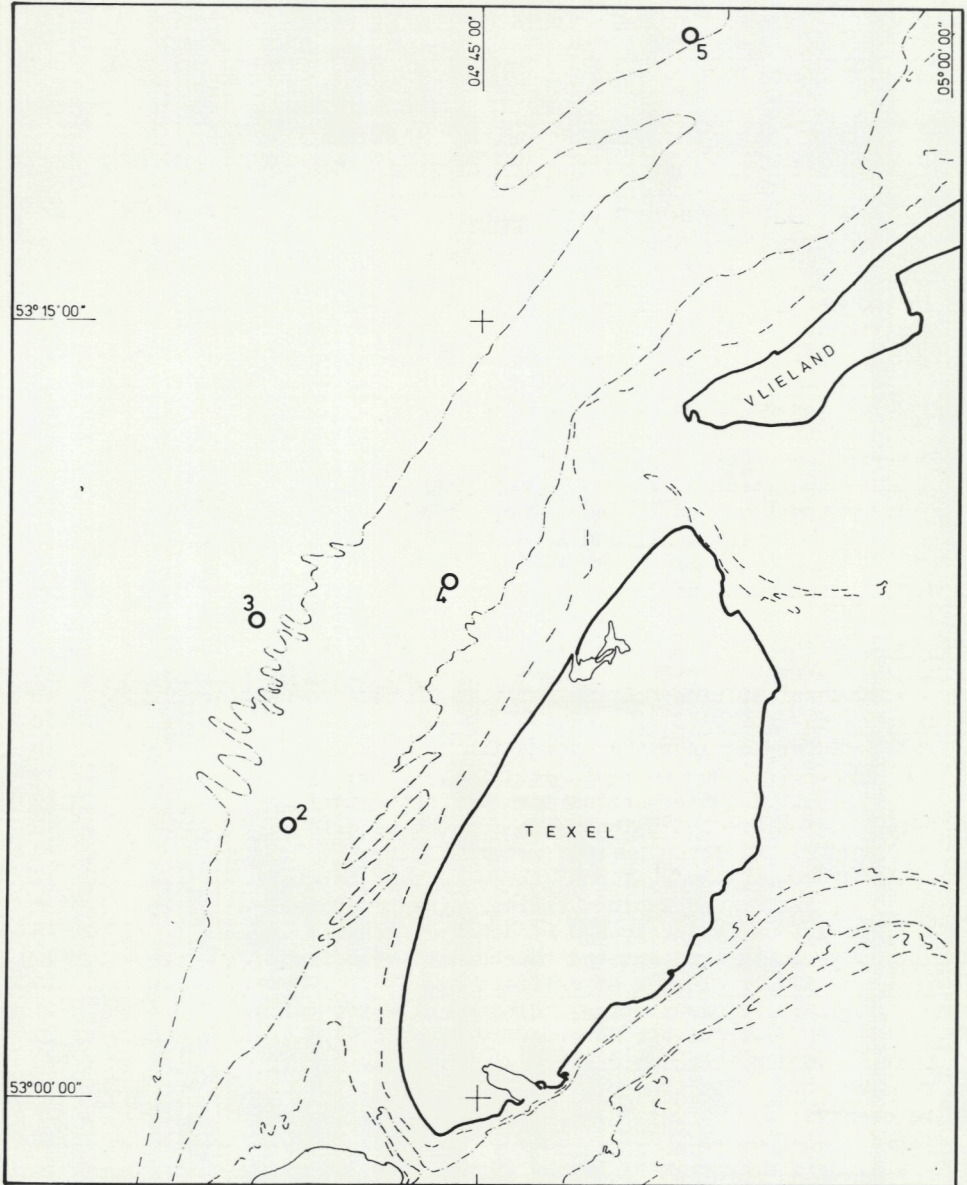


Fig. 1. Area of investigation.

## 1. INTRODUCTION

In 1979 the Netherlands Institute for Sea Research started an investigation with drifters and moored current meters, in the southern part of the North Sea, to compare the two dimensional Eulerian and Lagrangean properties of watermovement.

Within the framework of an investigation of the watermovement in the Dutch Wadden Sea and the adjacent part of the North Sea the Rijkswaterstaat Studiedienst Hoorn performed current measurements in front of the coast of Texel. In the period from May till July 1980 four current meter rigs were positioned at points 2, 3, 4 and 5 which are given in Fig. 1. Also the vertical tide was measured at point 3 in Fig. 1.

Within this framework of current meters, which give the two dimensional Eulerian properties of watermovement, some drifter experiments were planned. These drifters give the two dimensional Lagrangean properties of watermovement.

Together the institutes carried out five experiments in the period from May till July 1980.

Acknowledgements.— We want to thank in the first place all staff members Rijkswaterstaat Studiedienst Hoorn who contributed to this investigation. Further we want to thank all others who contributed to the accomplishment of this report. Also we want to acknowledge that this investigation was partly subsidized by the Netherlands organization for the advancement of pure research (Z.W.O.).

## 2. INSTRUMENTS

### 2.1. Drifters

A complete drifter system is illustrated in Fig. 2. The system consists of a window shade drogue, a subsurface and a surface buoy for the necessary buoyancy, a position buoy and a surface rope for recovery.

The window shade drogue has dimensions of 4 times 4 meter. The subsurface buoy unfolds the drogue beneath the water surface to simplify the procedure of getting a drifter in and out of the water. The middle of the drogue was situated 7 meters below sea surface, which was the depth at which moored current meters were layed out. The subsurface and surface buoys are plastic floats. All parts of the drifter above sea surface are very small compared with the drogue. A window shade drogue was used because this gives the best theoretical results (VACHON, 1974).

Because of the small dimensions of the parts of the drifter near the water surface, it is assumed that the wind influence is minimal, so a drifter gives the real Lagrangean trajectories.

The position buoy transmits its position in Decca Hi - Fix 6 coordinates to the mothership which is in the neighbourhood of the cluster of drifters. Totally 6 drifters were used, numbered 0 to 5.

### 2.2. Current meters

At the points 2, 3, 4, and 5 in Fig. 1 the current direction and speed were measured with Flachsee current meters. The current meters were situated at a depth of 7 meters below the mean sea surface (Fig. 3).

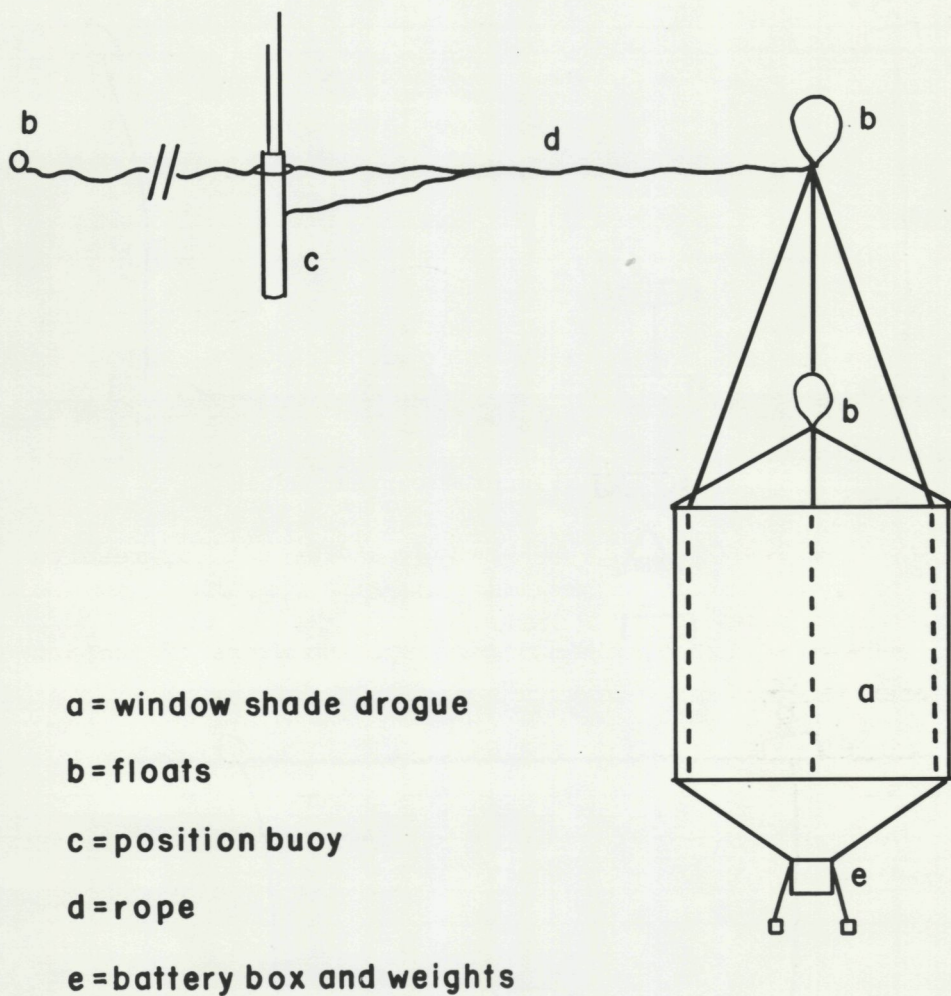


Fig. 2. Drifter system.

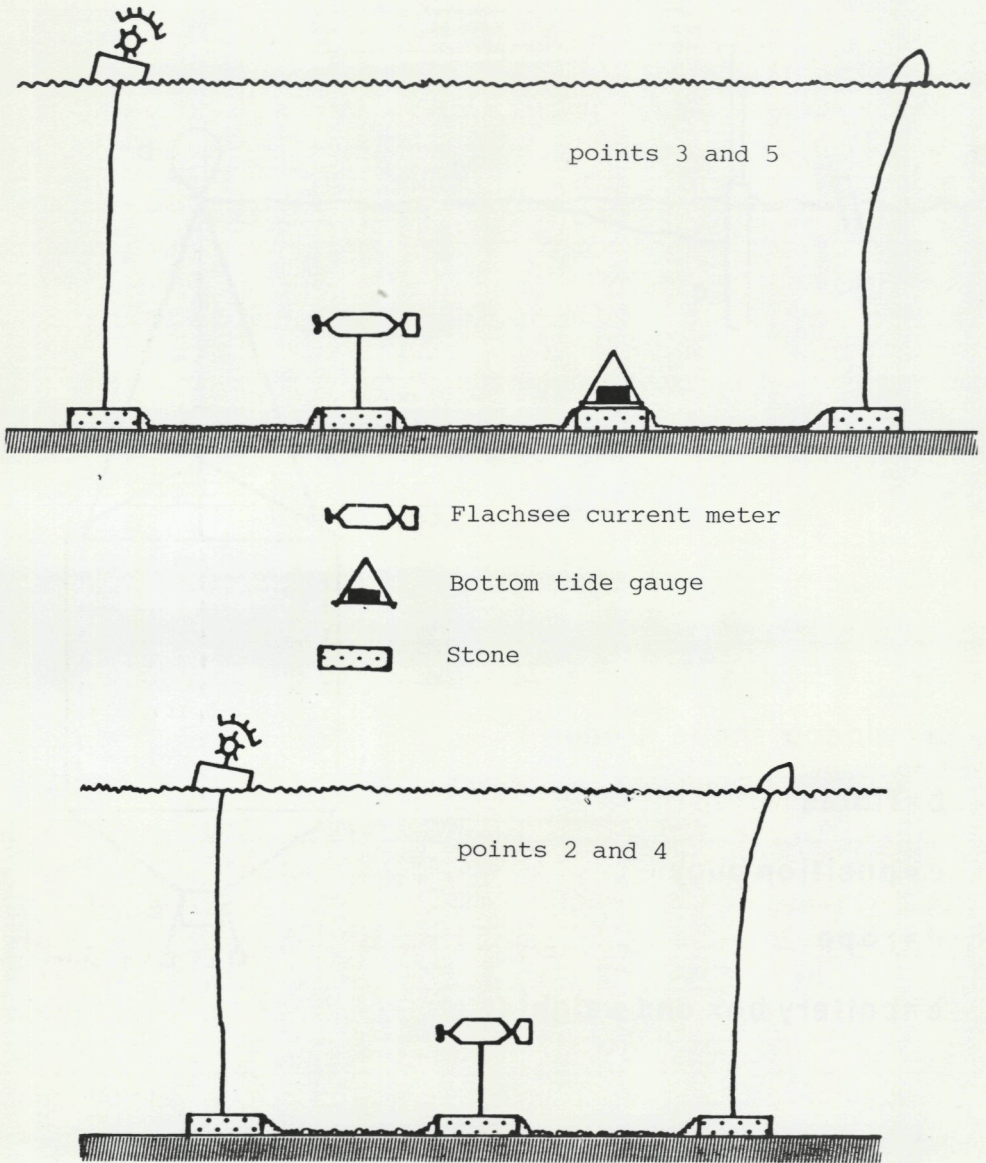


Fig. 3. Mooring situation at points 2,3,4 and 5.

Data available from these current meters were worked out by Rijkswaterstaat, Studiedienst Hoorn.

### 2.3. Vertical tide

The vertical tide was measured at point 3 in Fig. 1 with a Smitt tide-gauge type 1967. Data available from these instruments were worked out by Rijkswaterstaat, Studiedienst Hoorn.

### 2.4. Mothership

The first four experiments were carried out with the "Noordvaarder" from Rijkswaterstaat Studiedienst Hoorn and the last experiment with the "Aurelia" from NIOZ Texel.

## 3. DESCRIPTION OF THE EXPERIMENTS

### 3.1. Experiment of 19 and 20 May 1980

At 13.50 h a start was made with launching the drifters. At 15.40 h all 6 drifters were working. The start diameter of the cluster was about 1800 m. After about 22.50 h the data from 5 drifters were not reliable because of laneslips in the Hi-Fix 6 pattern, only the data from drifter 3 were reliable up to the moment of 06.50 h at which the experiment ended.

The number of drifters during this experiment is given in Fig. 5.

An indication of the windvelocity and direction (measured aboard) is given in Fig. 6.

### 3.2. Experiment of 20 and 21 May 1980

At 08.50 h a start was made with launching the drifters.

At 10.10 h 5 drifters were working. The start diameter was about 1500 m. At 15.00 h also the sixth drifter (number 1) worked after technical problems. Between 21.10 h and 0.00 h drifter 1 was set aboard again for repair.

The experiment ended at 13.10 h. The number of drifters during this experiment is given in Fig. 20.

An indication of the windvelocity and direction (measured aboard) is given in Fig. 21.

### 3.3. Experiment of 21 and 22 May 1980

At 14.50 h a start was made with launching the drifters. At 19.10 h all 6 drifters were working. The start diameter was about 1200 m.

Between 10.10 h and 10.50 h data from the drifters are lost because of a technical problem aboard the Mothership.

The experiment ended at 17.50 h. The number of drifters during this experiment is given in Fig. 35.

An indication of the windvelocity and direction (measured aboard) is given in Fig. 36.

### 3.4. Experiment of 16 and 17 June 1980

At 14.20 h a start was made with launching the drifters. At 16.10 h all 6 drifters were working. The start diameter was about 1500 m.

The experiment ended at 10.40 h. The number of drifters during this experiment is given in Fig. 51.

An indication of the windvelocity and direction (measured aboard) is given in Fig. 52.

### 3.5. Experiment of 23 and 24 June 1980

At 11.30 h a start was made with launching the drifters. At 19.20 h all 6 drifters were working. The start diameter was about 2000 m.

Because of technical problems data from drifter 1 are missing from 02.00 h.

The experiment ended at 11.20 h. The number of drifters during this experiment is given in Fig. 66.

An indication of the windvelocity and direction (measured aboard) is given in Fig. 67.

## 4. RESULTS

### 4.1. Drifters

Aboard the mothership the Hi-Fix 6 position of each drifter was registered on tape every 10 minutes by a H.P. 9825 A computer. Afterwards these hyperbolic Hi-Fix 6 coördinates were translated to rectangular U.T.M. coördinates. U.T.M. coördinates give a position in meters Easting and Northing.

The U.T.M. coördinates for each drifter each 10 minutes are printed in Table 1 to Table 4 for the experiment of 19 and 20 May 1980, in Tables 5 to 11 for 20 and 21 May 1980, in Tables 12 to 17 for 21 and 22 May 1980, in Tables 18 to 22 for 16 and 17 June 1980 and in Tables 23 to 28 for 23 and 24 June 1980.

Drifter trajectories apart and together in one plot and the shape of the cluster drifters every three hours are given in Figs 7 to 14 for the experiment of 19 and 20 May 1980, in Figs 22 to 29 for 20 and 21 May 1980, in Figs 37 to 44 for 21 and 22 May 1980, in Figs 52 to 59 for 16 and 17 June 1980 and in Figs 67 to 74 for 23 and 24 June 1980.

#### 4.2. Current meters

In Tables 29 to 56 the current meter data are printed during the periods drifter experiments were carried out. The same data are drawn in Figs 80 to 87.

#### 4.3. Vertical tide

In Table 57 is printed the vertical tide data during the periods drifter experiments were carried out.

### 5. DISCUSSION

The following discussion serves as a preliminary analysis.

#### 5.1. Euler-Lagrange transformation

The first question which arises in comparing drifter data with current meter data is whether or not it is possible to construct drifter trajectories from a current meter data set. A drifter gives the velocity of a water parcel as a function of time (Lagrangean velocity), whereas a current meter gives the velocity - of different water parcels - at a fixed location as a function of time (Eulerian velocity).

Indicating the Lagrangean velocity by  $\vec{v}(\vec{\alpha}, t)$ , in which  $\vec{\alpha}$  is the label of the fluid parcel (its position at  $t=0$ ), and the Eulerian velocity by  $\vec{u}(\vec{x}, t)$ , in which  $\vec{x}$  is the position, one has the relationship:

$$\vec{v}(\vec{\alpha}, t) = \vec{u}(\vec{y}(\vec{\alpha}, t), t), \quad (1)$$

with:

$$\vec{y}(\vec{\alpha}, t) = \vec{\alpha} + \int_0^t \vec{v}(\vec{\alpha}, t') dt', \quad (2)$$

which is the Euler-Lagrange transformation.

If the Eulerian velocity field  $\vec{u}$  is known completely, the Lagrangean velocities can in principle be evaluated by (1) and (2). However, with a few current meters, only the Eulerian field is known at these current meter stations. In how far can one construct real water parcel trajectories from these Eulerian data? The answer lies in the Euler-Lagrange transformation which one has to change in a more manageable form.

### 5.1.1. One current meter

First of all one can assume that the only spatial variation in the Eulerian velocity field is in the phase of the tidal wave.

Starting with (1) and (2) one can then derive (LONGUET-HIGGINS, 1969; ZIMMERMAN, 1979) the relationship:

$$\Delta \vec{y}(\vec{\alpha}, t) = \{ \vec{u}_p(\vec{\alpha}, t) + \vec{u}_s(\vec{\alpha}, t) \} T, \quad (3)$$

or in words:

Lagrangean residual drift = Eulerian residual drift + Stokes' drift.

$T$  is the period of the tidal wave;  $\Delta \vec{y}(\vec{\alpha}, t)$  is the Lagrangean net (residual) displacement of the water parcel (or drifter) in a period  $T$ ;  $\vec{u}_p(\vec{\alpha}, t)$  is the Eulerian residual velocity in a period  $T$ , indicated by a current meter in position  $\vec{\alpha}$ ;  $\vec{u}_s(\vec{\alpha}, t)$  is the so called Stokes' velocity, a correction caused by the spatial variation in the Eulerian velocity field through the phase of the tidal wave.

The formula for the Stokes' velocity is:

$$\vec{u}_s = \frac{\overline{\vec{U}(t)\vec{\xi}(t)}}{H}, \quad (4)$$

in which  $\vec{U}$  is the tidal velocity,  $\vec{\xi}$  in the position of the

water service (vertical tide) and  $H$  is the water depth. The bar indicates a mean over a period  $T$ .

The relationship Lagrange = Euler + Stokes is of course a very crude approximation, because one assumes the velocity field uniform in space except from a gradient due to the phase of the tidal wave.

### 5.1.2. Observations (one current meter)

Computing the Stokes' drift from the vertical tide and current meter data one gets for all cases a Stokes' velocity of about  $0.01 \text{ m}\cdot\text{s}^{-1}$  in the direction of the tidal wave propagation which is  $30^\circ$  for the present site of investigation.

From all drifter trajectories periods are taken to compare the Lagrange = Euler + Stokes relation. In nearly all cases these periods are 12.5 hours (period  $T$ ) but in some cases another time interval had to be taken.

During such a period of every drifter trajectory the centroid has been calculated. The centroid gives the center of mass of all drifter positions. In this centroid several vectors are drawn in the figures given below.

Firstly the Lagrangean residual drift is given by a vector  $L$ . Secondly, three Eulerian residual drifts are given by a vector  $E_i$  ( $i = 2, 3, 4$  or  $5$ ), in which  $i$  is the number of the current meter. These Eulerian residual drifts are computed by making a progressive vector diagram out of a current meter data set during the same period as that for which the Lagrangean drift was estimated. Thirdly to each vector  $E_i$  is added the Stokes' drift vector  $S$ .

The drifter trajectories and vectors are given in Figs 9<sup>b</sup> to 14<sup>b</sup> for the experiment of 19 and 20 May 1980, in Figs

24<sup>b</sup> to 29<sup>b</sup> for 20 and 21 May 1980, in Figs 39<sup>b</sup> to 44<sup>b</sup> for 21 and 22 May 1980, in Figs 54<sup>b</sup> to 59<sup>b</sup> for 16 and 17 June 1980 and in Figs 69<sup>b</sup> to 74<sup>b</sup> for 23 and 24 June 1980.

### 5.1.3. Conclusions (one current meter)

In all cases a difference exists between the Eulerian residual drift with Stokes' correction and the real observation of the residual Lagrangean displacement.

The difference can be caused by an inaccurately given Lagrangean path of the drifter and/or by spatial variabilities in the velocity field other than that in the phase of the tidal wave.

As explained under 2.1. it may be expected that drifter trajectories are correctly measured by the drogue system used. So the difference must be ascribed to spatial variabilities in the velocity field.

The angle between the Lagrangean vector and the Euler + Stokes vector and the ratio of the absolute value of the Euler + Stokes vector to the absolute value of the Lagrangean vector are given in Tables 58 to 59.

As all 6 drifters show approximately the same deviation from the relation Lagrange = Euler + Stokes during a certain period and compared with the same current meter, we must conclude that the cluster of drifters as a whole has experienced the same spatial variabilities in the velocity field. So the variabilities must occur on a scale between the tidal excursion of the drifter cluster and the cluster diameter.

#### 5.1.4. Three current meters

In all periods the drifters described a trajectory in or in the neighbourhood of a triangle of current meters. From the 3 current meters an Eulerian velocity field can be constructed by a linear interpolation between the velocity components at each position. So the same velocity components at the same time  $t$  in the 3 current meter positions are used to construct a velocity field varying linearly in space. At each point now an Eulerian velocity can be computed each time  $t$  out of the 3 current meter data.

By applying (1) and (2) to such an interpolated Eulerian field one can simulate drifter trajectories.

In principle this method must give better results than the relation Lagrange = Euler + Stokes, because this field is not uniform, but a spatial gradient is taken into account. In this gradient is also present the gradient due to the spatial variation of the phase of the tidal wave, so in this case no Stokes drift has to be calculated.

#### 5.1.5. Observations (three current meters)

The same drifter trajectories as mentioned under 5.1.2. are now used to make a comparison between the real Lagrangean residual drift and the simulated drifter trajectory out of the interpolated Eulerian field (which gives the simulated residual drift).

In the figures given below two vectors are drawn in each centroid. Firstly the real Lagrangean residual drift is given by a vector D. Secondly the simulated residual drift is given by a vector C.

The simulated residual drift is calculated out of a

simulated drifter path which one gets by starting a "dummy" drifter at the same starting point as the real drifter but now by letting it follow the interpolated Eulerian velocity field.

The real drifters trajectories and vectors D and C are given in Figs 9<sup>C</sup> to 14<sup>C</sup> for the experiment of 19 and 20 May 1980, in Figs 24<sup>C</sup> to 29<sup>C</sup> for 20 and 21 May 1980, in Figs 39<sup>C</sup> to 44<sup>C</sup> for 21 and 22 May 1980, in Figs 54<sup>C</sup> to 59<sup>C</sup> for 16 and 17 June 1980 and in Figs 69<sup>C</sup> 74<sup>C</sup> for 23 and 24 June 1980.

In all cases the trajectories were constructed by an interpolation between current meters 2, 3, and 4, except in the case of 23 and 24 June 1980, where an interpolation between current meters 3, 4 and 5 was used. For the experiment of 16 and 17 June also the last 12.5 hours period of the drifters 0, 2, 4, 5 is compared with an interpolation of the current meters 3, 4 and 5 in Figs 97 to 98, and the first 12.5 hours period for all six drifters in Figs 99 to 100.

#### 5.1.6. Conclusions (three current meters)

Also here there exists a difference between the constructed residual drift and the real Lagrangean residual drift. For each experiment the angle and ratio between the two vectors are given in Tables 60 to 61. A comparison with the results of one current meter learns that 3 current meters give little improvement, the deviations in both cases are of the same order.

The deviations between the D and C vectors are generated by two effects.

Firstly in homogeneties other than those accounted for by a linearly varying velocity field introduce errors. Moreover, once a "dummy" drifter leaves the real drifter path

due to the first error, it suffers constantly a wrong velocity due to the velocity gradient accounted for in the interpolated field. This causes the error to grow.

The second error can be estimated by calculating the interpolated velocity on the real Lagrangean drifter path. Now add up the differences between the real velocity and interpolated velocity and one gets the deviation which can only be due to inhomogeneties not accounted for in the interpolated field. In four cases (Figs 101 to 102) a new C vector is calculated out of interpolation velocities on the real drifter path and the difference between this C and O vector indicates the real inhomogeneties. As one can see this new vector C gives no considerable improvement.

Summarizing one can say that inhomogeneties in the velocity field on a scale smaller than the tidal excursion must exist, and that the influence of these inhomogeneties is much greater than the influence of the velocity gradient over the current meter triangle.

## 5.2. Residual velocity and windcharacteristics

In many cases it was possible to construct 12.5 hours residual drifts out of the drifter trajectories. These residual drifts are given in Fig. 103. Also in these figures the prevailing windcharacteristics are given.

As can be seen in these figures the direction and distance of the residual drifts is correlated with the wind direction and strength.

Direction correlation is very clearly in all experiments except perhaps on 20 and 21 May, distance correlation is more difficult to see. In this comparison one has to keep in mind

that there exists a certain time delay between wind characteristics and residual drifts.

### 5.3. Velocity gradient and "turbulent" velocity

#### 5.3.1. Cluster of drifters

If one assumes (OKUBO, 1976) that the scale of the drifter cluster is between the large scale inhomogeneties of the velocity field and small scale "turbulent" eddies, between which it is supposed that a gap in the energy density spectrum exists, the large scale inhomogeneties appear as a linear (in space) velocity field over the cluster size. This linear velocity field is called the shear velocity field.

If the large scale inhomogeneties do not appear as a linear field over the cluster diameter as seems evident in the cases described here, one still force a linear field over the cluster area and call this the shear velocity. Deviations from this linearity are now thought to be part of the "turbulent" velocity.

In other words one assumes that the velocity field  $\vec{u}(\vec{x}, t)$  over the cluster area is built up out of a field  $\bar{u}(\vec{x}, t)$  linearly varying in space and a perturbation field  $\vec{u}'(\vec{x}, t)$ . In this vision it is thought that the mean linear field  $\bar{u}(\vec{x}, t)$  represents large scale inhomogeneties and that the perturbation field  $\vec{u}'(\vec{x}, t)$  represents the small scale "turbulent" eddies, although it may contain higher order shear components of the large scale field.

In formula:

$$\vec{u}(\vec{x}, t) = \bar{u}(\vec{x}, t) + \vec{u}'(\vec{x}, t) \quad (5)$$

The contribution of the linear field  $\vec{u}(\vec{x}, t)$  can be thought of as the sum of the velocity  $\vec{u}(\vec{z}, t)$  of this field in the centroid ( $\vec{z}$ ) of the cluster, and a velocity due to the gradient of this field over the cluster:

$$\vec{u}(\vec{x}, t) = \vec{u}(\vec{z}, t) + \left\{ (\vec{x} - \vec{z}) \cdot \nabla \right\} \vec{u}(\vec{x}, t) \Big|_{\vec{x} = \vec{z}} \quad (6)$$

substituting (6) in (5) one gets:

$$\vec{u}(\vec{x}, t) = \vec{u}(\vec{z}, t) + \left\{ (\vec{x} - \vec{z}) \cdot \nabla \right\} \vec{u}(\vec{x}, t) \Big|_{\vec{x} = \vec{z}} + \vec{u}'(\vec{x}, t)$$

or in words:

drifter velocity = velocity mass center + velocity due to the gradient over cluster (shear) + "turbulent" velocity.

At a certain time  $t$ ,  $n$  drifters give  $n$  points of the velocity field  $\vec{u}(\vec{x}, t)$ . By making use of linear regression procedures one can calculate the linear field  $\vec{u}(\vec{x}, t)$  and the turbulent velocity components of each drifter (OKUBO, 1976).

Let  $x$  and  $y$  be the two components of the position vector  $\vec{x}$  and  $u$  and  $v$  the 2 components of the velocity  $\vec{u}$  in the respective directions. The shear matrix  $S$  and the turbulent matrix  $T$  are then defined in the following way:

$$S(t) = \begin{pmatrix} \frac{\delta \bar{u}}{\delta x} & \frac{\delta \bar{v}}{\delta x} \\ \frac{\delta \bar{u}}{\delta y} & \frac{\delta \bar{v}}{\delta y} \end{pmatrix}; \quad T(t) = \begin{pmatrix} u_1' & v_1' \\ u_2' & v_2' \\ \vdots & \vdots \\ \vdots & \vdots \\ u_n' & v_n' \end{pmatrix}; \quad n \text{ drifters}$$

The shear matrix gives 4 quantities which govern the

behaviour of the cluster area due to the shear of the large scale velocity field  $\vec{u}(\vec{x}, t)$ . These 4 quantities are:

$$\text{Horizontal divergence} = \frac{\delta \bar{u}}{\delta x} + \frac{\delta \bar{v}}{\delta y} \quad (7)$$

$$\text{Relative vorticity} = \frac{\delta \bar{v}}{\delta x} - \frac{\delta \bar{u}}{\delta y} \quad (8)$$

$$\text{Stretching deformation rate} = \frac{\delta \bar{u}}{\delta x} - \frac{\delta \bar{v}}{\delta y} \quad (9)$$

$$\text{Shearing deformation rate} = \frac{\delta \bar{v}}{\delta x} + \frac{\delta \bar{u}}{\delta y} \quad (10)$$

In Fig. 4 is drawn the influence of these 4 quantities on a square plane. Divergence gives the changes in area of the plane (keeping shape and orientation unchanged). Vorticity gives the rotation of the plane (keeping the area and its shape constant). Stretching deformation and shearing deformation give the change in shape of the plane (keeping the area and its orientation constant).

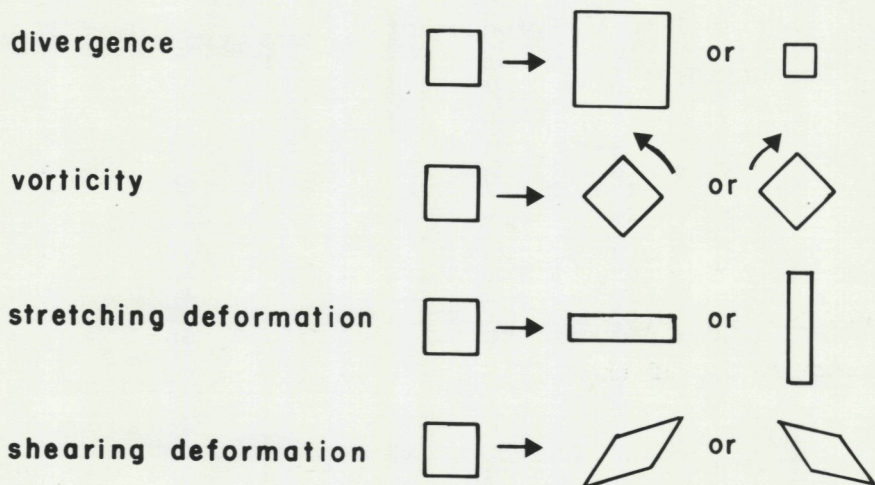


Fig. 4. Changes in area, orientation and shape of a plane.

From the matrix of turbulent velocity components one can compute the standard deviation of these components by:

$$\hat{\sigma}_u = \left\{ \frac{1}{n-1} \sum_{i=1}^n u_i'^2 \right\}^{\frac{1}{2}} \quad (11)$$

and

$$\hat{\sigma}_v = \left\{ \frac{1}{n-1} \sum_{i=1}^n v_i'^2 \right\}^{\frac{1}{2}} \quad (12)$$

In the same way one defines the standard deviation of the of the drifter positions around its centroid:

$$\hat{\sigma}_x = \left\{ \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2 \right\}^{\frac{1}{2}} \quad (13)$$

and

$$\hat{\sigma}_y = \left\{ \frac{1}{n-1} \sum_{i=1}^n (y_i - \bar{y})^2 \right\}^{\frac{1}{2}} \quad (14)$$

in which  $\left( \begin{smallmatrix} \bar{x} \\ \bar{y} \end{smallmatrix} \right) = \vec{z}$  is the position of the centroid.

Now one assumes the turbulent diffusion coefficients to be proportional to the product of  $\hat{\sigma}_u$  and  $\hat{\sigma}_x$ , and of  $\hat{\sigma}_v$  and  $\hat{\sigma}_y$ , and defines:

$$\begin{aligned} K_x &= c \hat{\sigma}_u \hat{\sigma}_x \\ K_y &= c \hat{\sigma}_v \hat{\sigma}_y \end{aligned} \quad (15)$$

in which  $c$  is a proportionality constant;  $K_x$  and  $K_y$  are the two components of the turbulent diffusion coefficient.

In these formulas it is assumed that the eddy diffusivities  $K_x$  and  $K_y$  are proportional to a representative turbulent velocity scale and a mixing length scale and that these scales are represented by  $\hat{\sigma}_u$ ,  $\hat{\sigma}_v$  and  $\hat{\sigma}_x$ ,  $\hat{\sigma}_y$  (OKUBO, 1976).

### 5.3.2. Observations (cluster of drifters)

In order to observe the behaviour of the cluster area irrespective of the absolute position of the cluster, the position of every drifter relative to the centroid as function of time is drawn in Fig. 15 for 19 and 20 May 1980, in Fig. 30a and b for 20 and 21 May 1980 (drifter 1 has been replaced), in Fig. 45 for 21 and 22 May 1980, in Fig. 60 for 16 and 17 June 1980 and in Fig. 75 for 23 and 24 June 1980. In these figures positions were only plotted if data from 6 drifters were available. In the figures one can recognize the change in shape every 3 hours as was mentioned under 4.1. The presented figures give the changes in cluster configuration as a function of time.

These changes can be ascribed to divergence, rotation, stretching and shearing deformation, and turbulent diffusion.

The following step is to calculate all these quantities apart. In these calculations one needs the velocities of all drifters at the same time.

Velocities can be calculated out of the 10 minutes position information of the drifters. Of course a time filter can be made by computing velocities out of two positions with a time difference larger than 10 minutes. For example an interval of 1 hour filters out all movements with a time scale smaller than one hour.

The absolute velocity of the centroid, the divergence,

the vorticity, the stretching deformation, the shearing deformation and the diffusion coefficients (assuming  $c = 1$  in (15)), are given in Figs 16 to 19 for the experiment of 19 and 20 May 1980, in Figs 31 to 34 for 20 and 21 May 1980, in Figs 46 to 49 for 21 and 22 May 1980, in Figs 61 to 64 for 16 and 17 June 1980 and in Figs 76 to 79 for 23 and 24 June 1980. All these quantities are calculated with a filter of one hour. Also one must keep in mind that all quantities are calculated along the path of the cluster of drifters during its tidal excursion.

Of course the cluster diameter determines whether the linear velocity field  $\vec{u}(\vec{x}, t)$  contains only the shear of the organized large scale velocity field and the perturbation field  $\vec{u}'(\vec{x}, t)$  only the turbulent part.

If the diameter is much larger than the scale over which the organized shear varies, the  $\vec{u}'$  field contains also contributions which essentially belong to the large scale velocity field  $\vec{u}(\vec{x}, t)$ . A diameter smaller than the scale of the largest turbulent eddies gives a contamination of the estimated organized shear by turbulence, if the shear is supposed to be given by a linearly varying velocity field.

Hence we must assume for the present analysis that a diameter of about 1500 m satisfies these restrictions.

### 5.3.3. Current meter array

The shear quantities and the diffusion coefficients calculated out of drifter data give these quantities along the path of the cluster.

One can also calculate the 4 shear quantities at a current meter triangle by using the linear (in space) velocity

field described under 5.1.4. This field gives a shear matrix  $S$  and this, in turn, determines divergence, vorticity, stretching and shearing deformation at the position of the current meter triangle.

In Figs 88 to 94 these quantities are given for a combination of the current meters 2, 3 and 4 and in Figs 95 to 96 for a combination of the current meters 3, 4 and 5.

#### 5.3.4. Conclusions

The divergence, rotation, stretching deformation and shearing deformation calculated from current meter data compared with the same quantities from drifter data during the same time intervals show that there are periods during which both quantities are of the same order of magnitude, but also that there are periods during which they differ completely.

So the cluster of drifters did not always experience the same velocity gradients as those obtained from the current meters.

This indicates again the existence of inhomogeneties on a scale smaller than the current meter array. Now one could ask whether the Euler-Lagrange transformation gives better results at those periods when the 4 shear quantities from current meters and from drifters are comparable. However, a first look at Lagrangean drifts and Eulerian drifts during such periods learns that there is in those cases no significant improvement.

The divergence, vorticity, stretching deformation and shearing deformation calculated from current meter data show a strong tidal signal. Particularly in the first three experiments this can be seen very clearly. But also the last two

experiments have a tidal character. The same tidal influence in the 4 shear quantities is apparent in the figures from drifter data, but not as outstanding as in the current meter data. So the velocity gradient calculated from the current meter triangle is strongly tidally influenced, but following the cluster of drifters one sees a more complex behaviour as a function of time. This, perhaps, can also be ascribed to inhomogeneties in the velocity field.

Of course the material collected in the report needs further analysis, and has to be compared with results from experiments at other places.

## 6. SUMMARY

Two methods have been used to simulate drifter trajectories out of current meter data. The results of the method using one current meter can be improved little by using data from three current meters. Errors in the simulations are made because of the existence of spatial variabilities in the velocity field which are not recognized by the current meters. The scale of these variabilities is between the tidal excursion of the drifters and the diameter of the cluster of 6 drifters. The influence of the variabilities is much greater than the influence of the velocity gradient over the current meter triangle.

Divergence, vorticity, stretching and shearing deformation from drifter data have in general the same tidal character as these quantities determined from 3 current meter data sets, but sometimes differences occur. These differences indicate also the variabilities in the velocity field.

## REFERENCES

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8. Tables and figures

8.1. 19 and 20 May 1980

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1905	13.50			608294.09 5886985.01			
	14.00			608167.86 5886792.48		607091.73 5885696.88	
	14.10			608018.21 5886564.83		606900.75 5885332.74	
	14.20			607856.90 5886324.82		606703.50 5885097.99	
	14.30	606425.82 5885695.27		607681.32 5886073.02		606521.85 5884855.28	
	14.40	606060.91 5885276.94		607490.51 5885795.68		606326.73 5884595.28	
	14.50	605851.27 5885016.24		607299.65 5885527.36		606127.25 5884331.17	
	15.00	605614.11 5884738.85		607098.43 5885249.86		605919.36 5884050.45	
	15.10	605375.80 5884442.16		606886.30 5884908.01	606004.62 5885071.49	605705.66 5883754.40	
	15.20	605125.27 5884158.54		606673.90 5884618.26	605784.73 5884751.34	605502.68 5883445.19	
	15.30	604868.26 5883815.24		606468.51 5884299.85	605556.69 5884453.96	605272.67 5883166.43	606581.32 5883532.18
	15.40	604622.51 5883542.91	605809.48 5882570.30	606243.20 5884008.24	605345.32 5884166.17	605044.09 5882836.93	606367.46 5883220.74
	15.50	604376.93 5883220.20	605408.40 5882058.01	606018.81 5883675.54	605107.59 5883853.26	604821.45 5882532.33	606117.11 5882873.94
	16.00	604134.03 5882907.93	605072.29 5881688.52	605797.24 5883345.43	604848.52 5883511.52	604589.61 5882216.41	605863.78 5882535.99
	16.10	603897.02 5882562.83	604777.54 5881362.58	605569.23 5883009.66	604603.97 5883205.37	604358.30 5881902.14	605620.63 5882182.52
	16.20	603667.25 5882266.05	604492.94 5881020.77	605333.48 5882673.83	604338.82 5882859.69	604119.20 5881609.00	605384.86 5881848.12
	16.30	603431.16 5881958.13	604218.83 5880692.26	605102.13 5882349.92	604092.55 5882546.24	603857.81 5881268.70	605164.24 5881510.03
	16.40	603207.54 5881654.92	603945.34 5880357.31	604869.12 5882002.15	603832.32 5882229.40	603597.96 5880957.33	604947.03 5881219.93
	16.50	602985.92 5881375.57	603678.33 5880030.09	604625.02 5881671.83	603574.63 5881937.55	603346.02 5880678.47	604731.75 5880921.14
	17.00	602760.43 5881039.60	603406.76 5879728.32	604400.48 5881370.32	603313.17 5881623.03	603071.13 5880362.84	604496.63 5880613.76
	17.10	602523.69 5880786.40	603135.46 5879404.37	604174.14 5881047.24	603056.77 5881352.69	602807.01 5880098.37	604272.02 5880358.15
	17.20	602286.97 5880478.29	602873.44 5879138.95	603950.22 5880762.53	602802.14 5881043.70	602534.73 5879831.38	604039.60 5880067.58
	17.30	602056.51 5880233.43	602595.67 5878888.16	603723.62 5880474.29	602560.17 5880775.75	602276.72 5879573.84	603798.70 5879802.33
	17.40	601815.73 5879982.66	602355.16 5878653.91	603494.89 5880183.44	602310.06 5880518.56	602028.78 5879332.61	603548.47 5879547.69
	17.50	601581.92 5879767.69	602119.37 5878436.48	603265.67 5879933.39	602051.55 5880296.32	601772.41 5879109.00	603296.55 5879328.40
	18.00	601344.19 5879563.80	601887.39 5878227.65	603056.00 5879723.34	601805.27 5880059.34	601531.55 5878939.59	603038.42 5879119.02
	18.10	601098.07 5879393.33	601656.02 5878042.72	602848.52 5879524.89	601558.75 5879855.38	601313.03 5878762.37	602784.12 5878928.30

Table 1. 19 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1905	18.20	600858.24 5879264.57	601414.32 5877875.81	602643.33 5879341.73	601331.45 5879688.22	601092.83 5878610.09	602536.54 5878774.24
	18.30	600605.57 5879167.24	601172.93 5877574.79	602446.35 5879185.72	601125.27 5879534.74	600856.98 5878498.88	602284.24 5878642.23
	18.40	600384.44 5879112.99	600946.25 5877673.88	602249.10 5879064.65	600896.18 5879450.38	600653.50 5878401.27	602049.77 5878526.11
	18.50	600178.19 5879047.07	600729.37 5877602.22	602070.29 5878979.62	600694.96 5879380.43	600466.02 5878335.67	601840.13 5878480.23
	19.00	599969.84 5879338.02	600568.38 5877576.28	601912.02 5878925.11	600493.71 5879341.08	600306.17 5878319.04	601637.42 5878408.01
	19.10	599794.74 5879047.99	600413.34 5877579.47	601765.46 5878916.33	600326.85 5879343.00	600160.38 5878318.64	601428.05 5878423.55
	19.20	599650.21 5879121.87	600269.30 5877640.20	601633.03 5878932.02	600173.89 5879373.18	599999.34 5878365.67	601257.31 5878451.89
	19.30	599531.82 5879194.08	600156.70 5877728.44	601540.20 5879024.48	600054.30 5879462.16	599840.96 5878481.90	601100.04 5878533.12
	19.40	599435.18 5879323.36	600083.68 5877886.51	601466.85 5879136.79	599956.71 5879614.77	599710.05 5878650.53	600972.54 5878675.77
	19.50	599360.97 5879510.43	600024.56 5878064.46	601405.21 5879315.92	599889.84 5879808.93	599629.70 5878834.96	600881.47 5878858.15
	20.00	599301.35 5879767.64	599988.48 5878311.52	601380.61 5879535.47	599819.94 5880054.02	599552.61 5879078.58	600823.05 5879093.98
	20.10	599214.27 5880065.21	599957.41 5878607.17	601385.76 5879838.66	599798.48 5880348.03	599471.77 5879398.95	600775.53 5879388.73
	20.20	599187.01 5880417.82	599941.17 5878962.01	601406.70 5880180.01	599835.85 5880694.46	599422.27 5879748.75	600749.33 5879744.61
	20.30	599166.76 5880820.03	599934.48 5879360.35	601453.47 5880562.88	599852.76 5881071.53	599399.13 5880159.74	600752.00 5880138.20
	20.40	599195.94 5881295.12	599921.27 5879814.41	601509.80 5881005.69	599880.46 5881511.80	599380.90 5880612.27	600764.52 5880558.73
	20.50	599241.09 5881779.31	599939.96 5880313.44	601573.71 5881508.95	599938.65 5882007.78	599403.31 5881102.94	600603.79 5881052.77
	21.00	599288.51 5882306.01	599977.34 5880814.82	601634.11 5882016.74	600004.60 5882511.05	599441.23 5881629.25	600856.78 5881582.44
	21.10	599352.87 5882862.84	600051.20 5881343.83	601712.14 5882533.95	600078.99 5883043.66	599484.55 5882176.00	600921.46 5882116.99
	21.20	599440.87 5883409.59	600149.80 5881923.94	601809.35 5883091.45	600178.92 5883611.07	599555.14 5882405.83	601006.06 5882648.48
	21.30	599529.28 5883975.89	600260.59 5882476.90	601918.08 5883627.91	600293.22 5884183.45	599636.86 5883300.54	601108.09 5883201.23
	21.40	599648.89 5884568.77	600374.76 5883057.86	602036.44 5884199.11	600422.26 5884758.22	599739.66 5883875.71	601227.87 5883780.78
	21.50	599761.10 5885133.05	600486.73 5883622.75	602170.44 5884750.93	600552.15 5885324.16	599851.77 5884461.93	601363.17 5884329.26
	22.00	599894.63 5885676.49	600622.42 5884179.23	602318.34 5885295.93	600702.62 5885890.65	599981.26 5885029.01	601502.58 5884873.49
	22.10	600031.63 5886247.57	600771.67 5884739.57	602474.84 5885837.27	600849.67 5886412.42	600124.83 5885555.69	601647.89 5885422.87
	22.20	600197.02 5886797.69	600937.83 5885260.40	602633.02 5886353.11	601027.07 5886979.26	600282.34 5886114.53	601809.01 5885966.66
	22.30	600356.57 5887309.22	601105.66 5885789.75	602813.90 5886889.53	601203.88 5887496.02	600457.24 5886690.20	
	22.40	600534.38 5887869.64		602952.42 5887346.61	601376.97 5888054.08	600634.71 5887163.99	

Table 2. 19 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1905	22.50				601594.59 5888533.81	600825.23 5887697.68	
	23.00				601772.06 5888983.96	601011.34 5888162.13	
	23.10				601991.13 5889461.17	601227.19 5888644.80	
	23.20				602189.98 5889851.55	601412.95 5889043.16	
	23.30				602394.00 5890235.84	601620.46 5889443.44	
	23.40				602593.47 5890622.70		
	23.50				602810.10 5890910.78		
2005	0.00				602996.95 5891274.03		
	0.10				603201.37 5891536.03		
	0.20				603386.83 5891778.41		
	0.30				603581.60 5891963.04		
	0.40				603769.13 5892126.37		
	0.50				603943.00 5892260.29		
	1.00				604095.56 5892384.44		
	1.10				604261.49 5892410.20		
	1.20				604388.48 5892477.81		
	1.30				604496.27 5892474.97		
	1.40				604584.16 5892451.40		
	1.50				604660.42 5892384.07		
	2.00				604706.64 5892249.30		
	2.10				604713.48 5892145.72		
	2.20				604708.16 5891990.01		
	2.30				604721.39 5891851.34		
	2.40				604681.56 5891659.75		
	2.50				604585.37 5891409.23		
	3.00				604524.54 5891208.53		
	3.10				604404.89 5890953.96		

Table 3. 19 and 20 may 1980. UTM co-ordinates.

<u>DATE</u>	<u>TIME</u>	<u>DRIFTER 0</u>	<u>DRIFTER 1</u>	<u>DRIFTER 2</u>	<u>DRIFTER 3</u>	<u>DRIFTER 4</u>	<u>DRIFTER 5</u>
2005	3.20				604301.87 5890684.00		
	3.30				604136.32 5890345.60		
	3.40				603979.35 5890033.84		
	3.50				603817.92 5889725.77		
	4.00				603637.07 5889440.36		
	4.10				603432.11 5889116.84		
	4.20				603238.36 5888723.89		
	4.30				603004.59 5888393.64		
	4.40				602801.56 5888073.47		
	4.50				602572.49 5887666.48		
	5.00				602334.59 5887333.86		
	5.10				602096.88 5886971.37		
	5.20				601874.07 5886548.75		
	5.30				601618.81 5886203.16		
	5.40				601472.34 5885999.10		
	5.50				601285.68 5885666.04		
	6.00				601109.19 5885405.02		
	6.10				600855.49 5885057.70		
	6.20				600623.85 5884769.98		
	6.30				600402.28 5884523.05		
	6.40				600204.26 5884277.18		
	6.50						

Table 4. 20 may 1980. UTM co-ordinates.

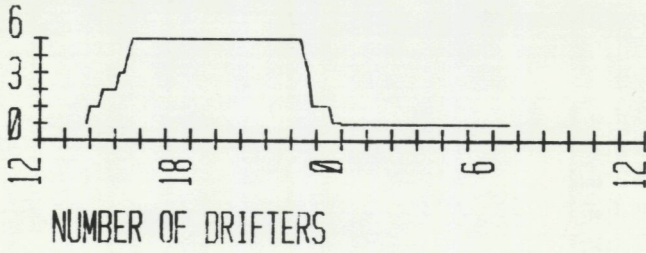


Fig. 5. 19 and 20 May 1980. Number of drifters.

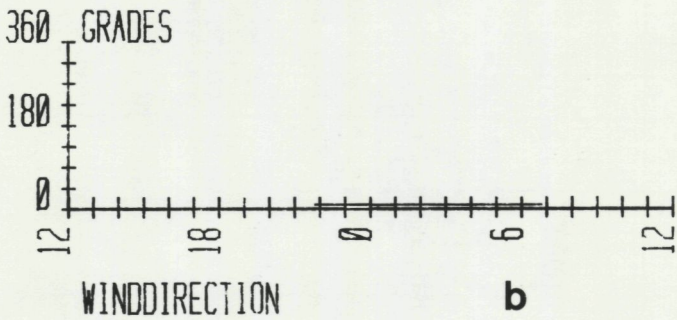
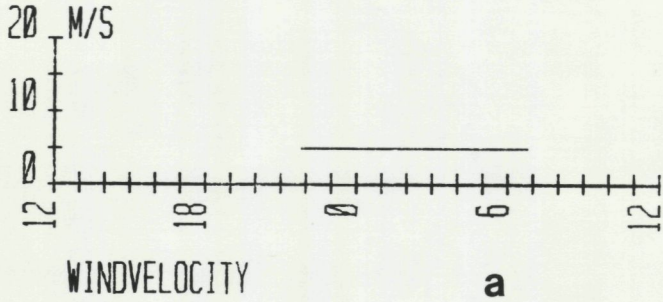


Fig. 6. 19 and 20 may 1980. a) Wind velocity. b) Wind direction.

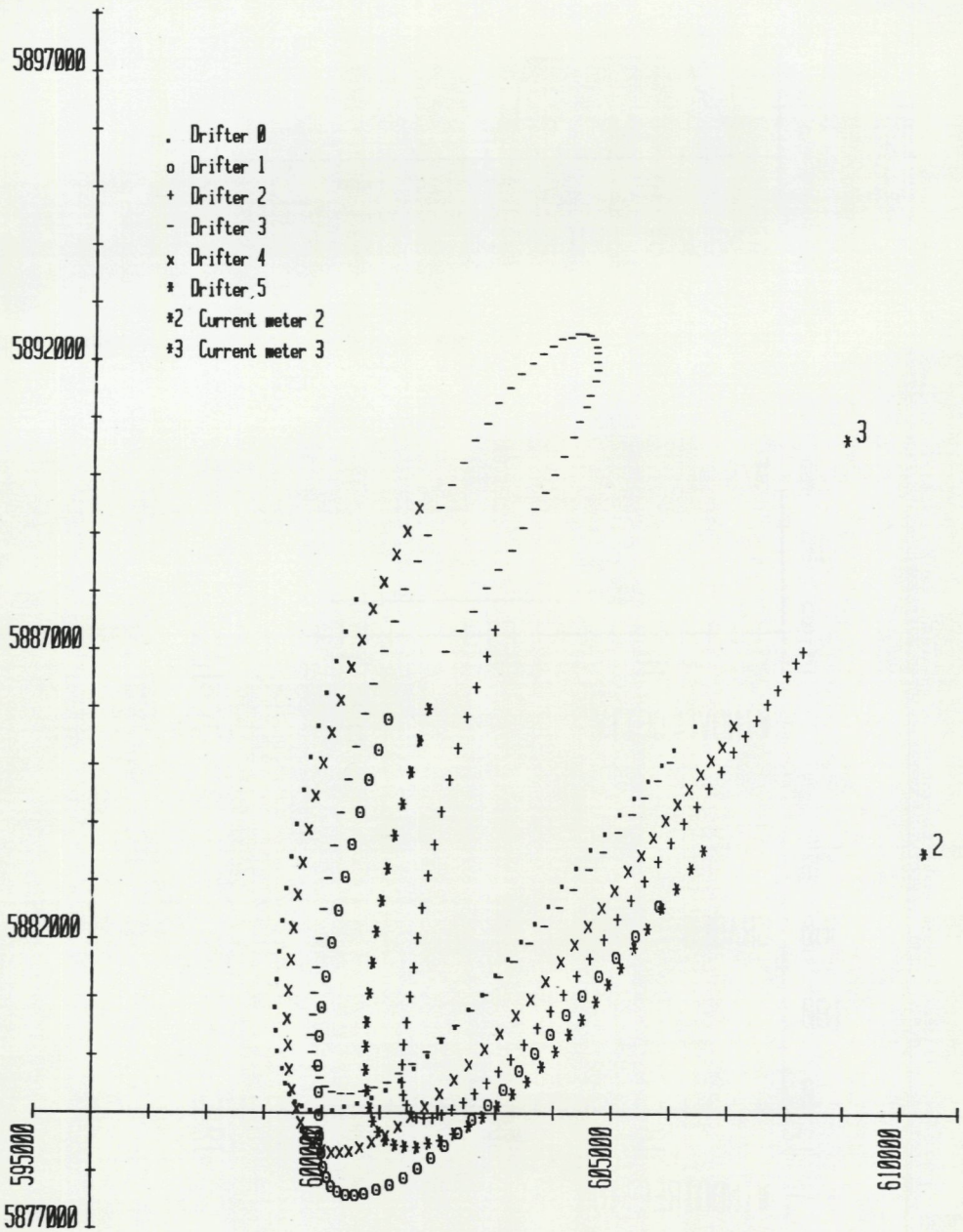


Fig. 7. 19 and 20 May 1980. Drifter trajectories.

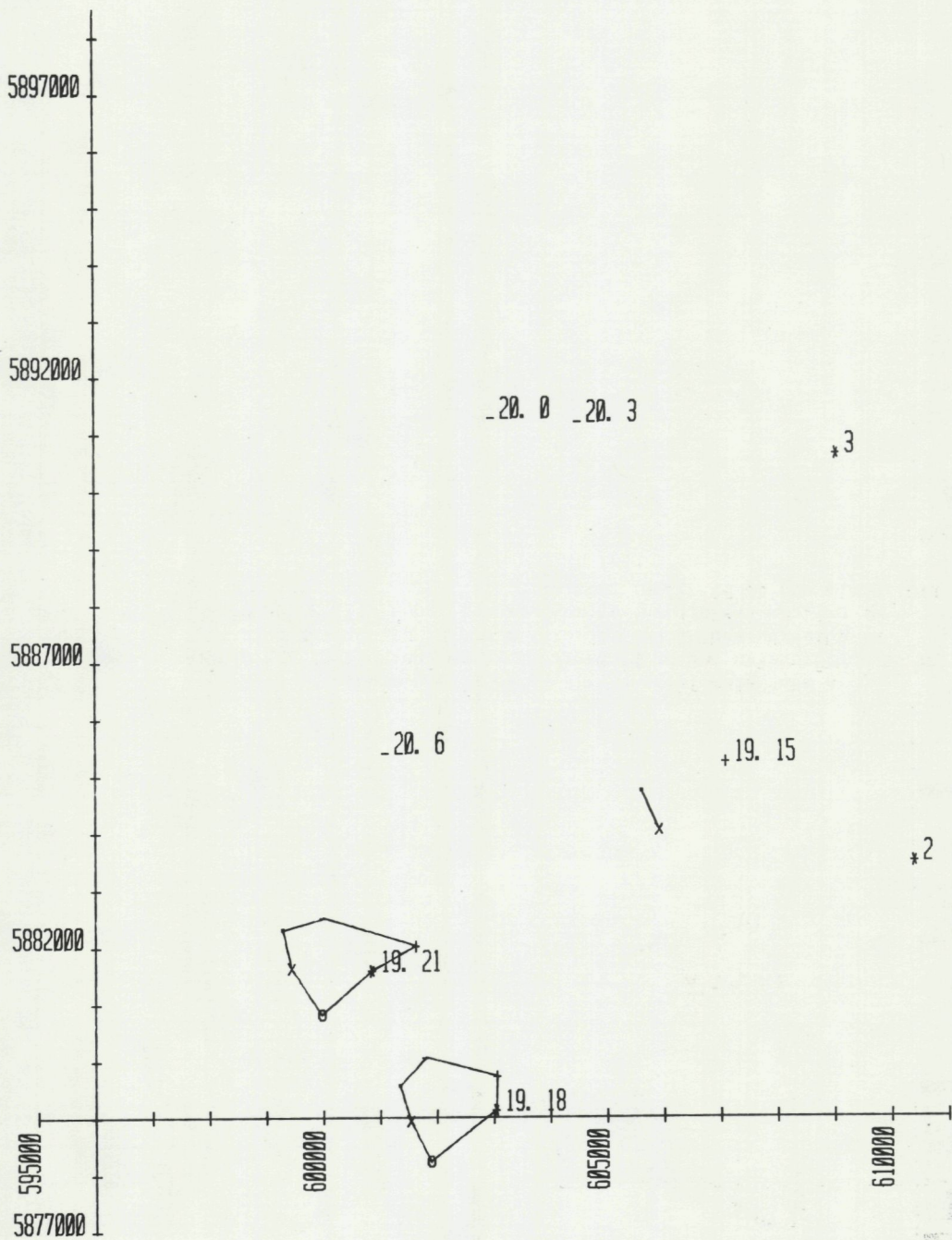


Fig. 8. 19 and 20 May 1980. Shape of the cluster of drifters, every 3 hours.

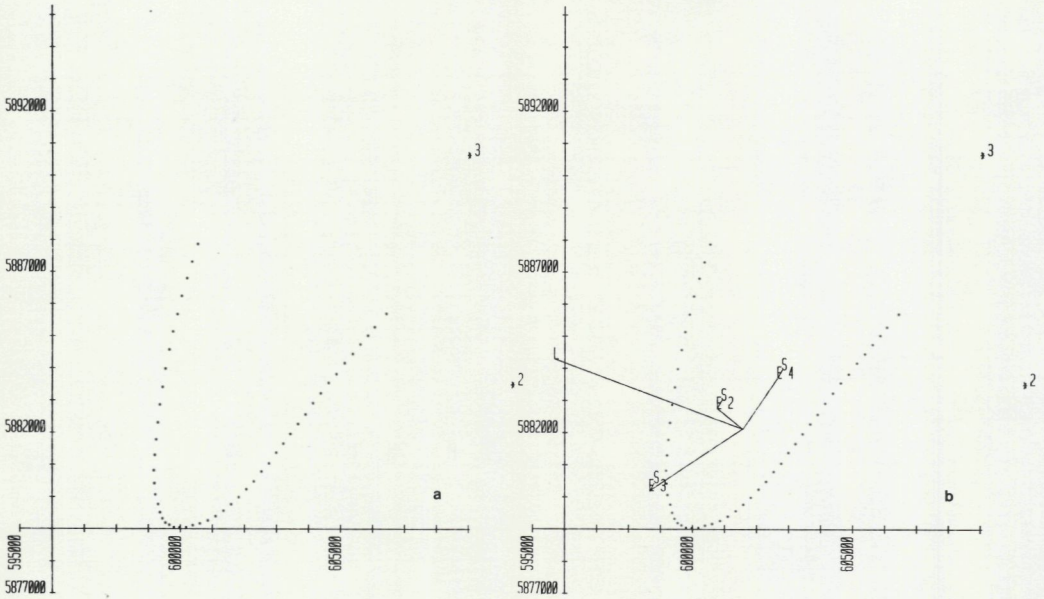


Fig. 9. 19 and 20 may 1980. Drifter O.

a) Drifter trajectory. 19 may, from 14.30 h till 22.40 h.

b) Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ , plotted at the centroid of the drifter trajectory. 19 may, from 14.30 h till 22.40 h, 490 minutes.

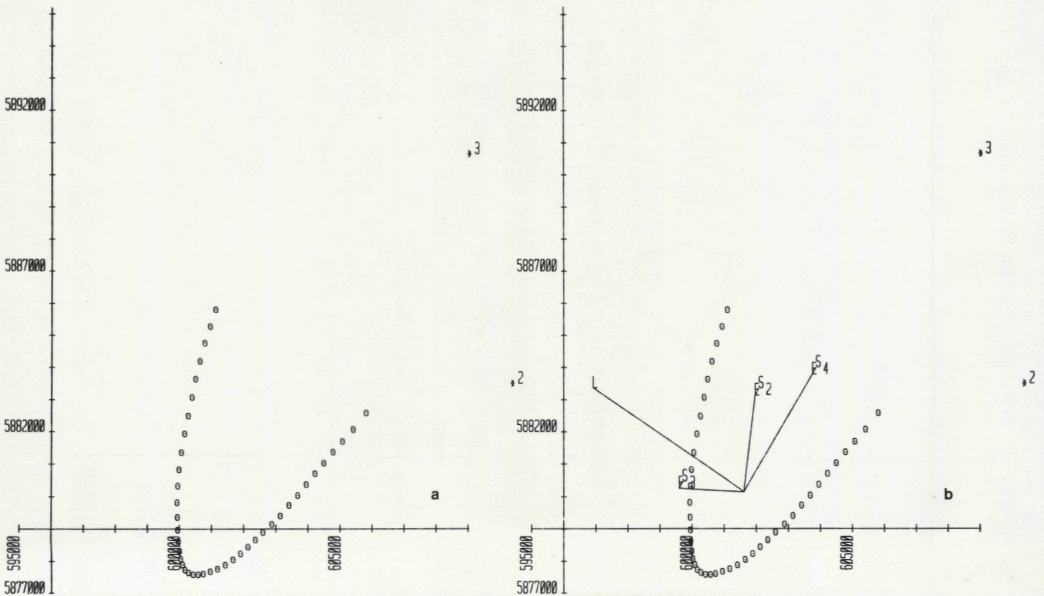


Fig. 10. 19 and 29 may 1980. Drifter 1.

a) Drifter trajectory. 19 may, from 15.40 h till 22.30 h.

b) Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ , plotted at the centroid of the drifter trajectory. 19 may, from 15.40 h till 22.30 h, 410 minutes.

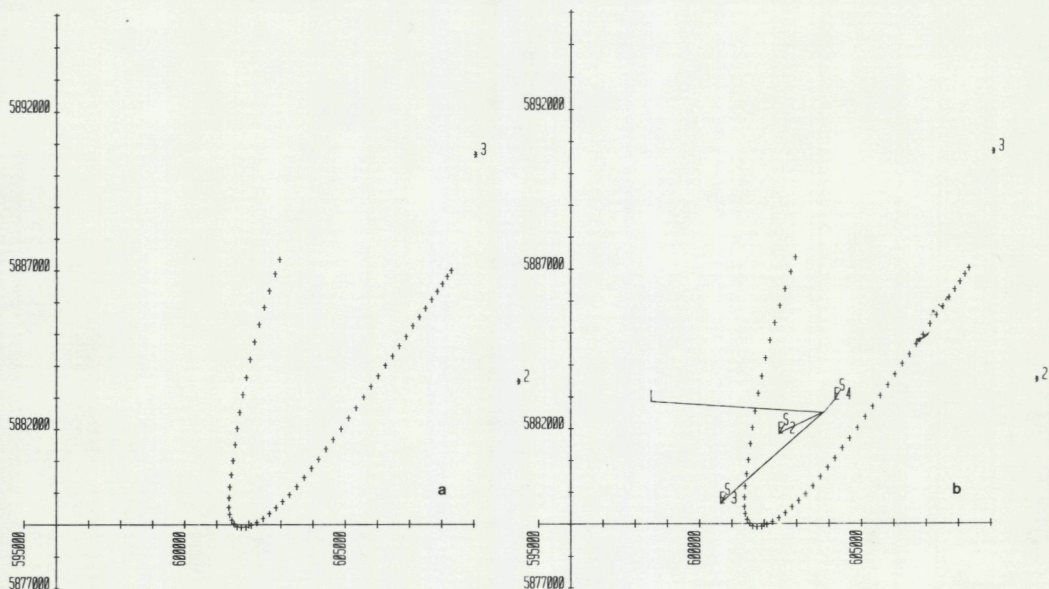


Fig. 11. 19 and 20 may 1980. Drifter 2.

- a) Drifter trajectory. 19 may, from 13.50 h till 22.40 h.  
 b) Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ , plotted at the centroid of the drifter trajectory. 19 may, from 13.50 h till 22.40 h, 530 minutes.

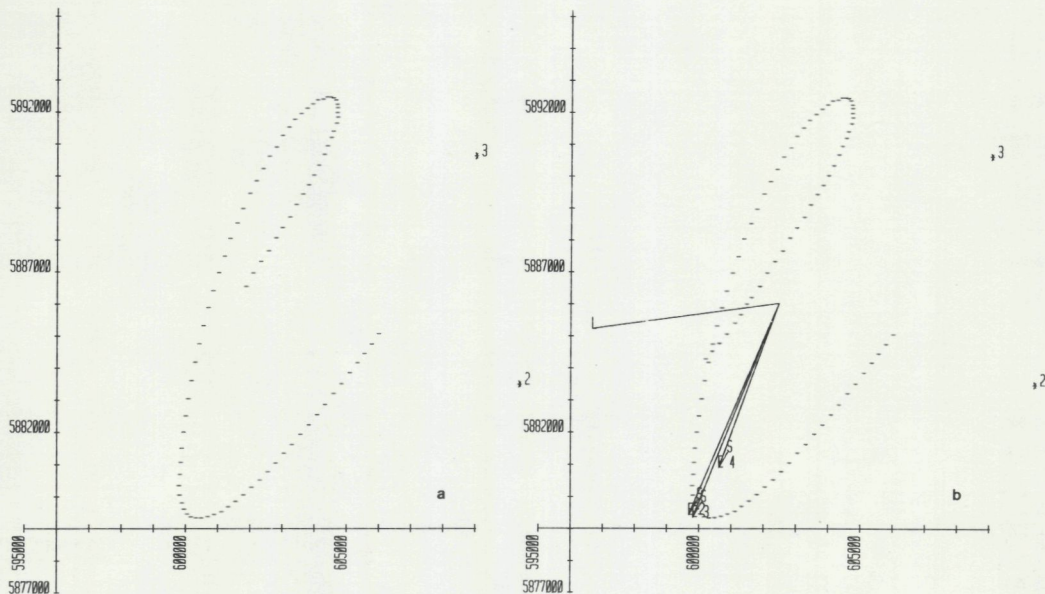


Fig. 12. 19 and 20 may 1980. Drifter 3.

- a) Drifter trajectory. From 19 may, 15.10 h till 20 may, 06.40 h.  
 b) Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ , plotted at the centroid of the drifter trajectory. From 19 may, 15.10 h till 20 may, 06.40 h, 930 minutes.

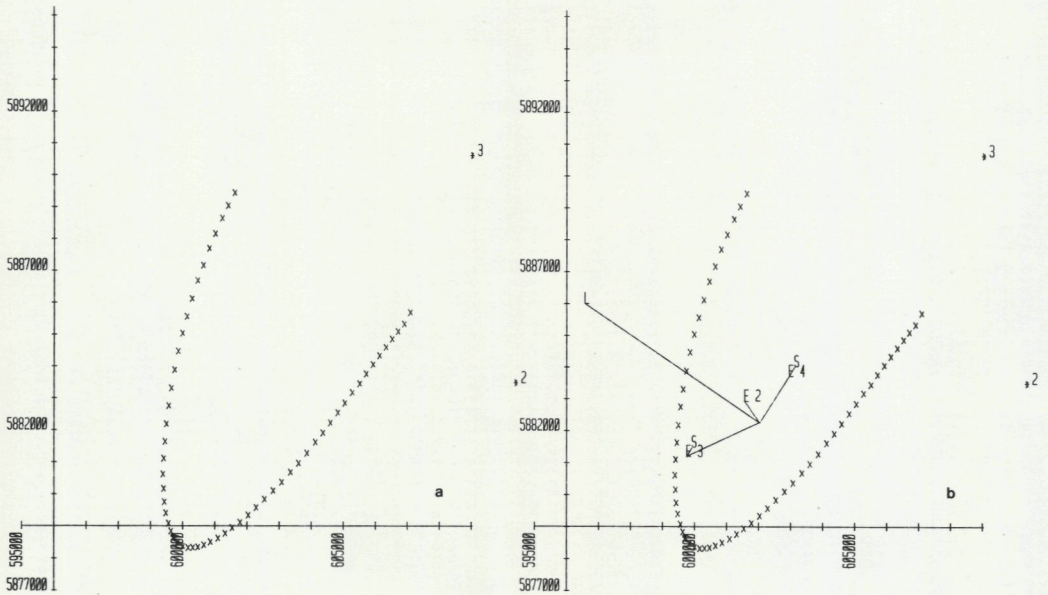


Fig. 13: 19 and 20 may 1980. Drifter 4.

- a) Drifter trajectory. 19 may, from 14.00 h till 23.30 h.
- b) Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ , plotted at the centroid of the drifter trajectory. 19 may, from 14.00 h till 23.30 h, 570 minutes.

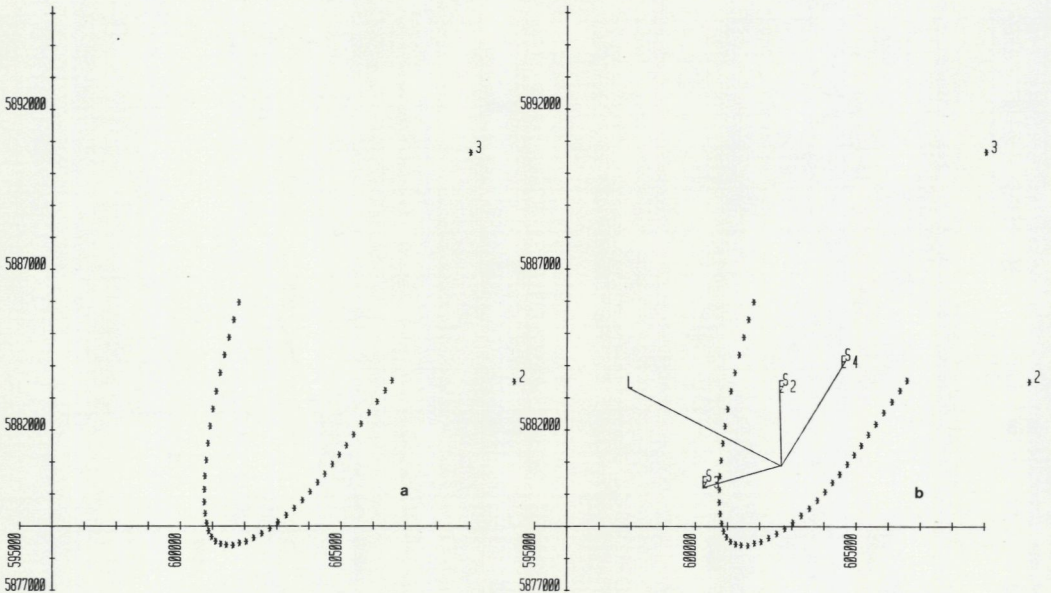


Fig. 14. 19 and 20 may 1980. Drifter 5.

- a) Drifter trajectory. 19 may, from 15.30 h till 22.20 h.
- b) Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ , plotted at the centroid of the drifter trajectory. 19 may, from 15.30 h till 22.20 h, 410 minutes.

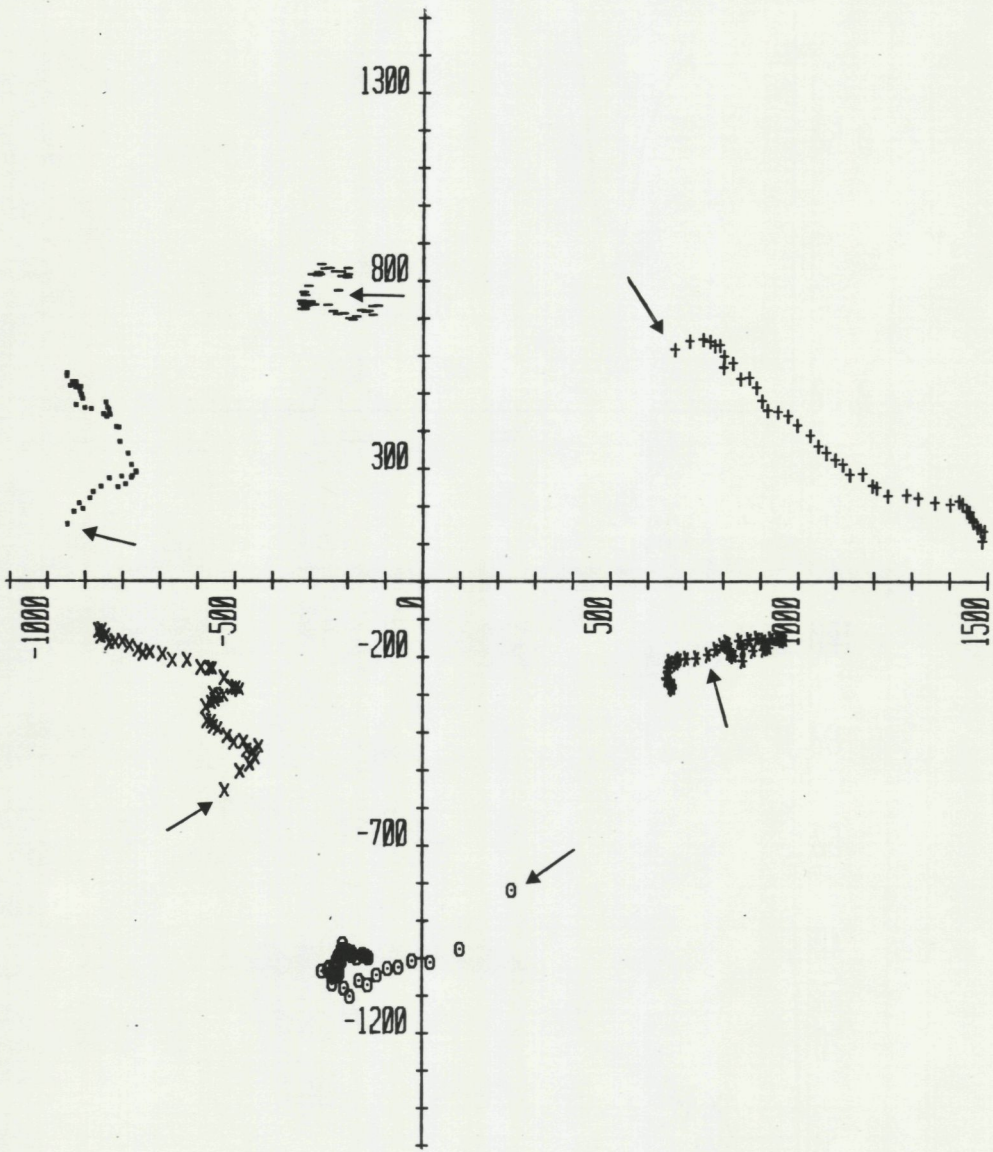


Fig. 15. 19 and 20 May 1980. Displacement of each drifter (m) relative to the centroid of a cluster of 6 drifters. 19 May, from 15.40 h till 22.20 h.

→ : starting point.

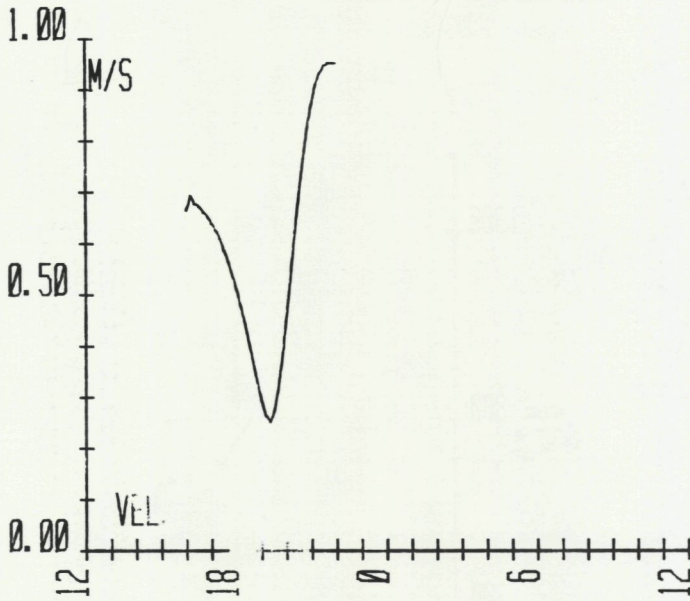


Fig. 16. 19 and 20 May 1980.  
 Absolute value of velocity of the centroid of drifters.

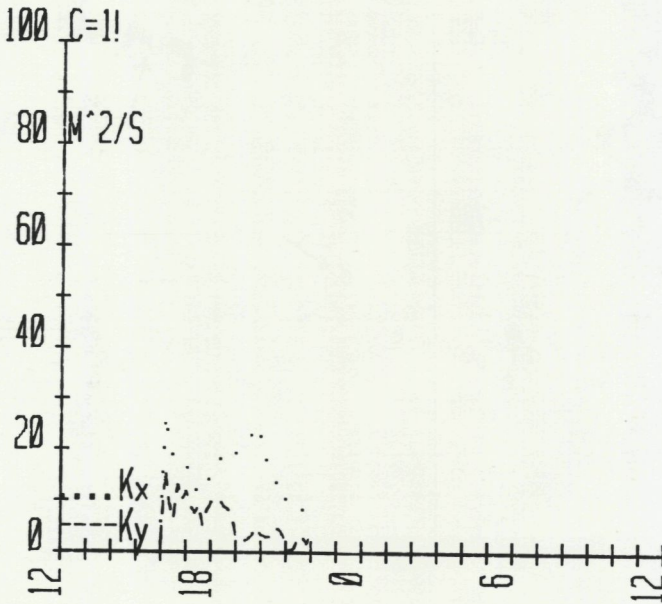
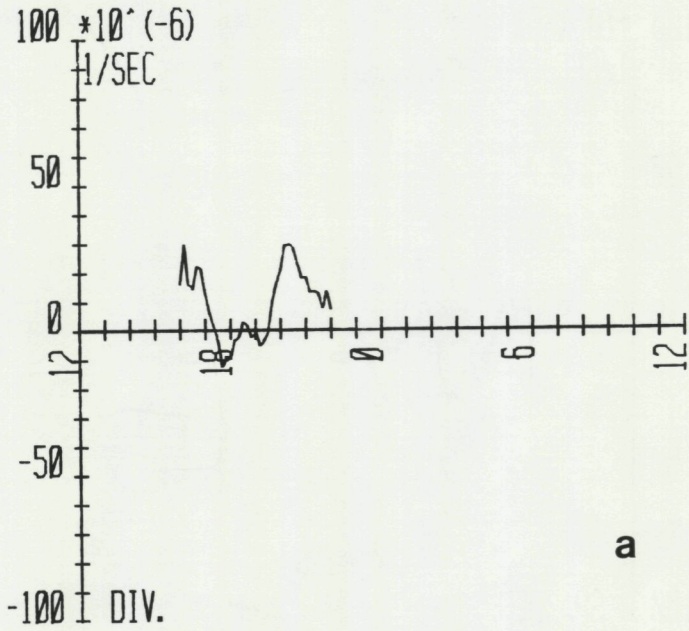
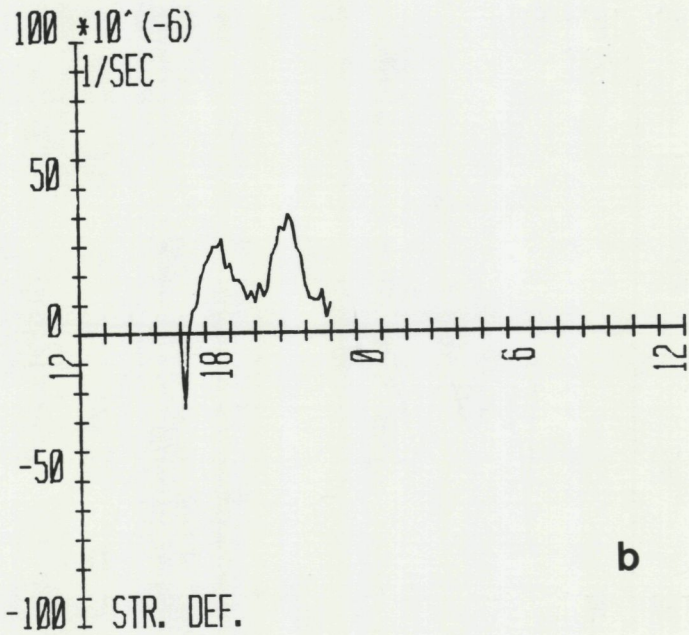


Fig. 17. 19 and 20 May 1980.  
 Turbulent diffusion coefficient of the cluster of drifters in the X- and Y direction



a



b

Fig. 18. 19 and 20 may 1980. Drifters.  
a) Divergence. b) Stretching deformation.

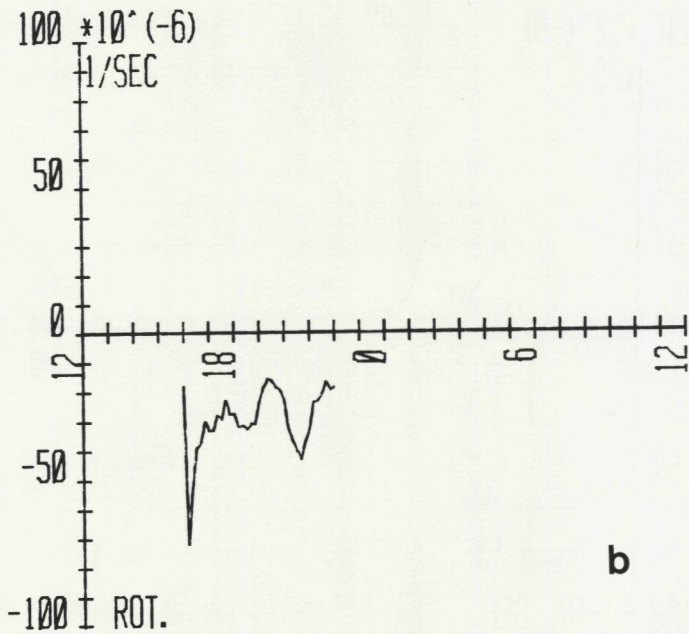
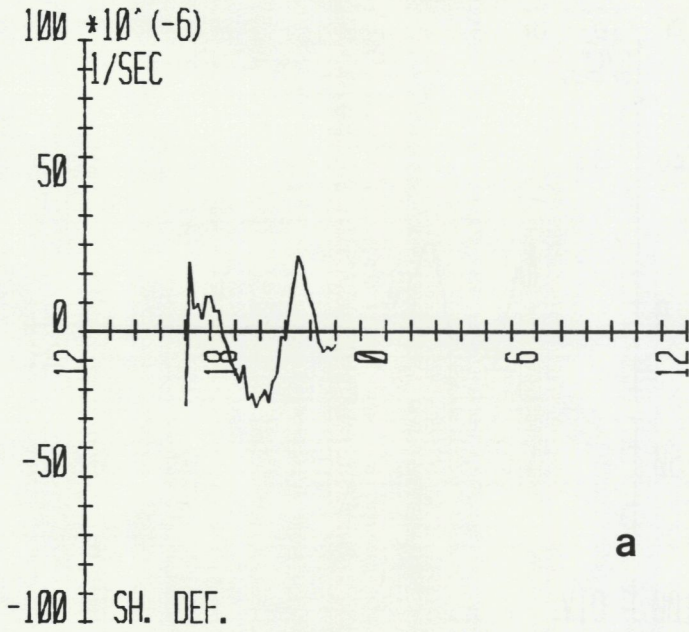


Fig. 19. 19 and 20 may 1980. Drifters.  
a) Shearing deformation. b) Vorticity.

8.2. 20 and 21 May 1980

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2005	8.50	609730.48 5885157.88					
	9.00	609926.60 588553.56					
	9.10	610128.21 5885994.14					
	9.20	610319.15 5886451.96					
	9.30	610521.66 5886942.37		611211.41 5888196.15			
	9.40	610751.50 5887427.67		611491.19 5888708.30		610715.43 5888824.16	
	9.50	610977.80 5887902.19		611768.59 5889227.74	610640.43 5888709.27	610926.80 5889268.48	
	10.00	611213.43 5888391.70		612042.14 5889775.14	610846.10 5889263.89	611170.78 5889751.51	
	10.10	611438.09 5888858.77		612262.99 5890252.75	611065.81 5889685.08	611385.21 5890194.43	612217.35 5888764.37
	10.20	611664.57 5889316.94		612504.78 5890739.25	611283.07 5890127.25	611626.83 5890659.85	612457.00 5889365.35
	10.30	611857.52 5889666.79		612724.32 5891184.42	611509.21 5890550.62	611818.04 5891056.61	612623.98 5889700.19
	10.40	612066.56 5890049.96		612937.48 5891621.59	611725.13 5890962.30	612060.39 5891517.53	612860.51 5890165.18
	10.50	612253.79 5890392.06		613125.97 5892013.44	611921.05 5891376.93	612277.99 5891924.87	613115.50 5890583.77
	11.00	612419.27 5890696.28		613339.90 5892412.73	612149.40 5891766.91	612445.71 5892260.01	613355.03 5890995.43
	11.10	612626.77 5891046.73		613503.61 5892753.14	612331.23 5892138.38	612654.65 5892663.46	613577.06 5891374.03
	11.20	612869.04 5891466.02		613698.07 5893106.86	612574.77 5892537.57	612865.23 5893050.59	613799.21 5891778.83
	11.30	613046.42 5891757.40		613867.01 5893437.96	612760.50 5892841.79	613029.32 5893362.88	614006.65 5892157.32
	11.40	613221.01 5892045.27		613997.59 5893706.75	612947.77 5893172.09	613182.45 5893657.58	614161.58 5892398.82
	11.50	613333.84 5892215.39		614154.69 5893992.56	613094.66 5893444.99	613289.05 5893840.30	614306.78 5892670.00
	12.00	613484.08 5892448.71		614288.51 5894254.01	613218.91 5893685.45	613461.39 5894098.03	614490.71 5892975.76
	12.10	613631.32 5892695.93		614446.14 5894536.02	613389.06 5893951.09	613577.51 5894303.99	614621.70 5893206.77
	12.20	613762.55 5892954.82		614565.81 5894722.32	613513.78 5894170.99	613720.58 5894550.53	614751.47 5893422.48
	12.30	613855.15 5893122.56		614672.63 5894913.66	613625.41 5894370.03	613825.62 5894717.03	614870.07 5893627.91
	12.40	613998.35 5893354.73		614772.49 5895081.52	613760.32 5894584.99	613954.20 5894915.88	615041.14 5893934.64
	12.50	614062.74 5893450.57		614860.00 5895239.78	613844.91 5894703.99	614044.39 5895064.70	615123.47 5894064.26
	13.00	614095.13 5893481.51		614944.17 5895386.94	613902.86 5894798.91	614112.33 5895157.68	615165.93 5894125.15
	13.10	614138.44 5893517.23		615002.61 5895465.58	613940.25 5894847.11	614180.62 5895284.48	615256.90 5894224.68

Table 5. 20 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2005	13.20	614166.98 5893562.79		615051.57 5895546.20	613988.94 5894920.88	614206.06 5895311.03	615311.62 5894306.08
	13.30	614203.25 5893637.04		615099.64 5895596.49	614010.03 5894994.87	614248.34 5895430.28	615366.37 5894385.87
	13.40	614188.68 5893621.90		615128.95 5895637.96	614028.64 5895004.63	614262.11 5895454.63	615401.38 5894440.72
	13.50	614188.62 5893632.68		615129.58 5895644.34	614018.23 5894994.55	614268.60 5895468.57	615405.17 5894425.20
	14.00	614150.06 5893565.98		615132.04 5895648.94	613979.77 5894959.97	614272.34 5895481.09	615372.37 5894387.19
	14.10	614097.86 5893499.68		615077.37 5895578.34	613930.06 5894910.88	614237.45 5895409.46	615377.53 5894399.75
	14.20	613989.76 5893369.44		615002.88 5895471.02	613877.00 5894858.69	614216.77 5895372.06	615283.05 5894268.73
	14.30	613930.46 5893269.67		614952.64 5895416.71	613760.61 5894681.98	614141.16 5895251.74	615203.24 5894162.43
	14.40	613806.53 5893086.62		614821.07 5895232.40	613679.69 5894594.19	614075.21 5895157.06	615138.63 5894072.00
	14.50	613668.99 5892914.36		614694.36 5895062.49	613537.38 5894406.94	613986.32 5895026.03	614999.94 5893888.96
	15.00	613598.85 5892825.94	614949.33 5894330.22	614537.25 5894864.46	613448.48 5894311.75	613891.64 5894892.57	614936.20 5893812.02
	15.10	613431.48 5892580.61	614834.03 5894177.28	614388.73 5894679.01	613301.15 5894105.53	613753.04 5894682.49	614762.59 5893569.19
	15.20	613267.25 5892349.65	614660.74 5893924.73	614205.06 5894432.21	613122.74 5893878.21	613626.30 5894488.64	614630.19 5893377.31
	15.30	613081.12 5892050.49	614533.88 5893740.19	614044.71 5894210.92	612923.35 5893591.07	613448.99 5894214.89	614442.38 5893083.96
	15.40	612917.69 5891800.95	614340.95 5893457.78	613867.27 5893927.96	612761.47 5893360.71	613302.05 5893986.91	614303.19 5892858.53
	15.50	612716.18 5891513.19	614205.07 5893254.48	613695.31 5893657.38	612550.29 5893042.19	613114.26 5893690.43	614129.66 5892557.25
	16.00	612485.45 5891137.02	614068.57 5893013.38	613526.77 5893392.49	612347.09 5892732.88	612930.00 5893384.92	613930.52 5892216.30
	16.10	612354.74 5890960.55	613841.91 5892609.66	613300.07 5893011.44	612180.24 5892492.74	612778.19 5893129.39	613808.30 5892001.07
	16.20	612140.21 5890627.07	613668.98 5892305.76	613118.70 5892692.18	611962.92 5892158.46	612598.33 5892839.74	613616.68 5891659.24
	16.30	611940.54 5890323.45	613485.67 5892001.07	612941.45 5892363.83	611752.23 5891836.25	612411.25 5892536.99	613455.61 5891380.60
	16.40	611727.27 5890022.77	613304.46 5891692.84	612752.71 5892017.68	611541.48 5891514.71	612220.12 5892205.42	613262.54 5891044.23
	16.50	611507.25 5889704.77	613112.03 5891375.14	612573.98 5891680.38	611334.66 5891199.22	612030.82 5891881.31	613097.70 5890741.96
	17.00	611289.89 5889403.98	612929.84 5891080.56	612406.11 5891381.06	611111.61 5890860.25	611816.94 5891582.48	612912.43 5890377.10
	17.10	611058.13 5889036.40	612784.50 5890860.00	612251.29 5891099.03	610877.40 5890492.76	611603.27 5891208.34	612721.49 5890013.47
	17.20	610842.76 5888752.77	612591.00 5890544.93	612069.48 5890759.06	610663.03 5890160.46	611425.60 5890911.72	612532.11 5889682.10
	17.30	610636.41 5888499.33	612387.97 5890205.29	611908.33 5890449.52	610451.71 5889848.00	611245.45 5890592.64	612395.16 5889423.12
	17.40	610421.43 5888217.89	612224.48 5889960.93	611718.42 5890112.52	610255.80 5889552.84	611066.90 5890292.46	612204.20 5889077.12

Table 6. 20 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2005	17.50	610216.72 5887927.24	612032.61 5889663.76	611570.35 5889846.23	610052.26 5889261.14	610881.14 5889964.56	612036.08 5888751.77
	18.00	610016.05 5887701.13	611842.88 5889368.94	611411.70 5889557.80	609848.14 5888980.38	610724.67 5889700.68	611881.09 5888459.53
	18.10	609790.93 5887418.61	611660.37 5889062.61	611247.82 5889266.48	609646.70 5888703.60	610540.78 5889401.26	611721.41 5888200.33
	18.20	609598.96 5887209.59	611483.92 5888818.35	611089.09 5888992.48	609455.38 5888432.61	610379.50 5889149.96	611556.93 5887945.60
	18.30	609428.19 5887039.55	611289.99 5888527.08	610911.74 5888681.41	609280.10 5888225.00	610226.93 5888902.44	611402.57 5887698.83
	18.40	609211.03 5886783.89	611132.60 5888301.00	610786.27 5888475.43	609079.38 5887949.80	610060.28 5888650.00	611237.11 5887427.11
	18.50	609009.17 5886593.75	610989.15 5888249.33	610638.14 5888249.33	608893.37 5887717.93	609903.94 5888418.30	611069.55 5887175.95
	19.00	608846.50 5886422.84	610842.43 5887925.59	610511.47 5888043.86	608715.88 5887529.15	609761.95 5888237.42	610904.26 5886965.50
	19.10	608684.26 5886240.56	610703.31 5887742.86	610385.91 5887849.90	608555.25 5887345.45	609632.49 5888045.31	610761.67 5886790.21
	19.20	608523.45 5886096.85	610563.47 5887566.23	610265.05 5887705.58	608390.03 5887170.55	609513.98 5887873.60	610633.92 5886643.32
	19.30	608370.39 5886001.41	610465.80 5887461.93	610143.14 5887530.20	608230.17 5887009.06	609406.98 5887746.60	610518.37 5886521.11
	19.40	608246.25 5885903.72	610332.83 5887311.48	610055.59 5887430.61	608103.51 5886942.74	609327.79 5887675.30	610408.76 5886411.85
	19.50	608136.07 5885844.91	610232.82 5887239.07	609974.56 5887360.67	607973.91 5886847.25	609253.92 5887621.45	610311.64 5886356.11
	20.00	608029.30 5885847.43	610158.64 5887181.30	609889.66 5887292.80	607867.01 5886825.62	609183.60 5887592.78	610241.01 5886302.22
	20.10	607925.45 5885835.02	610111.02 5887175.13	609845.91 5887294.70	607796.15 5886828.90	609122.38 5887594.42	610180.57 5886295.85
	20.20	607882.66 5885914.43	610091.63 5887193.73	609818.13 5887283.08	607724.51 5886861.30	609087.38 5887605.78	610156.80 5886348.51
	20.30	607871.35 5886019.49	610092.38 5887272.37	609816.73 5887393.50	607694.42 5886956.67	609082.85 5887723.14	610142.19 5886414.89
	20.40	607885.69 5886185.01	610096.17 5887393.18	609843.09 5887520.64	607693.17 5887090.93	609111.99 5887865.40	610161.04 5886541.04
	20.50	607893.10 5886389.81	610090.07 5887896.24	609875.30 5887666.97	607732.48 5887285.85	609133.51 5888053.35	610211.56 5886746.59
	21.00	607929.85 5886625.19	610114.35 5888315.27	609946.10 5887894.36	607773.75 5887514.54	609187.86 5888295.04	610263.84 5886986.00
	21.10	608003.69 5886925.02		610054.62 5888181.72	607822.66 5887808.47	609308.29 5888607.85	610317.99 5887226.78
	21.20	608089.76 5887243.02		610189.07 5888479.40	607924.74 5888136.30	609422.27 5888940.09	610442.28 5887563.92
	21.30	608196.92 5887642.62		610315.97 5888778.28	608025.34 5888501.33	609546.49 5889331.77	610588.00 5887912.57
	21.40	608348.75 5888056.81		610488.85 5889175.18	608156.32 5888914.18	609699.57 5889734.31	610764.03 5888339.16
	21.50	608517.39 5888479.58		610670.19 5889571.28	608303.87 5889357.88	609876.79 5890185.98	610924.59 5888757.35
	22.00	608706.38 5888943.25		610870.48 5890014.83	608460.12 5889807.53	610088.50 5890658.76	611126.59 5889197.32
	22.10	608908.95 5889426.84		611065.55 5890500.17	608646.42 5890293.62	610300.65 5891132.24	611343.57 5889700.17

Table 7. 20 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5	
2005	22.20	609129.73 5889946.00		611266.97 5890906.88	608842.54 5890797.51	610550.92 5891662.51	611572.19 5890234.29	
	22.30	609342.42 5890414.16		611476.12 5891375.91	609057.56 5891309.62	610787.74 5892148.36	611811.70 5890706.40	
	22.40	609527.72 5890834.14		611695.59 5891849.52	609239.76 5891733.97	611030.08 5892627.87	612010.84 5891128.71	
	22.50	609736.24 5891282.00		611910.31 5892289.88	609456.26 5892222.00	611260.63 5893065.55	612231.43 5891607.01	
	23.00	609947.16 5891714.76		612132.37 5892778.84	609669.19 5892701.02	611510.41 5893560.51	612420.75 5892037.38	
	23.10	610152.68 5892144.98		612309.79 5893178.02	609908.58 5893158.37	611748.40 5893985.28	612613.80 5892451.82	
	23.20	610349.19 5892560.35		612509.41 5893573.59	610123.37 5893571.13	612006.54 5894466.92	612821.05 5892922.03	
	23.30	610544.11 5892934.70		612707.28 5894027.20	610348.11 5893972.67	612214.28 5894861.48	612993.17 5893289.28	
	23.40	610734.57 5893329.94		612885.21 5894391.88	610593.37 5894381.62	612442.10 5895292.91	613161.07 5893655.11	
	23.50	610895.14 5893630.89		613083.13 5894773.45	610826.52 5894760.28	612682.04 5895647.99	613346.78 5894028.23	
	2105	0.00	611078.77 5893961.49	612245.26 5893724.58	613268.78 5895118.81	611060.70 5895114.07	612911.40 5896048.67	613514.03 5894367.67
		0.10	611208.23 5894205.14	612333.87 5894034.09	613458.55 5895478.78	611287.20 5895458.37	613142.52 5896395.77	613668.15 5894702.14
		0.20	611356.69 5894501.97	612469.24 5894323.50	613643.26 5895850.51	611505.11 5895749.45	613357.67 5896730.65	613755.36 5894915.93
		0.30	611490.39 5894716.06	612559.51 5894514.87	613755.25 5896046.42	611698.11 5896014.95	613556.79 5897059.07	613916.47 5895247.38
		0.40	611625.79 5894935.47	612701.13 5894779.28	613925.58 5896382.59	611896.06 5896294.94	613769.58 5897320.91	614021.73 5895441.38
0.50		611741.62 5895152.63	612838.78 5895000.37	614055.79 5896614.12	612094.78 5896525.30	613968.11 5897585.42	614109.72 5895683.08	
1.00		611858.96 5895319.57	612917.00 5895119.16	614167.25 5896827.90	612253.48 5896685.97	614171.61 5897826.50	614186.72 5895859.32	
1.10		611936.93 5895446.04	612991.52 5895287.78	614281.20 5897059.37	612413.02 5896882.13	614373.37 5898101.07	614263.80 5896053.22	
1.20		612012.58 5895568.26	613061.05 5895414.54	614374.01 5897212.40	612559.66 5896979.36	614484.69 5898153.51	614328.79 5896207.42	
1.30		612079.69 5895639.47	613097.37 5895501.18	614425.86 5897263.93	612733.55 5897159.94	614663.43 5898366.77	614379.85 5896346.62	
1.40		612119.64 5895677.90	613147.40 5895598.80	614538.03 5897438.63	612846.73 5897216.16	614825.51 5898557.69	614401.30 5896449.55	
1.50		612187.42 5895740.33	613142.32 5895608.68	614623.95 5897605.16	612967.60 5897311.04	614969.64 5898696.08	614441.20 5896558.24	
2.00		612275.24 5895850.98	613124.35 5895591.38	614609.10 5897579.29	613113.43 5897425.93	615100.17 5898828.34	614473.62 5896649.79	
2.10		612214.49 5895692.03	613144.57 5895644.17	614703.50 5897730.55	613130.38 5897319.62	615163.25 5898850.85	614421.27 5896580.43	
2.20		612236.08 5895682.42	613119.44 5895624.00	614702.81 5897758.15	613231.36 5897382.36	615245.62 5898903.60	614426.46 5896648.53	
2.30	612211.23 5895604.84	613043.60 5895509.77	614709.66 5897757.26	613241.00 5897271.32	615297.29 5898925.09	614392.63 5896632.07		
2.40	612170.22 5895482.28	612996.24 5895421.76	614638.41 5897655.28	613257.58 5897197.79	615347.44 5898941.99	614349.58 5896599.32		

Table 8. 20 and 21 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2105	2.50	612100.67 5895326.54	612909.40 5895299.05	614617.99 5897633.82	613254.62 5897111.34	615370.65 5898914.38	614218.71 5896452.09
	3.00	612029.74 5895177.92	612807.67 5895167.53	614592.43 5897627.57	613239.49 5897006.92	615370.86 5898865.96	614127.17 5896362.93
	3.10	611912.62 5894949.28	612662.35 5894927.40	614489.04 5897498.78	613183.44 5896878.63	615317.93 5898785.51	614039.32 5896288.57
	3.20	611813.49 5894778.56	612538.18 5894765.43	614382.86 5897386.29	613125.35 5896731.92	615278.39 5898722.83	613891.56 5896118.93
	3.30	611663.72 5894510.18	612389.79 5894524.42	614265.49 5897258.47	613014.68 5896504.22	615169.65 5898555.51	613750.49 5895966.83
	3.40	611503.93 5894244.99	612204.00 5894237.90	614128.52 5897092.31	612899.14 5896313.45	615065.24 5898392.38	613598.08 5895781.50
	3.50	611357.51 5894014.71	612018.55 5893942.63	613988.54 5896906.86	612753.73 5896065.10	614932.93 5898194.08	613419.25 5895549.24
	4.00	611177.77 5893695.14	611827.88 5893629.98	613806.13 5896676.49	612582.21 5895750.16	614754.85 5897919.11	613247.71 5895309.71
	4.10	610970.97 5893309.92	611644.37 5893291.02	613652.01 5896465.55	612431.17 5895501.58	614661.78 5897825.90	613064.25 5895150.72
	4.20	610781.50 5892961.32	611412.17 5892957.08	613539.66 5896379.81	612260.28 5895249.61	614470.97 5897479.75	612814.66 5894708.43
	4.30	610541.70 5892631.87	611215.60 5892646.19	613262.45 5895964.60	612120.07 5894991.35	614271.61 5897189.38	612614.37 5894456.90
	4.40	610287.33 5892226.15	610978.77 5892248.82	613030.03 5895643.51	611804.82 5894545.68	614094.90 5896905.35	612404.61 5894126.65
	4.50	610069.47 5891832.60	610753.66 5891878.11	612840.99 5895389.87	611598.71 5894216.71	613915.62 5896616.99	612166.69 5893761.40
	5.00	609870.71 5891511.13	610501.94 5891412.68	612657.41 5895084.46	611408.76 5893925.39	613729.80 5896298.79	611978.61 5893497.82
	5.10	609621.17 5891032.17	610312.49 5891084.29	612399.60 5894715.45	611156.08 5893504.51	613508.35 5895956.90	611715.61 5893078.33
	5.20	609389.51 5890612.06	610096.95 5890684.18	612185.77 5894371.30	610927.98 5893162.41	613287.71 5895611.18	611566.02 5892809.06
	5.30	609196.84 5890240.64	609878.21 5890280.16	611982.40 5894028.21	610705.23 5892821.08	613047.87 5895206.20	611270.87 5892356.76
	5.40	608984.29 5889805.27	609666.49 5889906.70	611790.92 5893692.82	610462.43 5892432.36	612877.34 5894928.60	611037.22 5891963.77
5.50	608766.62 5889414.90	609454.58 5889523.15	611541.56 5893271.52	610202.25 5892052.09	612688.34 5894573.18	610815.17 5891626.47	
6.00	608568.76 5889054.26	609232.06 5889150.49	611324.06 5892913.87	609954.35 5891671.41	612498.06 5894228.97	610576.65 5891242.86	
6.10	608386.64 5888732.11	609012.45 5888768.36	611104.33 5892546.02	609732.56 5891309.59	612309.06 5893907.51	610357.90 5890931.93	
6.20	608186.12 5888357.52	608801.75 5888387.00	610884.41 5892203.28	609510.74 5890960.31	612104.19 5893556.88	610141.65 5890568.15	
6.30	608003.22 5888024.11	608584.67 5888033.28	610678.51 5891849.03	609290.76 5890611.95	611925.74 5893207.19	609896.07 5890213.46	
6.40	607814.76 5887683.39	608397.10 5887672.52	610478.76 5891509.35	609059.55 5890278.39	611748.91 5892914.30	609687.76 5889853.72	
6.50	607636.76 5887346.63	608215.59 5887364.17	610297.35 5891198.07	608842.90 5889930.18	611579.21 5892605.26	609504.78 5889580.14	
7.00	607435.79 5887033.04	608028.53 5887025.92	610071.51 5890841.92	608625.73 5889619.64	611410.06 5892306.50	609316.30 5889249.20	
7.10	607267.12 5886754.64	607862.03 5886812.29	609930.65 5890595.33	608423.77 5889323.17	611243.21 5892021.82	609124.21 5888949.75	

Table 9. 21 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2105	7.20	607127.02 5886517.58	607730.46 5886549.30	609751.18 5890320.36	608227.46 5889037.08	611081.81 5891748.62	608942.05 5888679.63
	7.30	606995.28 5886282.04	607598.67 5886313.12	609599.82 5890103.32	608052.84 5888794.11	610921.02 5891489.01	608790.64 5888444.87
	7.40	606882.30 5886069.31	607458.12 5886092.96	609470.76 5889908.13	607894.98 5888546.39	610793.40 5891264.94	608656.99 5888239.69
	7.50	606764.39 5885886.68	607340.06 5885887.67	609347.00 5889688.37	607761.94 5888354.48	610689.89 5891028.26	608520.73 5888038.07
	8.00	606673.44 5885745.27	607235.53 5885731.78	609243.57 5889537.97	607660.83 5888197.15	610575.89 5890851.78	608406.78 5887894.94
	8.10	606587.63 5885618.56	607164.39 5885614.42	609143.34 5889393.25	607567.83 5888045.34	610482.59 5890700.05	608303.77 5887776.93
	8.20	606533.53 5885556.90	607112.30 5885524.90	609084.55 5889316.88	607508.85 5889759.89	610402.53 5890563.23	608240.50 5887683.57
	8.30	606509.89 5885506.24	607063.25 5885471.83	609051.53 5889241.86	607471.06 5887901.04	610359.49 5890500.25	608205.30 5887634.76
	8.40	606507.22 5885484.87	607060.22 5885426.74	609022.44 5889212.00	607451.02 5887874.72	610343.20 5890479.65	608168.59 5887610.28
	8.50	606526.47 5885539.74	607077.99 5885450.28	609025.47 5889246.75	607474.96 5887925.68	610334.97 5890475.97	608205.62 5887676.12
	9.00	606577.03 5885627.91	607107.18 5885519.62	609076.47 5889360.25	607519.75 5888014.19	610383.55 5890593.58	608256.94 5887781.11
	9.10	606661.20 5885774.64	607176.70 5885666.41	609133.32 5889483.32	607580.73 5888094.73	610440.98 5890721.69	608323.35 5887920.47
	9.20	606753.07 5885983.48	607262.46 5885860.21	609223.75 5889639.85	607654.91 5888276.81	610510.81 5890867.98	608398.21 5888109.76
	9.30	606866.12 5886208.48	607356.07 5886069.14	609320.11 5889838.85	607767.19 5888507.71	610625.07 5891095.07	608495.59 5888347.43
	9.40	606993.30 5886425.75	607462.83 5886325.65	609458.00 5890131.16	607887.26 5888718.15	610762.86 5891380.09	608634.37 5888643.66
	9.50	607141.76 5886744.17	607620.18 5886663.89	609615.99 5890456.15	608011.14 5889005.82	610922.23 5891669.17	608767.50 5888945.09
	10.00	607317.48 5887059.34	607779.77 5886975.39	609759.14 5890762.79	608147.41 5889314.28	611084.63 5891998.61	608920.66 5889283.40
	10.10	607502.81 5887413.10	607949.79 5887320.58	609951.61 5891155.40	608300.95 5889656.83	611265.08 5892365.06	609092.14 5889643.26
	10.20	607694.34 5887764.49	608127.98 5887697.57	610150.10 5891569.29	608460.21 5889974.99	611482.85 5892763.46	609273.45 5890040.28
	10.30	607889.90 5888123.27	608339.22 5888072.25	610338.74 5891926.69	608653.18 5890380.98	611685.11 5893159.19	609459.03 5890423.09
	10.40	608100.32 5888477.75	608556.81 5888437.53	610527.53 5892302.34	608847.00 5890758.45	611905.04 5893563.76	609646.60 5890800.35
	10.50	608320.96 5888836.57	608766.29 5888821.51	610784.23 5892764.08	609043.60 5891125.91	612128.60 5893975.17	609854.32 5891214.57
	11.00	608549.82 5889229.67	608993.46 5889221.23	610982.61 5893127.31	609247.91 5891512.35	612355.71 5894368.09	610036.30 5891575.51
	11.10	608742.24 5889536.10	609220.13 5889596.31	611235.87 5893564.55	609463.33 5891930.92	612580.49 5894754.95	610266.20 5891994.38
	11.20		609402.34 5889914.60	611454.64 5893930.24	609628.26 5892252.98	612810.99 5895145.10	610470.52 5892387.61
	11.30			611656.37 5894259.24	609820.30 5892609.28	613010.55 5895511.49	610668.45 5892734.73
	11.40			611872.43 5894590.63	610041.66 5893016.49	613225.59 5895879.58	610874.91 5893086.53

Table 10. 21 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2105	11.50			612076.62 5894908.05	610231.16 5893333.24	613462.07 5896241.75	611064.78 5893431.16
	12.00			612301.37 5895231.43	610445.69 5893656.95	613646.44 5896527.93	
	12.10			612510.28 5895529.95	611081.17 5894489.72	613868.58 5896861.00	
	12.20			612726.10 5895842.48		614063.28 5897174.34	
	12.30			612924.51 5896130.92		614255.15 5897423.35	
	12.40			613125.63 5896408.94		614441.92 5897704.26	
	12.50					614633.21 5897978.74	
	13.00					614762.03 5898163.73	
	13.10						

Table 11. 21 may 1980. UTM co-ordinates.

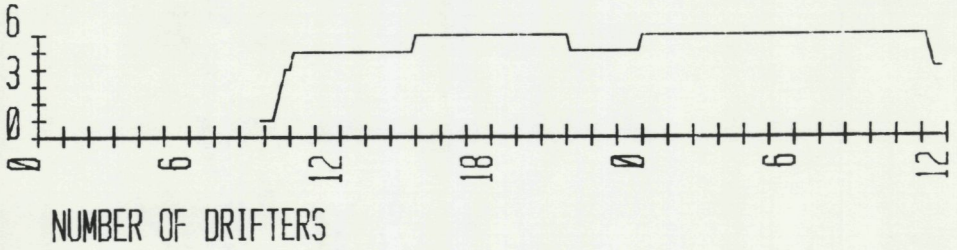
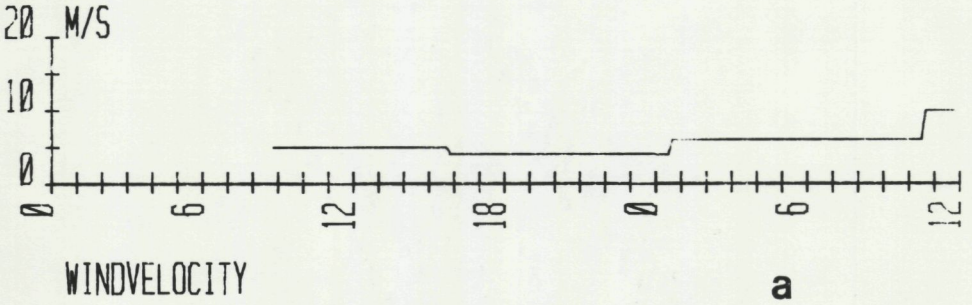
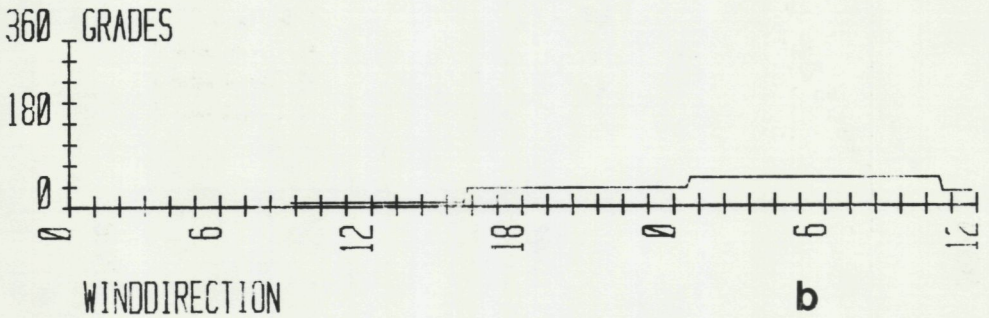


Fig. 20. 20 and 21 May 1980. Number of drifters.



**a**



**b**

Fig. 21. 20 and 21 may 1980. a) Wind velocity. b) Wind direction.

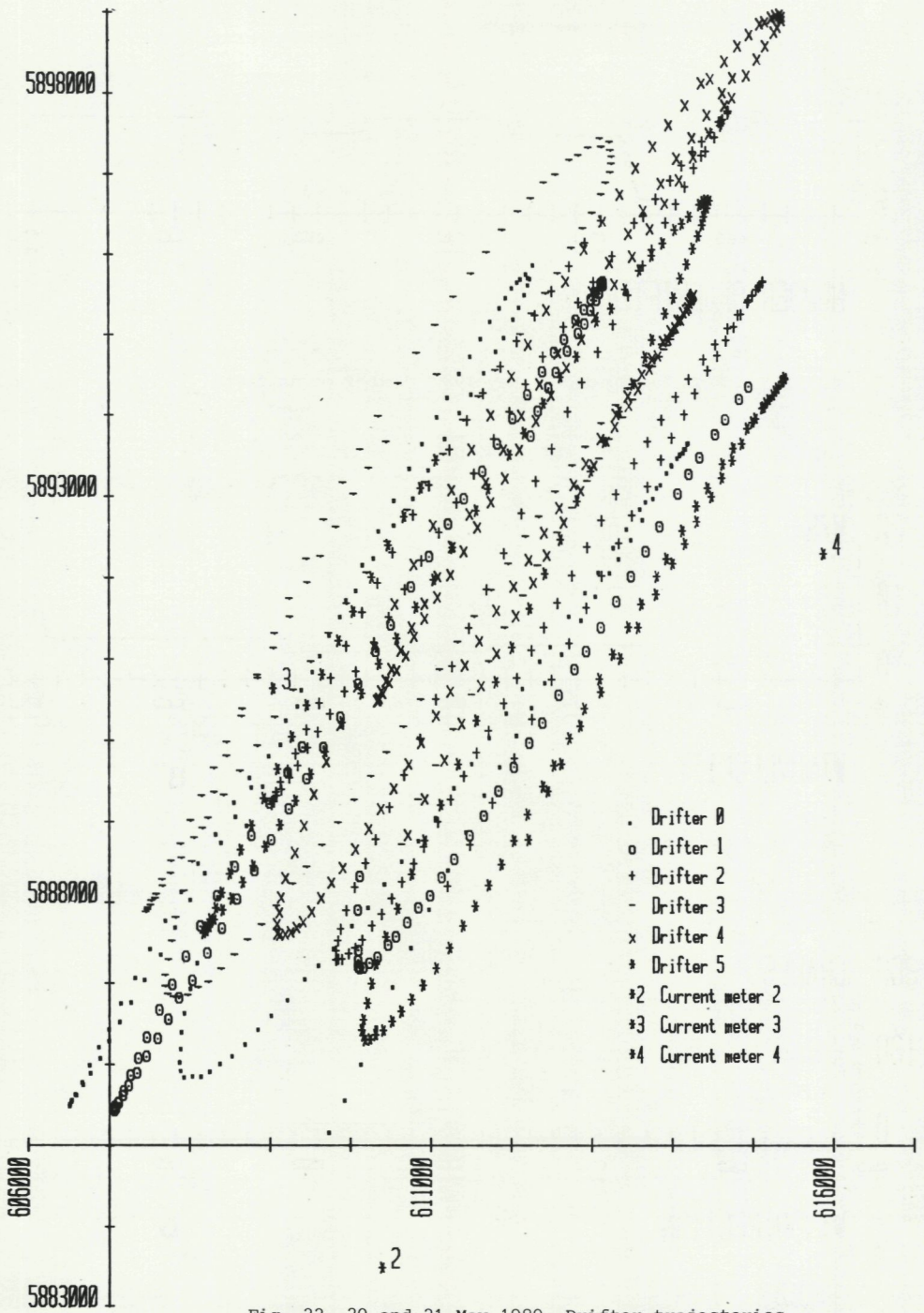


Fig. 22. 20 and 21 May 1980. Drifter trajectories.

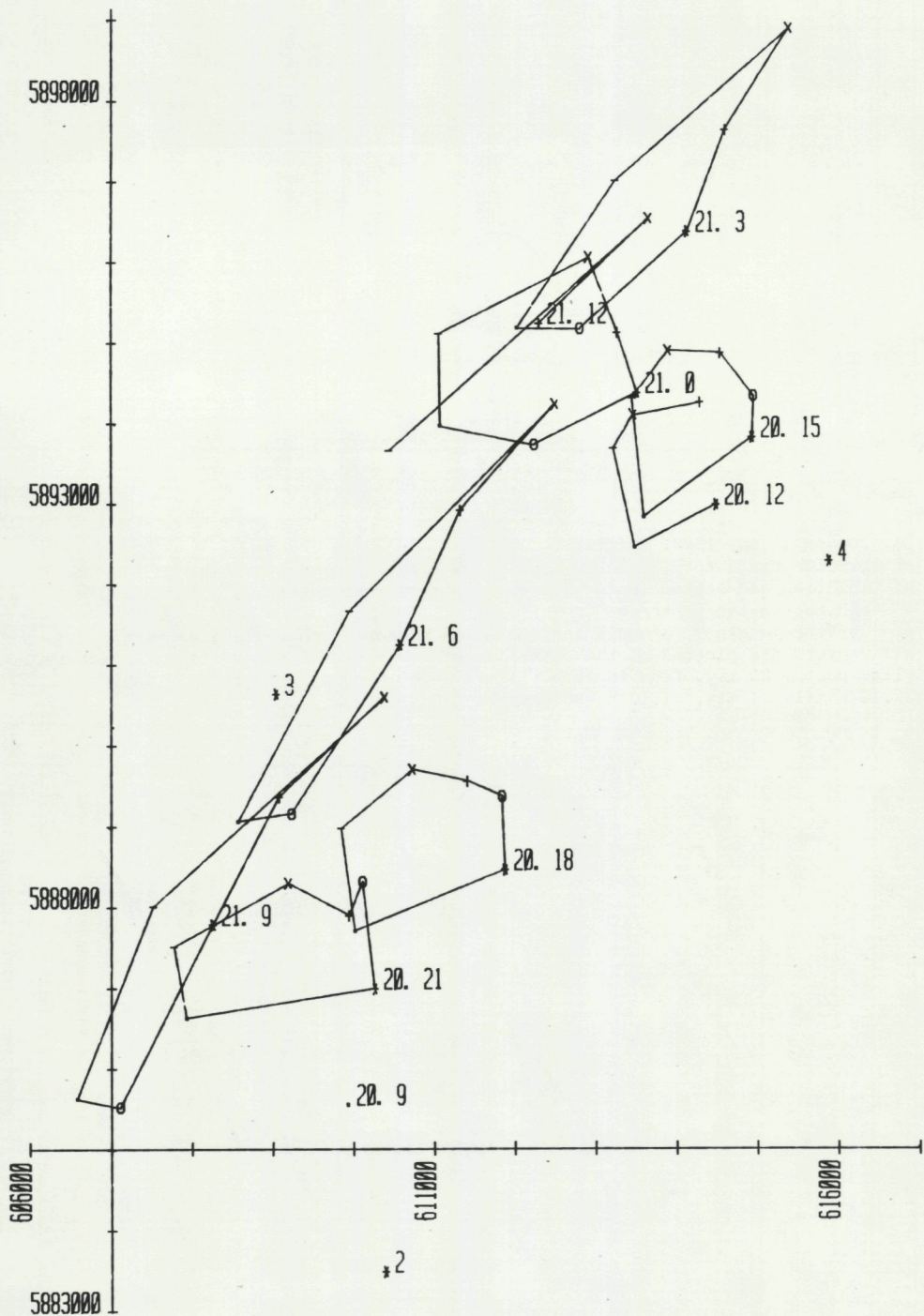


Fig. 23. 20 and 21 May 1980. Shape of the cluster of drifters, every 3 hours.

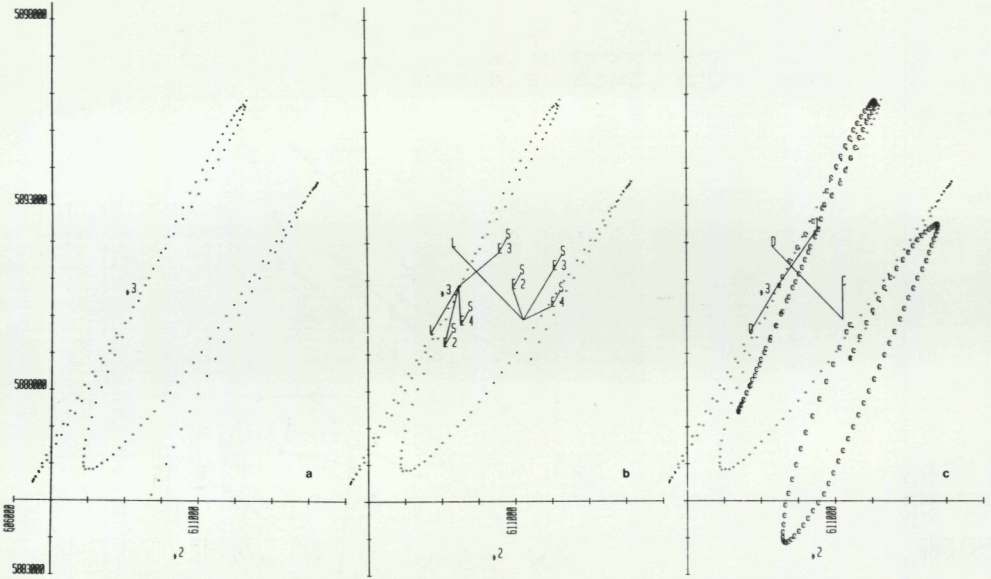


Fig. 24. 20 and 21 may 1980. Drifter 0.

- Drifter trajectory, from 20 may, 08.50 h till 21 may, 11.10 h.
- Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
- Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D. All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, 20 may, from 10.10 h till 22.40 h. Second part, from 20 may, 22.40 h till 21 may, 11.10 h. Both parts 750 minutes.

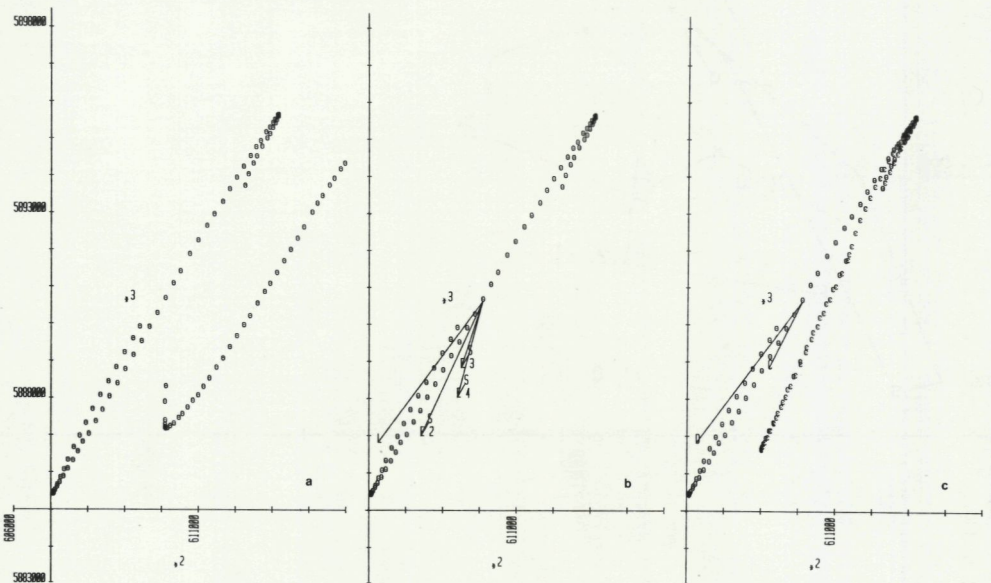


Fig. 25. 20 and 21 may 1980. Drifter 1.

- Drifter trajectory, from 20 may, 15.00 h till 21 may, 11.20 h.
- Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
- Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D. All vectors are plotted at the centroid of a part of the drifter trajectory. 21 may, from 00.00 h till 11.20 h, 680 minutes.

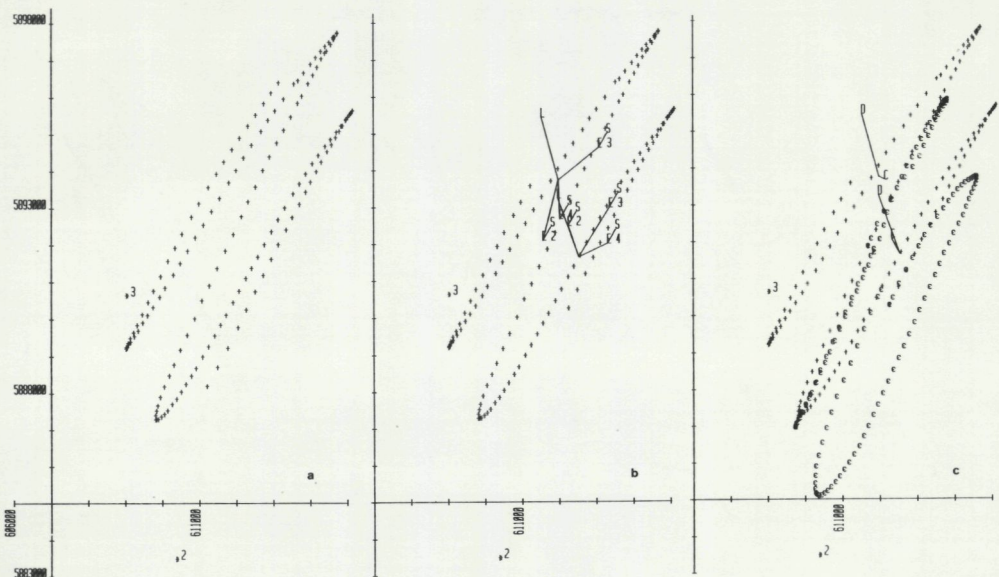


Fig. 26. 20 and 21 may 1980. Drifter 2.

- Drifter trajectory, from 20 may, 09.30 h till 21 may, 12.40 h.
  - Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
  - Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, 20 may, from 10.10 h till 22.40 h. Second part, from 20 may, 22.40 h till 21 may, 11.10 h. Both parts 750 minutes.

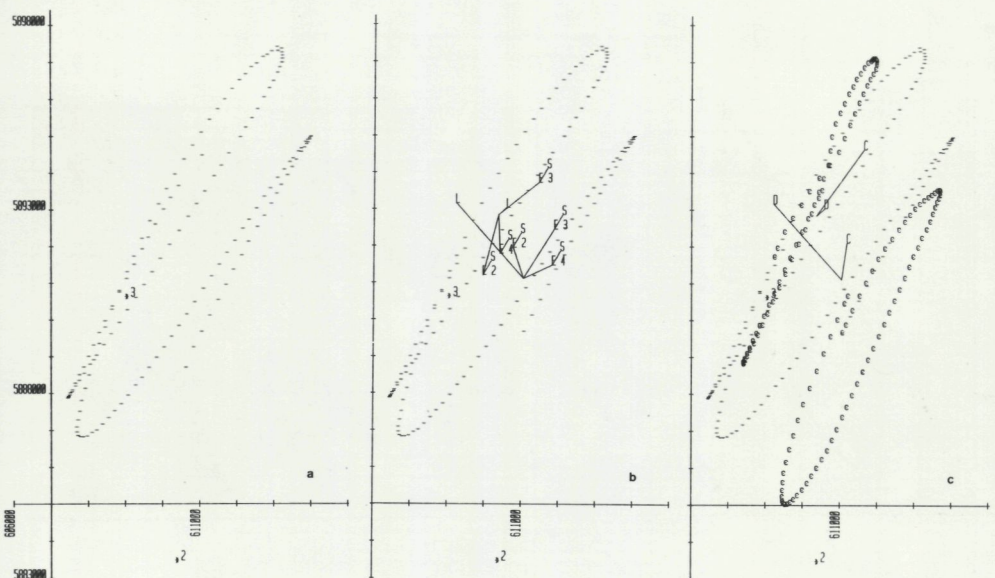


Fig. 27. 20 and 21 may 1980. Drifter 3.

- Drifter trajectory, from 20 may, 09.50 h till 21 may, 12.10 h.
  - Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
  - Currentmeters 2, 3 and 4 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, 20 may, from 10.10 h till 22.40 h. Second part, from 20 may, 22.40 h till 21 may, 11.10 h. Both parts 750 minutes.

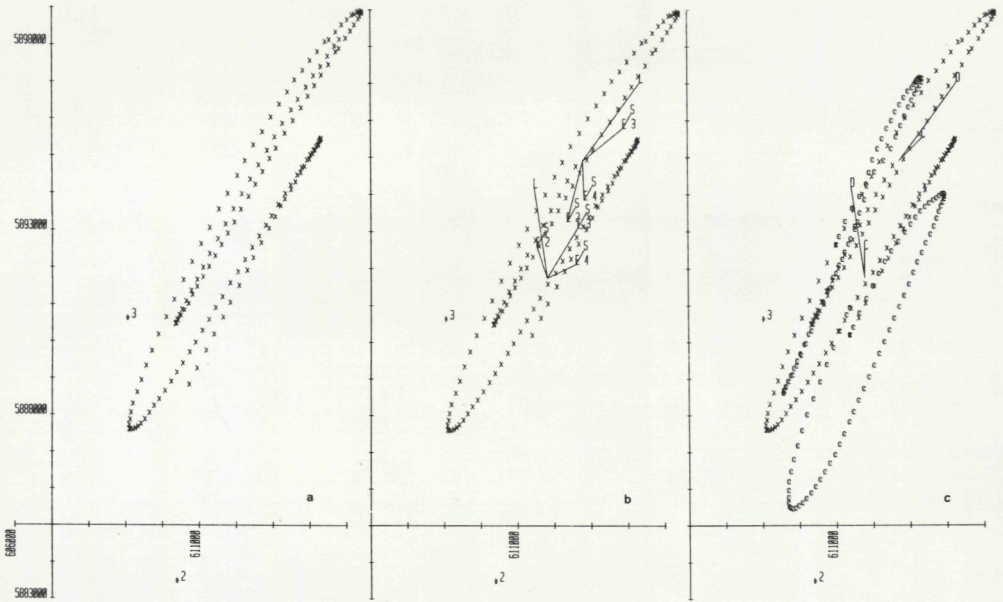


Fig. 28. 20 and 21 may 1980. Drifter 4.

- Drifter trajectory, from 20 may, 09.40 h till 21 may, 13.00 h.
  - Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
  - Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, 20 may, from 10.10 h till 22.40 h. Second part, from 20 may, 22.40 h till 21 may, 11.10 h. Both parts 750 minutes.

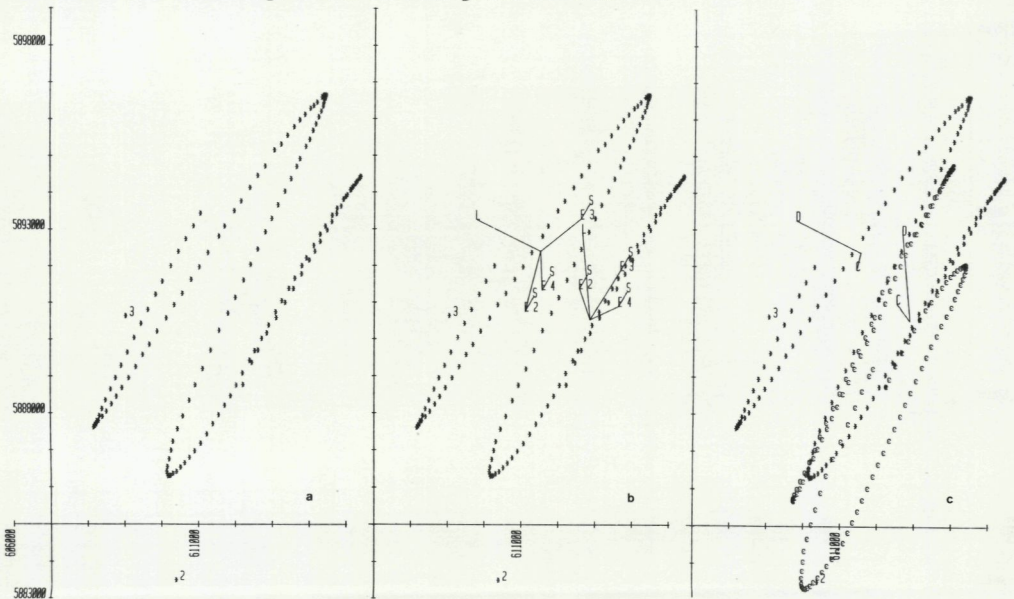


Fig. 29. 20 and 21 may 1980. Drifter 5.

- Drifter trajectory, from 20 may, 10.10 h till 21 may, 11.50 h.
  - Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
  - Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, 20 may, from 10.10 h till 22.40 h. Second part, from 20 may, 22.40 h till 21 may, 11.10 h. Both parts 750 minutes.

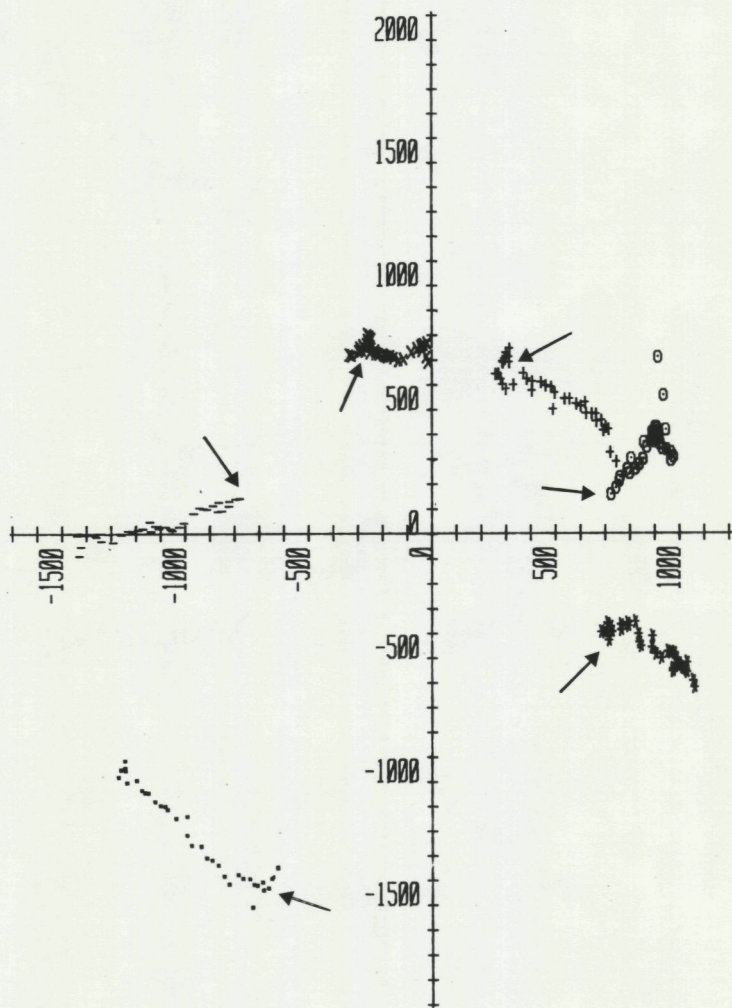


Fig. 30<sup>a</sup>. 20 and 21 may 1980. Displacement of each drifter (m) relative to the centroid of a cluster of 6 drifters. 20 may, from 15.00 h till 21.00 h.

→ : starting point.

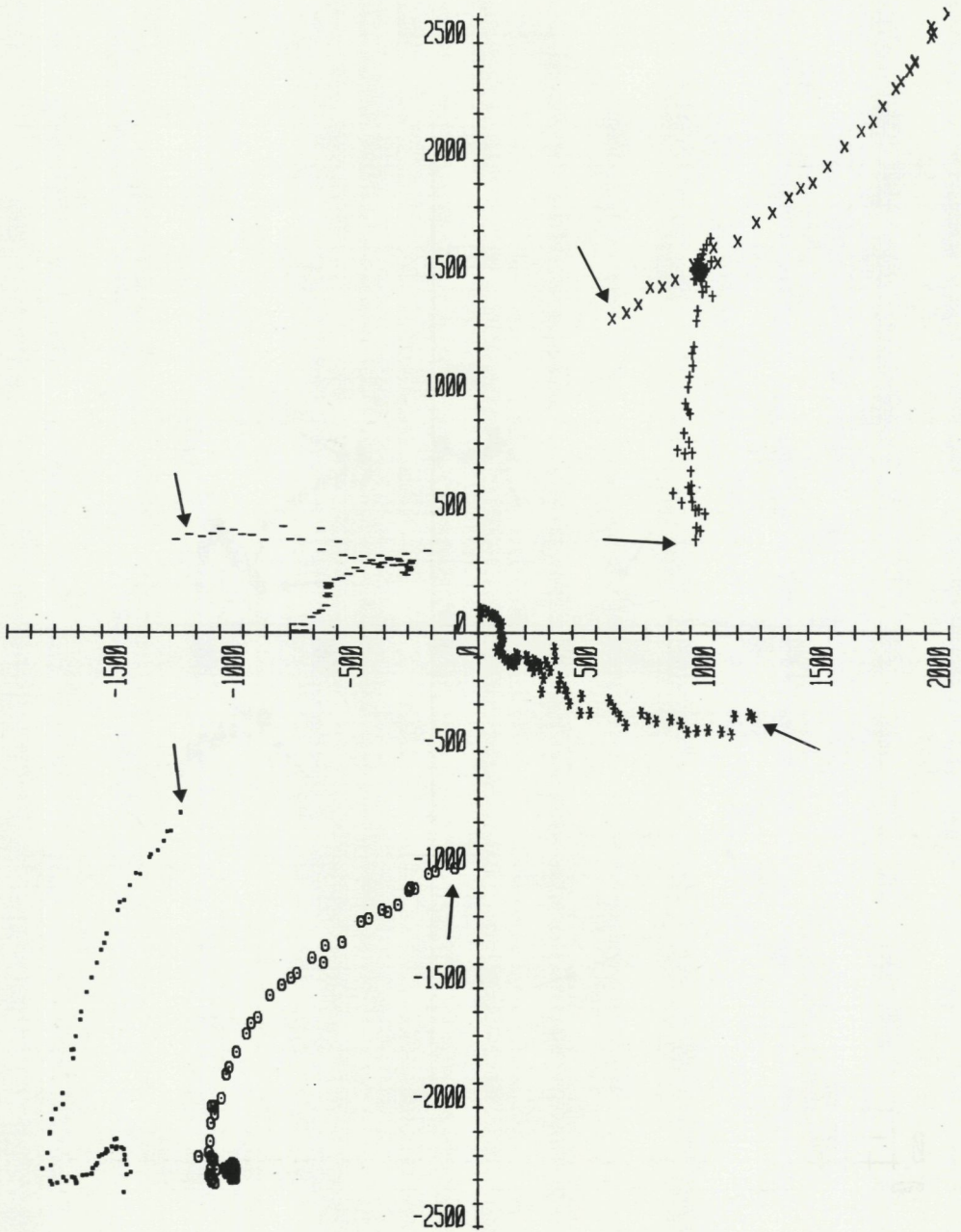


Fig. 30<sup>b</sup>. 20 and 21 may 1980. Displacement of each drifter (m) relative to the centroid of a cluster of 6 drifters. 21 may, from 00.00 h till 11.10 h.  
 → : starting point.

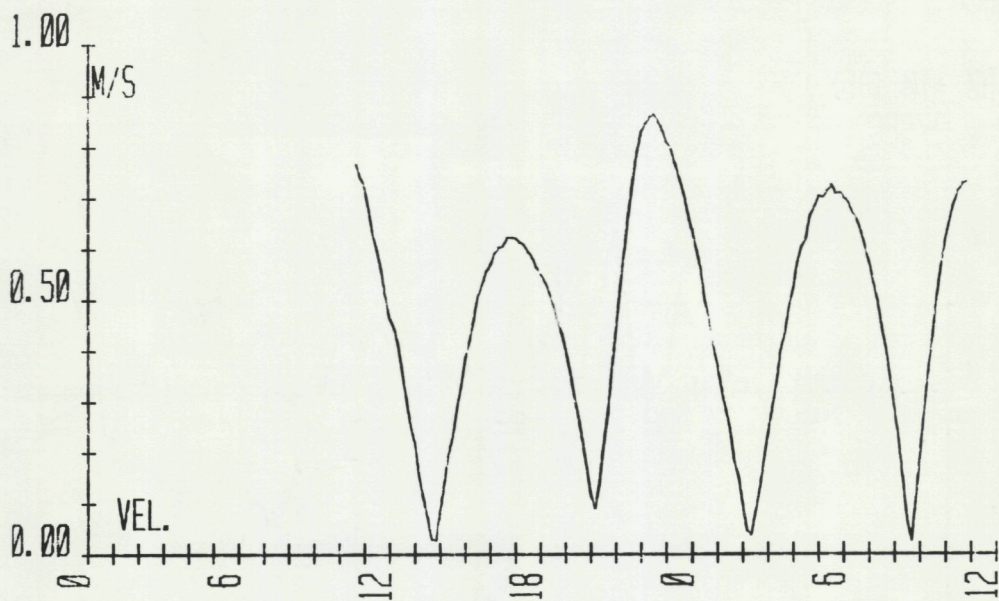


Fig. 31. 20 and 21 may 1980. Absolute value of velocity of the centroid of drifters.

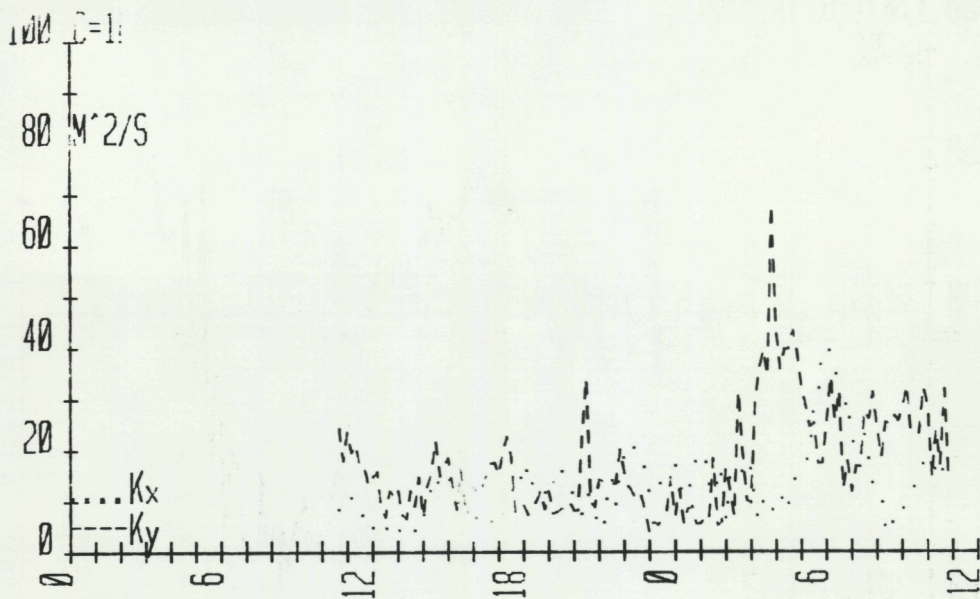


Fig. 32. 20 and 21 may 1980. Turbulent diffusion coefficient of the cluster of drifters in the X- and Y direction.

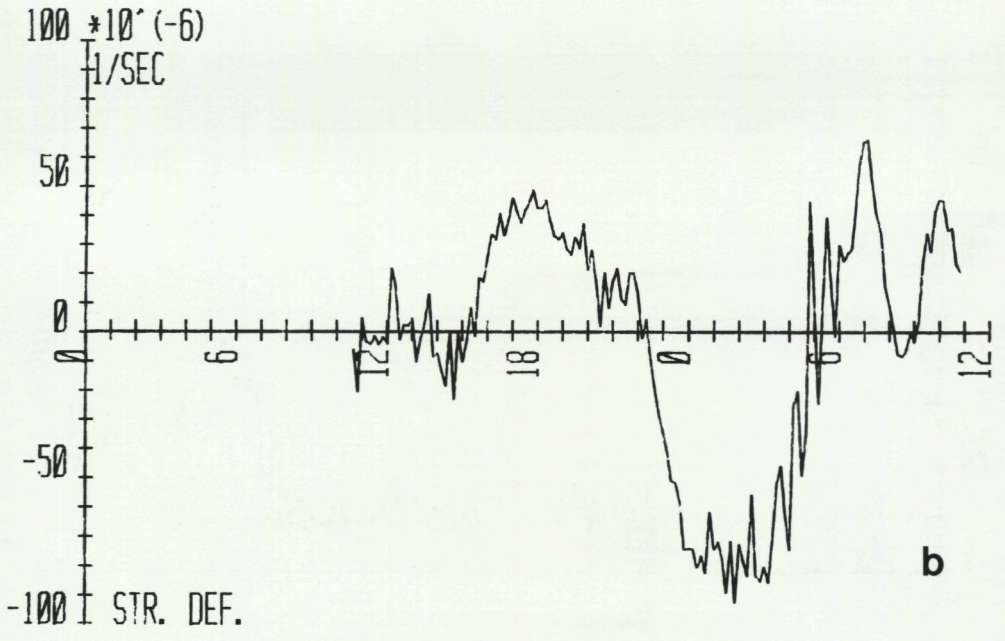
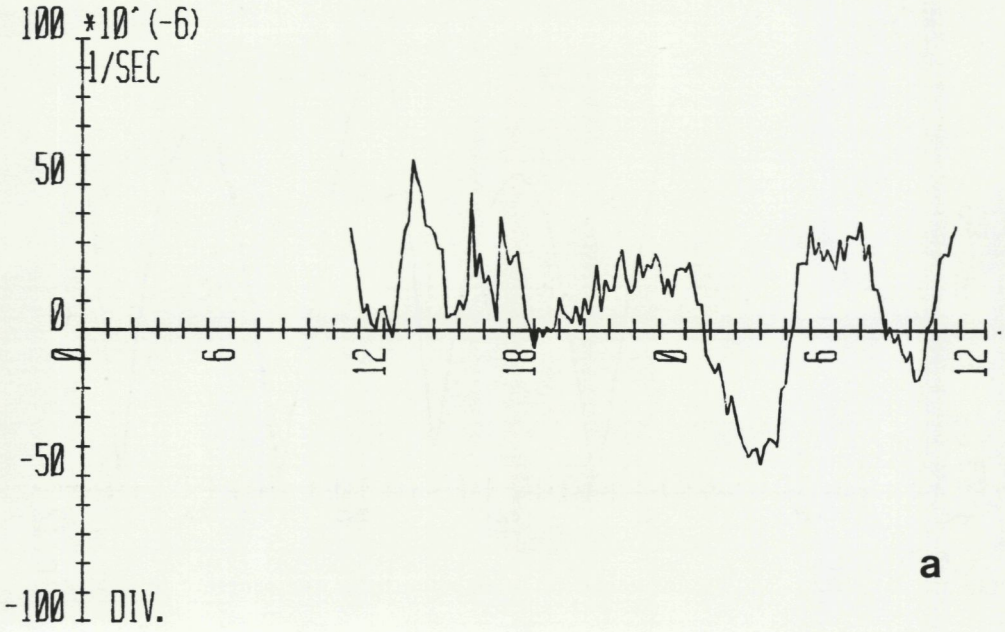


Fig. 33. 20 and 21 may 1980. Drifters.  
a) Divergence. b) Stretching deformation.

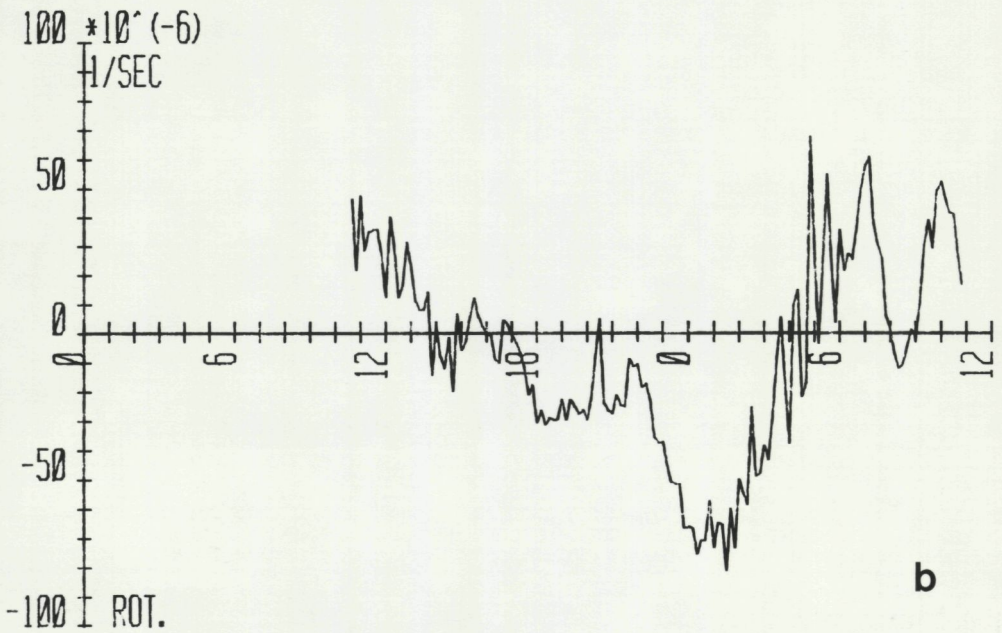
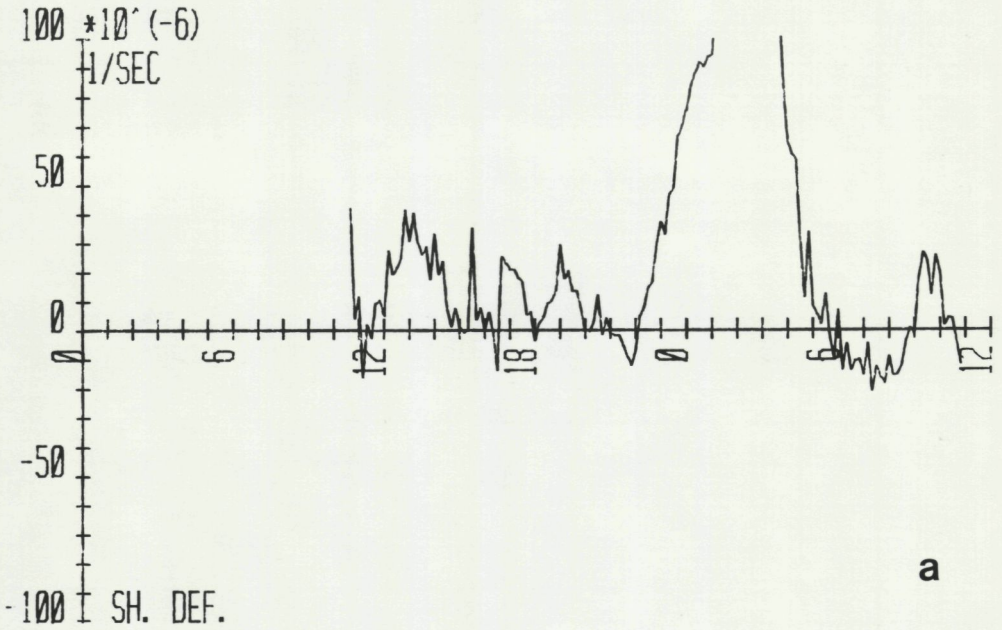


Fig. 34. 20 and 21 may 1980. Drifters.  
a) Shearing deformation. b) Vorticity.

8.3. 21 and 22 May 1980

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2105	14.50					616704.25 5894702.05	
	15.00					616626.58 5894578.93	
	15.10					616505.59 5894404.26	
	15.20					616342.89 5894163.99	
	15.30					616204.00 5893952.89	614675.55 5892988.25
	15.40					616021.91 5893703.98	614451.68 5892672.25
	15.50					615876.96 5893469.21	614308.07 5892416.62
	16.00	614517.02 5892977.98				615732.02 5893239.84	614113.92 5892115.67
	16.10	614324.56 5892701.65				615542.43 5892946.11	613935.33 5891813.62
	16.20	614142.52 5892413.04				615335.99 5892613.05	613744.74 5891535.93
	16.30	613917.83 5892038.85				615137.77 5892291.49	613529.87 5891173.73
	16.40	613720.12 5891699.17		613731.73 5890671.23		614928.54 5891932.91	613341.25 5890896.41
	16.50	613482.27 5891320.89		613484.43 5890268.10		614737.63 5891605.15	613102.66 5890503.93
	17.00	613283.00 5890993.39		613280.14 5889921.89		614518.38 5891235.02	612895.94 5890158.64
	17.10	613052.02 5890574.78		613068.01 5889550.91		614324.03 5890863.19	612626.60 5889751.29
	17.20	612798.68 5890176.18		612857.27 5889159.79		614127.00 5890506.34	612418.77 5889403.34
	17.30	612585.55 5889816.07		612662.66 5888837.33		613924.98 5890189.10	612198.87 5889024.01
	17.40	612367.34 5889419.21		612423.67 5888399.31		613716.67 5889815.12	612014.17 5888664.12
	17.50	612166.01 5889037.37		612233.48 5888063.50		613503.47 5889460.60	611791.29 5888289.28
	18.00	611992.15 5888677.89		612010.34 5887690.98		613293.18 5889111.94	611589.50 5887927.10
	18.10	611760.34 5888287.22		611813.22 5887335.17		613088.46 5888735.83	611409.26 5887566.42
	18.20	611551.88 5887923.41		611618.16 5886975.77		612895.00 5888415.34	611219.56 5887201.57
	18.30	611334.41 5887567.68		611416.39 5886629.25		612701.61 5888092.00	611030.22 5886899.28
	18.40	611141.75 5887220.91		611244.45 5886318.12		612509.65 5887761.67	610853.85 5886571.80
	18.50	610951.30 5886920.34		611078.31 5885987.39		612339.19 5887431.10	610673.57 5886227.34
	19.00	610778.66 5886572.27	611521.35 5885489.35	610916.06 5885696.18		612160.09 5887158.32	610517.78 5885950.00
	19.10	610627.98 5886310.17	611404.14 5885237.92	610792.83 5885458.35	611757.66 5886227.08	611983.84 5886851.01	610355.83 5885693.44

Table 12. 21 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2105	19.20	610468.72 5885008.93	611259.34 5885006.28	610659.08 5885199.20	611507.36 5885794.35	611819.09 5886573.32	610178.93 5885413.91
	19.30	610318.64 5885757.48	611108.39 5884754.44	610530.82 5884930.38	611358.05 5885534.98	611680.20 5886348.14	610032.48 5885182.68
	19.40	610164.41 5885535.77	610982.08 5884544.20	610398.76 5884698.19	611241.25 5885292.45	611533.07 5886096.73	609874.51 5884947.82
	19.50	610036.88 5885301.45	610865.08 5884331.00	610266.22 5884465.03	611138.16 5885117.05	611424.81 5885913.76	609739.51 5884708.27
	20.00	609913.55 5885092.15	610779.49 5884152.04	610139.39 5884256.38	611033.92 5884933.69	611300.80 5885719.31	609624.29 5884534.81
	20.10	609799.85 5884914.96	610677.61 5883998.47	610052.73 5884102.59	610918.16 5884738.63	611199.22 5885563.21	609503.59 5884341.28
	20.20	609692.10 5884742.19	610576.96 5883831.55	609959.78 5883961.34	610852.46 5884633.88	611116.68 5885392.07	609406.12 5884202.51
	20.30	609605.29 5884614.15	610505.66 5883732.65	609863.10 5883790.41	610766.84 5884507.50	611023.41 5885267.11	609315.19 5884092.55
	20.40	609526.82 5884477.56	610449.44 5883640.65	609805.93 5883710.71	610683.50 5884424.53	610958.25 5885186.75	609230.32 5883956.35
	20.50	609468.46 5884422.77	610397.31 5883584.05	609752.26 5883604.81	610617.61 5884322.92	610885.09 5885074.47	609196.33 5883908.95
	21.00	609416.72 5884333.81	610364.61 5883534.98	609724.35 5883541.05	610575.94 5884287.29	610822.69 5885010.97	609163.20 5883856.82
	21.10	609399.29 5884326.88	610347.04 5883512.01	609711.41 5883524.94	610555.10 5884291.63	610773.98 5884943.90	609161.82 5883880.47
	21.20	609391.38 5884331.61	610348.33 5883542.52	609720.23 5883539.27	610554.31 5884305.36	610766.53 5884964.30	609173.32 5883888.32
	21.30	609400.54 5884395.96	610370.09 5883603.93	609744.22 5883564.16	610563.97 5884333.38	610765.18 5884988.77	609194.40 5883969.45
	21.40	609430.35 5884448.35	610409.18 5883662.69	609795.96 5883658.58	610605.73 5884459.46	610806.33 5885079.16	609228.39 5884057.96
	21.50	609480.40 5884568.54	610458.16 5883798.57	609871.88 5883775.51	610647.59 5884555.21	610846.74 5885185.81	609290.79 5884201.01
	22.00	609547.95 5884745.58	610540.21 5883960.49	609951.65 5883951.61	610715.94 5884721.05	610913.14 5885330.26	609359.08 5884334.56
	22.10	609633.56 5884907.55	610625.40 5884154.82	610045.35 5884146.46	610787.92 5884915.60	610988.54 5885542.47	609455.10 5884540.27
	22.20	609735.14 5885130.67	610705.34 5884361.12	610156.57 5884367.55	610886.34 5885151.29	611052.91 5885723.67	609547.35 5884761.11
	22.30	609843.63 5885373.17	610807.76 5884609.86	610281.65 5884629.26	610998.38 5885430.36	611184.59 5885973.30	609652.08 5885007.94
	22.40	609967.80 5885581.61	610926.84 5884952.22	610420.47 5884915.26	611109.30 5885722.11	611278.61 5886255.81	609790.93 5885248.85
	22.50	610110.94 5885966.69	611053.99 5885227.03	610554.07 5885218.51	611244.23 5886038.39	611405.79 5886568.73	609923.70 5885549.93
	23.00	610246.91 5886250.13	611174.85 5885532.24	610708.77 5885548.37	611359.32 5886331.87	611569.80 5886908.93	610087.81 5885917.00
	23.10	610399.54 5886548.02	611325.85 5885864.82	610844.41 5885833.71	611517.61 5886689.24	611680.80 5887198.61	610216.28 5886206.83
	23.20	610511.73 5886826.76	611459.82 5886214.70	611001.48 5886198.70	611658.26 5887002.22	611808.04 5887537.18	610369.69 5886508.81
	23.30	610673.44 5887188.53	611601.40 5886532.57	611146.03 5886512.01	611795.40 5887315.78	611942.32 5887858.56	610507.11 5886834.79
	23.40	610807.50 5887476.79	611718.18 5886840.79	611292.08 5886819.96	611944.91 5887645.64	612091.86 5888206.67	610638.22 5887116.52

Table 13. 21 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2105	23.50	610936.17 5887777.22	611862.90 5887174.34	611433.74 5887129.89	612073.47 5887935.24	612227.67 5888500.96	610772.89 5887411.93
2205	0.00	611042.89 5888055.80	612003.07 5887470.60	611555.81 5887424.22	612216.21 5888286.27	612352.56 5888823.10	610898.86 5887710.04
	0.10	611173.16 5888328.03	612135.99 5887806.19	611675.86 5887696.73	612350.31 5888596.35	612477.57 5889117.15	611015.62 5887951.50
	0.20	611297.27 5888613.16	612253.15 5888067.04	611829.22 5888018.26	612469.98 5888886.38	612583.05 5889397.36	611150.64 5888243.09
	0.30	611430.62 5888905.96	612381.29 5888364.37	611956.14 5888269.41	612574.72 5889135.21	612696.64 5889666.54	611275.40 5888510.00
	0.40	611528.88 5889128.04	612487.15 5888623.56	612049.15 5888502.06	612678.75 5889408.38	612828.04 5889300.27	611378.58 5888752.50
	0.50	611636.72 5889343.95	612586.69 5888849.57	612153.98 5888734.68	612799.86 5889654.20	612907.74 5890127.08	611471.85 5888953.79
	1.00	611733.98 5889597.82	612677.25 5889057.73	612263.01 5888951.22	612889.46 5889875.66	613023.41 5890380.36	611583.67 5889185.88
	1.10	611808.49 5889734.94	612771.58 5889256.41	612363.05 5889140.11	612988.80 5890104.26	613127.73 5890618.64	611658.28 5889363.47
	1.20	611891.30 5889921.31	612859.21 5889443.70	612451.25 5889362.75	613038.25 5890251.74	613195.79 5890763.39	611726.00 5889509.26
	1.30	611944.58 5890039.41	612915.40 5889589.85	612533.05 5889528.50	613120.61 5890449.79	613262.79 5890935.64	611806.11 5889653.83
	1.40	611994.98 5890180.76	612966.91 5889694.31	612613.56 5889715.58	613175.87 5890586.49	613317.67 5891078.67	611854.76 5889775.46
	1.50	612037.73 5890269.81	613030.16 5889841.12	612634.50 5889789.24	613225.21 5890717.98	613366.14 5891218.71	611876.52 5889871.35
	2.00	612081.73 5890397.71	613043.35 5889904.58	612676.74 5889898.71	613264.51 5890813.24	613382.30 5891272.95	611904.50 5889882.26
	2.10	612074.83 5890389.67	613074.40 5889995.09	612700.94 5889971.77	613278.83 5890859.26	613376.37 5891321.19	611917.01 5889933.21
	2.20	612068.55 5890410.63	613082.55 5890051.24	612714.81 5890029.90	613270.73 5890084.79	613400.09 5891397.29	611915.31 5889927.65
	2.30	612079.66 5890451.55	613087.80 5890076.50	612695.02 5889998.41	613252.57 5890921.20	613400.22 5891393.57	611907.52 5889938.51
	2.40	612033.33 5890399.79	613030.90 5890018.89	612680.96 5889997.95	613217.52 5890872.85	613358.97 5891348.27	611868.22 5889892.54
	2.50	611968.26 5890319.61	613018.70 5890004.03	612644.56 5889985.71	613182.70 5890824.76	613303.22 5891269.30	611821.20 5889836.17
	3.00	611909.32 5890248.63	612954.27 5889898.98	612593.87 5889907.62	613136.98 5890766.14	613261.72 5891217.07	611764.54 5889757.72
	3.10	611857.70 5890175.40	612891.17 5889811.30	612513.90 5889833.58	613034.52 5890438.56	613187.21 5891113.27	611679.21 5889619.80
	3.20	611761.78 5890030.31	612819.83 5889670.24	612399.86 5889669.35	612950.54 5890526.75	613103.83 5890971.64	611578.44 5889496.78
	3.30	611634.12 5889842.10	612728.09 5889488.97	612296.33 5889518.59	612851.49 5890366.74	612983.31 5890816.48	611460.46 5889310.59
	3.40	611532.30 5889680.95	612611.76 5889306.11	612169.66 5889382.69	612730.87 5890175.47	612849.24 5890626.49	611331.76 5889121.51
	3.50	611380.56 5889425.67	612468.81 5889074.62	612044.52 5889222.07	612587.24 5889963.02	612690.55 5890377.31	611166.16 5888930.42
	4.00	611225.69 5889202.36	612321.22 5888839.23	611859.09 5888964.82	612433.64 5889749.53	612580.31 5890208.97	610992.06 5888671.11
	4.10	611066.60 5888970.23	612133.70 5888536.27	611689.37 5888732.86	612234.62 5889437.89	612391.63 5889912.06	610823.56 5888434.31

Table 14. 21 and 22 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2205	4.20	610889.46 5888650.26	611983.08 5888330.74	611503.12 5888476.14	612039.85 5889151.81	612197.12 5889606.34	610629.53 5888118.19
	4.30	610721.54 5888362.35	611786.17 5887985.63	611293.67 5888141.52	611861.30 5888861.71	612036.64 5889323.95	610452.75 5887821.23
	4.40	610531.77 5888021.18	611596.16 5887654.00	611093.25 5887845.99	611663.03 5888527.64	611837.92 5888993.80	610244.26 5887481.14
	4.50	610355.64 5887737.80	611370.13 5887310.63	610886.01 5887510.88	611487.23 5888159.03	611643.23 5888687.51	610053.82 5887192.39
	5.00	610132.77 5887374.75	611147.39 5886952.19	610699.92 5887199.99	611285.37 5887882.17	611412.36 5888339.49	609851.87 5886857.30
	5.10	609922.02 5887088.27	610936.57 5886608.59	610503.63 5886885.34	611076.48 5887530.59	611209.05 5887984.44	609641.94 5886501.57
	5.20	609680.37 5886735.63	610718.47 5886247.18	610313.42 5886539.54	610864.36 5887169.12	611027.89 5887644.69	609421.95 5886150.43
	5.30	609465.91 5886365.41	610499.80 5885909.61	610106.81 5886181.61	610662.38 5886809.51	610815.54 5887255.41	609187.55 5885821.24
	5.40	609233.97 5886012.49	610287.10 5885622.19	609917.43 5885813.98	610461.30 5886440.15	610592.49 5886904.79	608953.77 5885468.68
	5.50	609017.43 5885627.14	610094.54 5885218.05	609709.75 5885421.71	610251.43 5886078.66	610378.69 5886533.44	608712.23 5885082.71
	6.00	608796.31 5885242.43	609884.51 5884801.08	609516.99 5885092.07	610050.47 5885707.96	610181.76 5886201.80	608480.79 5884712.16
	6.10	608577.25 5884863.30	609695.15 5884472.95	609311.58 5884743.79	609847.38 5885366.37	609995.01 5885838.37	608235.81 5884360.42
	6.20	608386.00 5884536.37	609491.05 5884115.19	609111.36 5884420.39	609636.26 5885004.32	609776.50 5885494.59	607992.74 5883997.34
	6.30	608170.76 5884164.72	609319.99 5883818.75	608914.80 5884052.08	609447.24 5884682.69	609581.20 5885167.07	607784.06 5883656.60
	6.40	607978.36 5883795.39	609130.34 5883487.92	608735.35 5883742.46	609251.99 5884363.66	609395.47 5884834.37	607550.20 5883270.84
	6.50	607796.02 5883473.90	608959.56 5883170.85	608570.12 5883415.97	609044.80 5884045.70	609196.18 5884499.72	607324.65 5882936.16
	7.00	607610.57 5883153.12	608788.54 5882862.05	608392.47 5883144.44	608854.94 5883735.56	609012.48 5884182.89	607098.20 5882595.53
	7.10	607413.21 5882846.86	608609.06 5882562.16	608218.19 5882857.56	608674.02 5883433.73	608847.62 5883904.35	606896.36 5882262.80
	7.20	607244.11 5882512.40	608449.95 5882282.40	608067.05 5882574.29	608490.00 5883152.01	608691.64 5883623.32	606676.67 5881957.88
	7.30	607068.29 5882224.35	608290.35 5882050.71	607916.13 5882332.78	608322.12 5882907.44	608510.57 5883365.33	606467.05 5881609.34
	7.40	606905.03 5881919.81	608128.11 5881803.89	607770.08 5882115.09	608147.36 5882642.10	608357.20 5883109.15	606286.50 5881327.63
	7.50	606754.00 5881629.54	607971.12 5881540.37	607632.67 5881883.21	607990.12 5882420.12	608183.54 5882849.49	606102.08 5881059.45
	8.00	606601.90 5881374.08	607828.10 5881344.89	607489.00 5881661.53	607833.53 5882229.91	608037.24 5882629.07	605915.80 5880776.42
	8.10	606467.86 5881137.68	607698.86 5881176.43	607362.51 5881479.42	607692.35 5882051.83	607906.36 5882458.99	605753.26 5880539.24
	8.20	606328.21 5880892.80	607596.69 5881018.88	607236.72 5881283.96	607552.11 5881859.73	607774.90 5882287.44	605591.80 5880287.77
	8.30	606197.03 5880699.42	607500.86 5880836.51	607124.09 5881141.94	607418.56 5881711.59	607638.89 5882130.50	605425.47 5880081.52
	8.40	606073.24 5880514.77	607392.65 5880714.89	607014.11 5881023.48	607292.51 5881580.95	607528.87 5881969.25	605264.73 5879890.37

Table 15. 22 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2205	8.50	605947.20 5880354.05	607302.89 5880631.48	606903.85 5880934.66	607186.56 5881470.20	607411.84 5881869.65	605102.41 5879736.89
	9.00	605854.36 5880234.99	607210.31 5880580.82	606813.38 5880848.98	607093.74 5881380.81	607314.40 5881797.19	604968.33 5879613.70
	9.10	605776.65 5880147.32	607160.86 5880554.74	606738.55 5880799.01	606999.11 5881333.88	607232.11 5881724.71	604839.75 5879499.48
	9.20	605714.62 5880080.55	607110.21 5880582.71	606679.11 5880802.76	606939.34 5881310.85	607170.70 5881717.00	604714.62 5879448.62
	9.30	605654.02 5880044.11	607081.15 5880602.33	606640.04 5880847.87	606894.38 5881339.11	607140.11 5881727.22	604620.58 5879420.11
	9.40	605620.91 5880049.71	607064.58 5880682.47	606619.73 5880897.41	606857.35 5881383.61	607116.41 5881773.17	604524.16 5879447.99
	9.50	605588.33 5880081.54	607054.82 5880797.37	606614.16 5881012.69	606837.83 5881477.81	607115.29 5881857.47	604456.54 5879511.80
	10.00	605572.57 5880174.32	607075.22 5880943.38	606622.48 5881140.01	606845.41 5881602.13	607131.28 5881973.01	604400.31 5879594.28
	10.10						
	10.20						
	10.30						604381.96 5880160.10
	10.40	605617.34 5880869.60					604381.94 5880424.02
	10.50	605662.40 5881157.75			607080.60 5882735.09	607420.23 5883074.11	604404.70 5880726.79
	11.00	605713.71 5881472.20	607527.73 5882533.34	607071.07 5882679.54	607186.75 5883046.72	607535.57 5883373.54	604450.97 5880994.25
	11.10	605792.91 5881778.49	607659.63 5882892.69	607189.77 5883031.14	607285.13 5883388.73	607678.55 5883714.85	604504.73 5881339.38
	11.20	605888.28 5882154.59	607809.43 5883251.40	607318.72 5883397.04	607396.84 5883741.49	607826.20 5884053.97	604587.87 5881699.77
	11.30	605985.93 5882506.70	607975.93 5883752.188	607476.28 5883752.01	607529.77 5884100.68	607990.77 5884447.10	604674.10 5882078.40
	11.40	606106.82 5882889.72	608153.53 5884016.24	607645.21 5884137.95	607681.34 5884496.26	608165.56 5884843.23	604764.79 5882436.67
	11.50	606233.34 5883293.99	608330.43 5884415.07	607824.22 5884565.57	607865.99 5884907.89	608310.18 5885190.83	604868.31 5882831.88
	12.00	606370.19 5883689.92	608497.05 5884783.58	608014.23 5884937.35	608006.68 5885276.20	608490.18 5885591.25	604975.34 5883213.32
	12.10	606482.54 5884056.72	608677.34 5885168.51	608182.21 5885333.19	608162.88 5885659.48	608657.14 5885983.81	605085.04 5883613.44
	12.20	606610.56 5884427.05	608846.18 5885511.40	608363.38 5885737.52	608338.46 5886051.67	608799.81 5886299.51	605207.14 5884004.80
	12.30	606739.16 5884831.20	609026.19 5885832.86	608541.86 5886112.28	608481.95 5886402.13	608948.66 5886653.10	605324.71 5884412.30
	12.40	606869.22 5885187.56	609182.62 5886153.76	608692.57 5886405.13	608634.78 5886763.35	609134.53 5887014.08	605429.09 5884768.79
	12.50	606993.43 5885517.86	609363.61 5886497.31	608859.07 5886730.55	608787.34 5887067.30	609289.06 5887332.07	605539.62 5885155.90
	13.00	607119.20 5885841.67	609507.28 5886777.30	609011.72 5887061.99	608946.43 5887442.74	609435.12 5887647.28	605639.02 5885514.30
	13.10	607252.71 5886200.47	609649.35 5887067.68	609172.09 5887362.25	609090.89 5887716.14	609577.17 5887946.52	605760.38 5885890.56

Table 16. 22 may 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2205	13.20	607369.49 5886504.58	609791.50 5887333.95	609302.65 5887620.77	609222.90 5888006.46	609712.15 5888208.33	605865.77 5886210.17
	13.30	607488.76 5886778.47	609908.73 5887540.15	609427.39 5887886.83	609367.89 5888296.74	609853.14 5888481.36	605963.42 5886528.37
	13.40	607597.07 5887047.52	610011.97 5887767.05	609542.65 5888108.62	609489.41 5888525.04	609991.92 5888759.21	606052.15 5886820.50
	13.50	607718.67 5887301.31	610117.16 5887966.21	609655.32 5888302.78	609606.50 5888743.60	610067.09 5888948.14	606140.59 5887095.73
	14.00	607830.35 5887485.34	610227.50 5888162.54	609762.78 5888516.57	609719.97 5888958.04	610177.75 5889160.34	606205.66 5887331.75
	14.10	607918.91 5887641.79	610309.63 5888311.39	609866.42 5888699.05	609814.54 5889139.18	610275.39 5889364.16	606273.07 5887558.75
	14.20	607994.88 5887829.68	610383.39 5888439.31	609944.55 5888853.74	609890.84 5889297.14	610353.02 5889533.36	606324.87 5887763.66
	14.30	608064.82 5887938.86	610444.69 5888534.55	610010.36 5888957.50	609975.33 5889446.46	610401.77 5889644.90	606353.37 5887903.05
	14.40	608128.86 5888044.68	610510.72 5888605.75	610072.64 5889048.13	610030.62 5889551.12	610473.66 5889784.44	606402.39 5888024.10
	14.50	608166.60 5888140.24	610551.35 5888665.22	610119.91 5889105.69	610058.08 5889581.10	610514.61 5889844.78	606397.65 5888122.11
	15.00	608203.26 5888197.80	610579.56 5888688.01	610160.85 5889171.88	610093.21 5889652.38	610543.10 5889890.87	606380.46 5888191.31
	15.10	608216.68 5888238.45	610574.17 5888669.06	610166.26 5889155.68	610114.29 5889686.04	610568.25 5889910.64	606359.22 5888228.07
	15.20	608214.78 5888196.92	610566.87 5888619.08	610174.85 5889128.82	610099.66 5889674.48	610574.24 5889908.65	606365.35 5888234.63
	15.30	608184.71 5888153.67	610527.95 5888565.46	610151.64 5889068.16	610066.83 5889620.63	610533.91 5889848.85	606340.38 5888220.21
	15.40	608129.82 5888034.39	610459.85 5888442.42	610114.79 5888974.62	610038.27 5889554.74	610499.13 5889818.56	606275.69 5888170.35
	15.50	608067.69 5887914.46	610383.69 5888280.43	610055.30 5888844.40	609986.43 5889461.41	610430.31 5889699.57	606209.43 5888073.13
	16.00	607998.37 5887809.72	610304.63 5888145.96	609980.95 5888679.96	609916.74 5889337.56	610339.93 5889536.61	606119.74 5888002.26
	16.10	607900.96 5887634.61	610207.23 5887959.35	609888.68 5888519.19	609819.56 5889171.35	610216.49 5889353.91	606040.24 5887900.91
	16.20	607781.04 5887424.25	610069.62 5887714.52	609771.14 5888267.68	609691.46 5888976.69		605959.99 5887789.03
	16.30	607661.79 5887241.94	609936.15 5887486.71	609624.72 5888024.41	609561.19 5888743.57		605814.80 5887599.85
	16.40	607509.52 5886984.88	609773.25 5887205.22		609424.20 5888527.89		605658.68 5887420.60
	16.50	607349.15 5886684.70	609602.22 5886923.29		609257.71 5888276.85		605491.58 5887174.03
	17.00	607175.80 5886426.94			609066.35 5887947.80		605311.09 5886927.06
	17.10	607002.76 5886137.48			608859.22 5887624.01		605128.55 5886649.70
	17.20	606796.40 5885786.01					604914.60 5886311.72
	17.30						604712.21 5885989.54
	17.40						604514.48 5885687.43
	17.50						604316.55 5885333.26

Table 17. 22 may 1980. UTM co-ordinates.

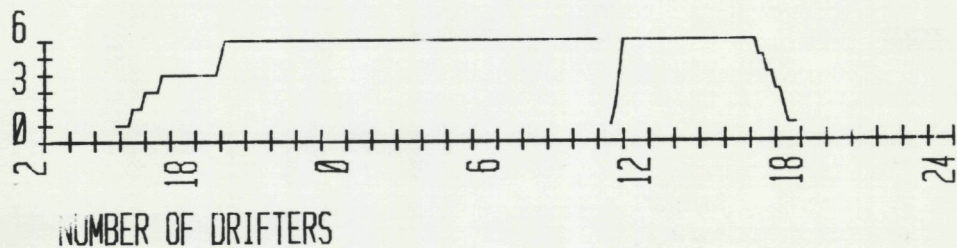


Fig. 35. 21 and 22 may 1980. Number of drifters.

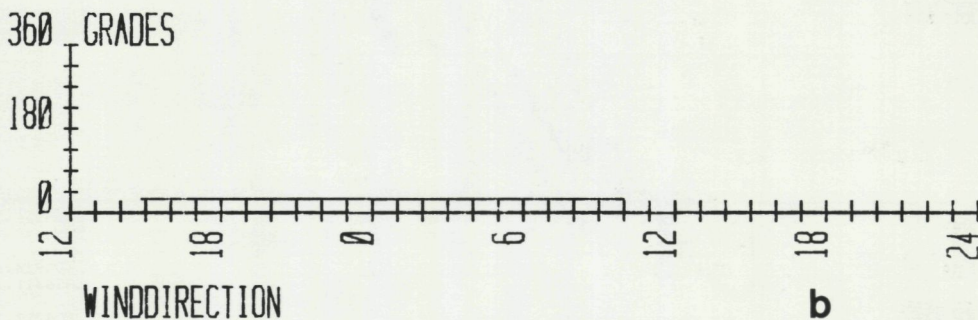
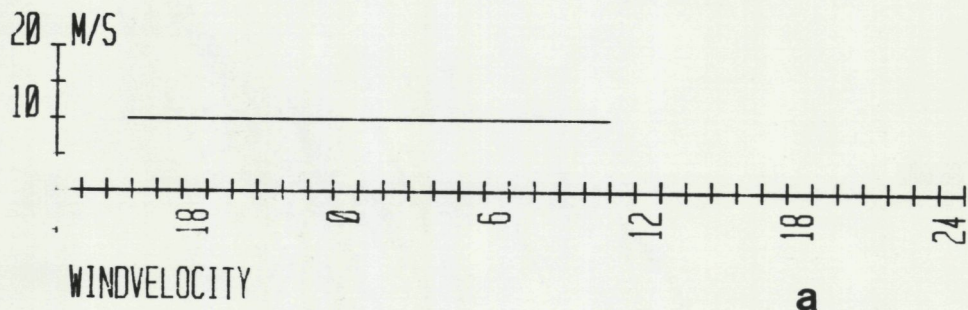


Fig. 36. 21 and 22 may 1980. a) Wind velocity. b) Wind direction.

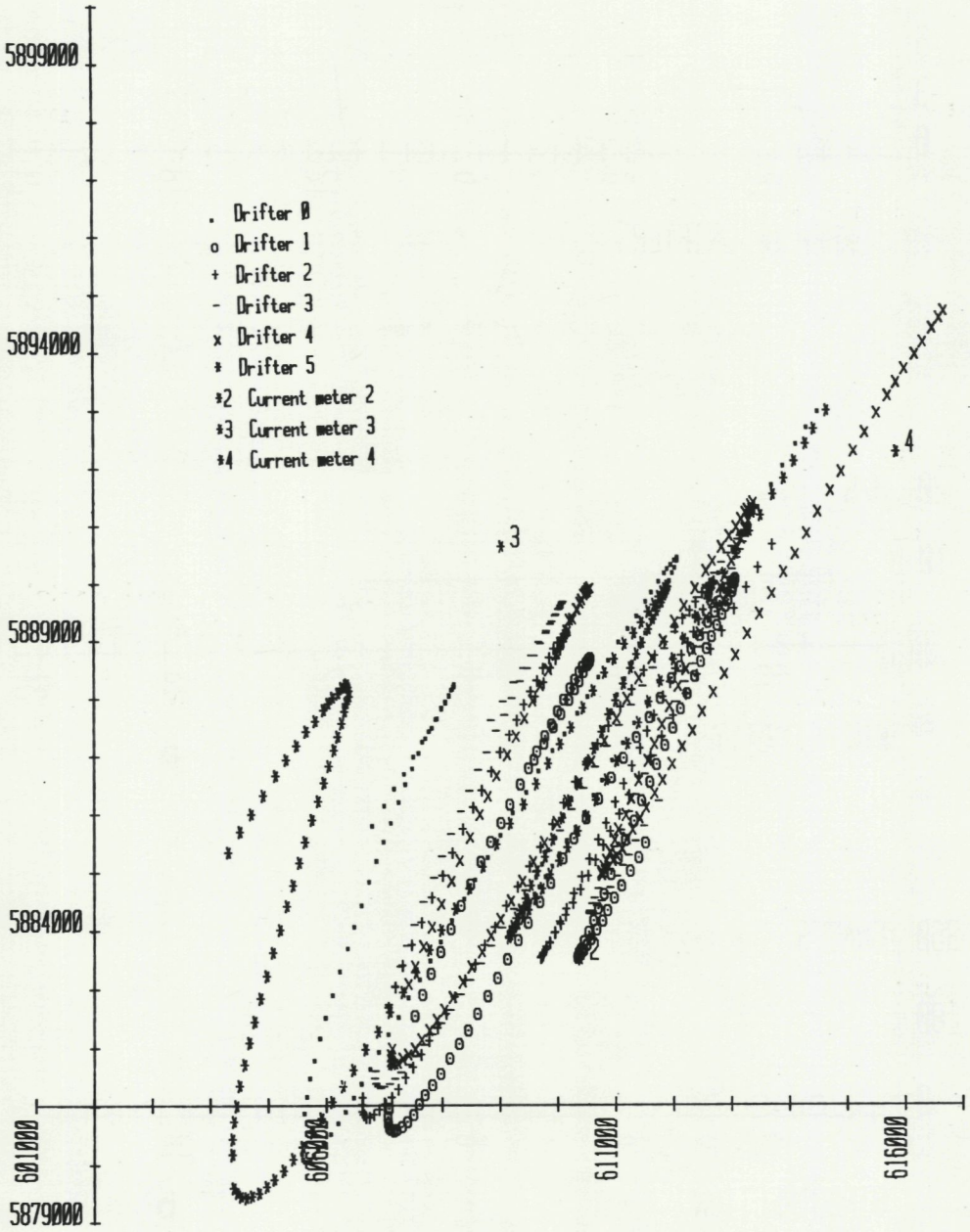


Fig. 37. 21 and 22 may 1980. Drifter trajectories.

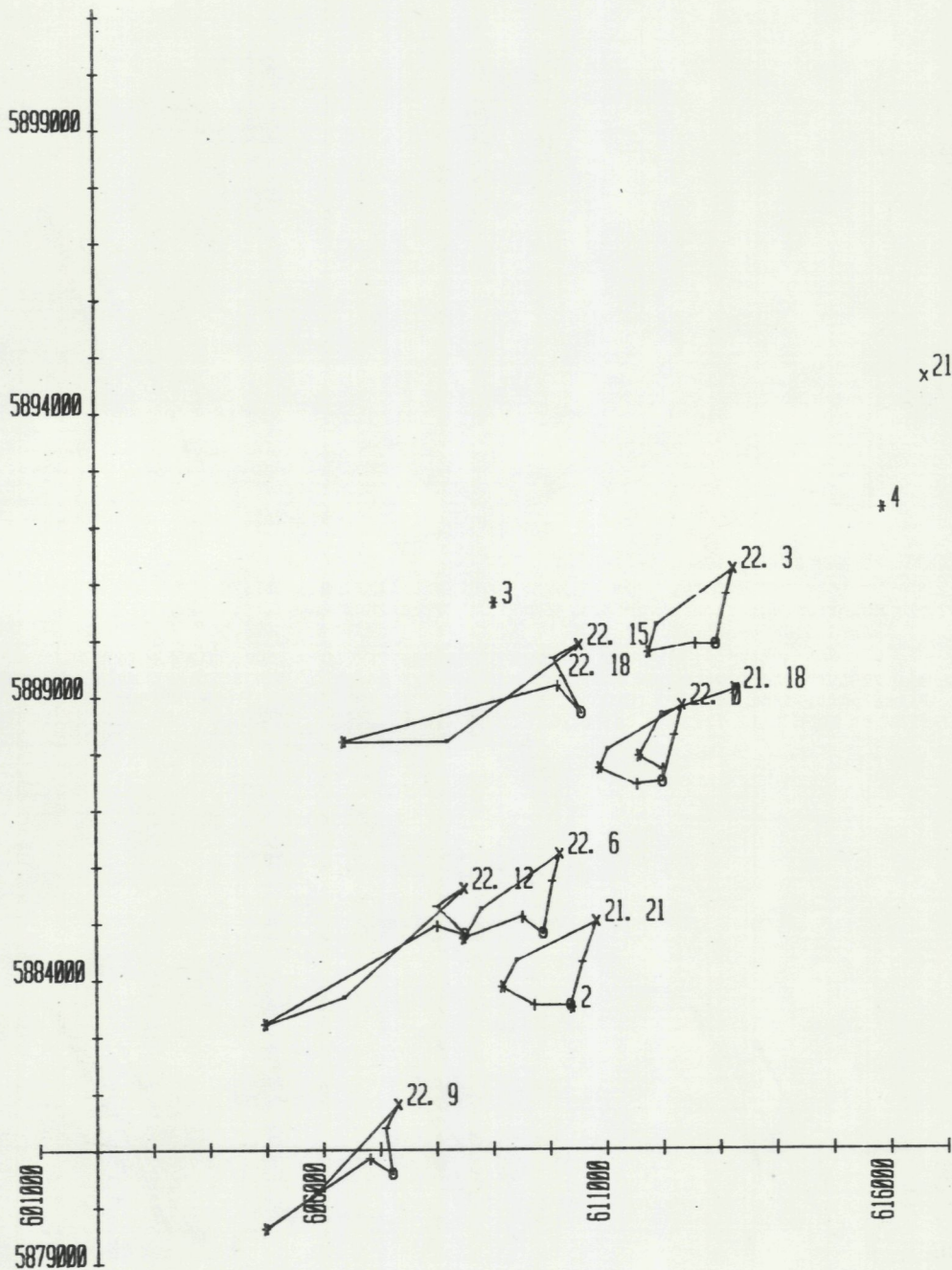


Fig. 38. 21 and 22 may 1980. Shape of the cluster of drifters, every 3 hours.

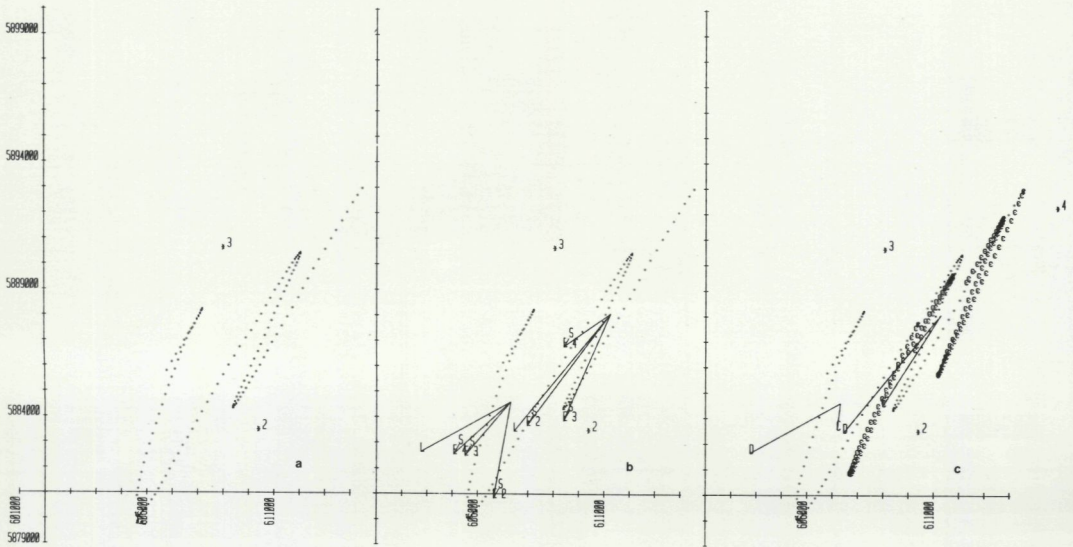


Fig. 39. 21 and 22 may 1980. Drifter 0.

a) Drifter trajectory, from 21 may, 16.00 h till 22 may, 17.20 h.

b) Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.

c) Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.

All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, from 21 may, 16.00 h till 22 may, 04.30h. Second part, 22 may, from 04.50 h till 17.20 h. Both parts 750 minutes.

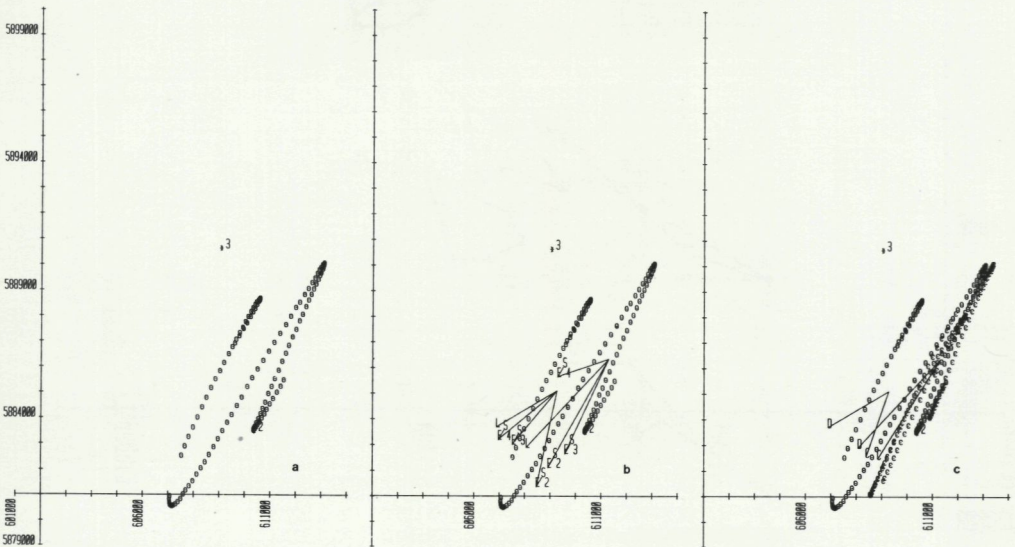


Fig. 40. 21 and 22 may 1980. Drifter 1.

a) Drifter trajectory, from 21 may, 19.00 h till 22 may, 16.50 h.

b) Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.

c) Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.

All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, from 21 may, 19.00 h till 22 may, 07.30 h. Second part, 22 may, from 04.20 h till 16.50 h. Both parts 750 minutes.

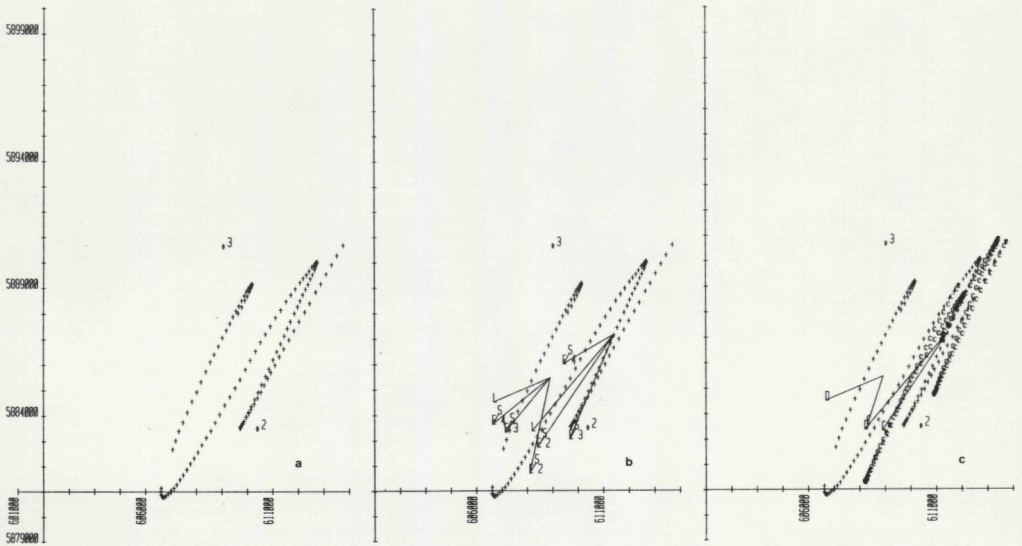


Fig. 41. 21 and 22 may 1980. Drifter 2.

a) Drifter trajectory, from 21 may, 16.40 h till 22 may, 16.30 h.

b) Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.

c) Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.

All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, from 21 may, 16.40 h till 22 may, 05.10 h. Second part, 22 may, from 04.00 h till 16.30 h. Both parts 750 minutes.

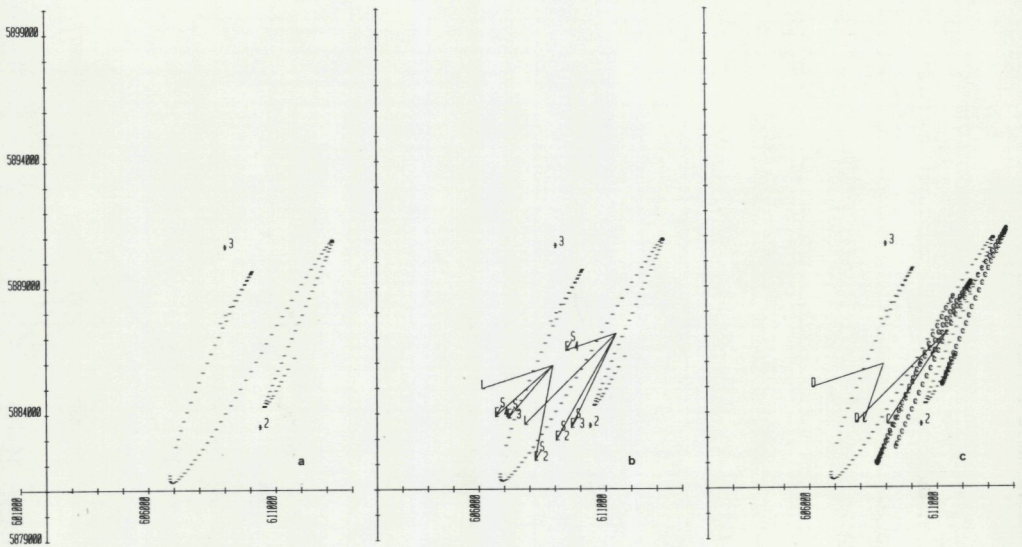


Fig. 42. 21 and 22 may 1980. Drifter 3.

a) Drifter trajectory, from 21 may, 19.10 h till 22 may, 17.10 h.

b) Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.

c) Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.

All vectors are plotted at the centroids of two parts of the drifter trajectory. First part, from 21 may, 19.10 h till 22 may, 07.40 h. Second part, 22 may, from 04.40 h till 17.10 h. Both parts 750 minutes.

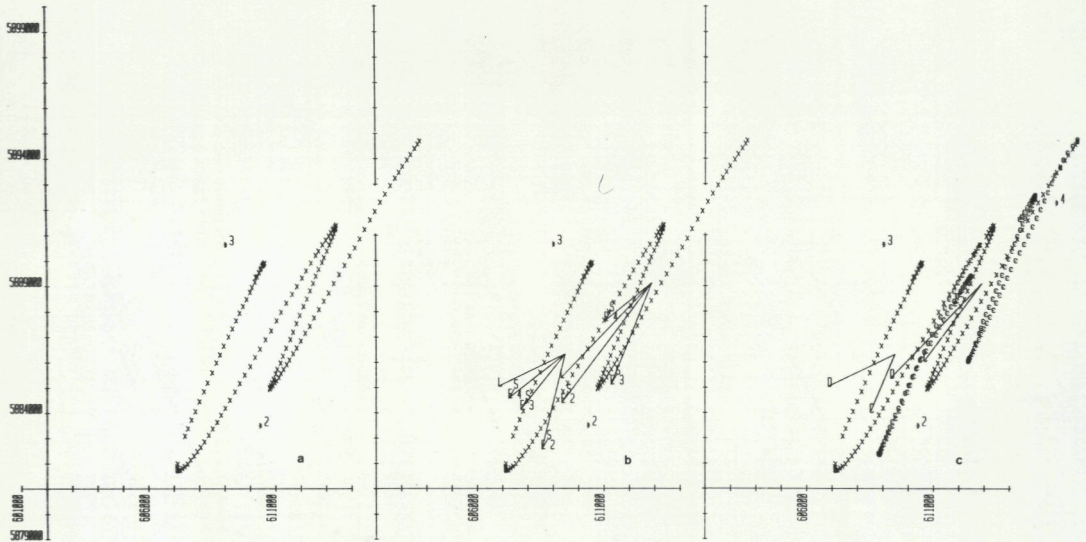


Fig. 43. 21 and 22 may 1980. Drifter 4.

- a) Drifter trajectory, from 21 may, 14.50 h till 22 may, 16.10 h.  
 b) Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.  
 c) Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.  
 All vectors are plotted at the centroids of two parts of the drifter trajectory.  
 First part, from 21 may, 14.50 h till 22 may, 03.20 h. Second part, 22 may, from 03.40 h till 16.10 h. Both parts 750 minutes.

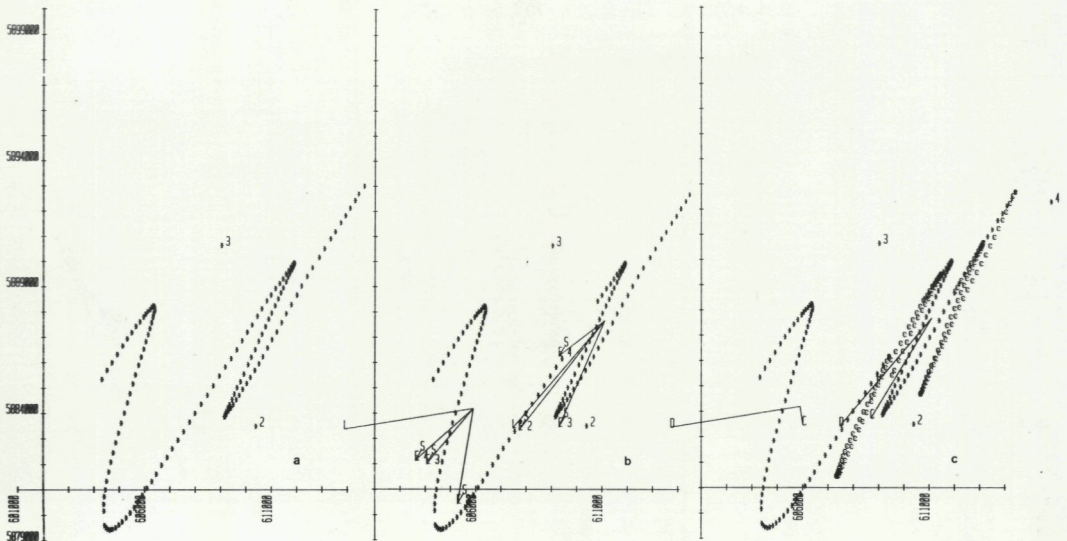


Fig. 44. 21 and 22 may 1980. Drifter 5.

- a) Drifter trajectory, from 21 may, 15.30 h till 22 may, 17.50 h.  
 b) Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.  
 c) Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.  
 All vectors are plotted at the centroids of two parts of the drifter trajectory.  
 First part, from 21 may, 15.40 h till 22 may, 04.10 h. Second part, 22 may, from 05.20 h till 17.50 h. Both parts 750 minutes.

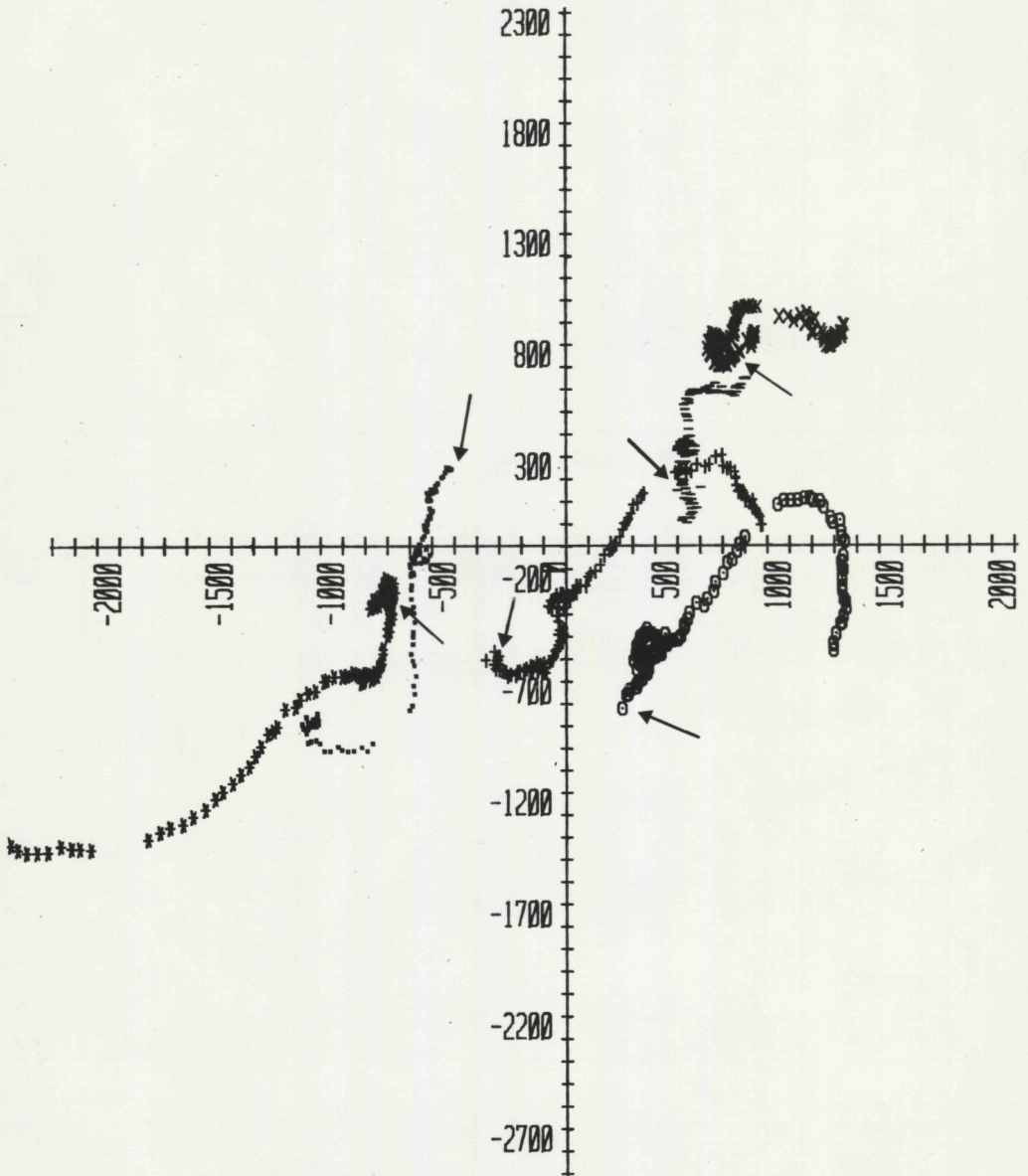


Fig. 45. 21 and 22 may 1980. Displacement of each drifter (m) relative to the centroid of 6 drifters. From 21 may, 19.10 h till 22 may, 16.10 h.

→ : starting point.

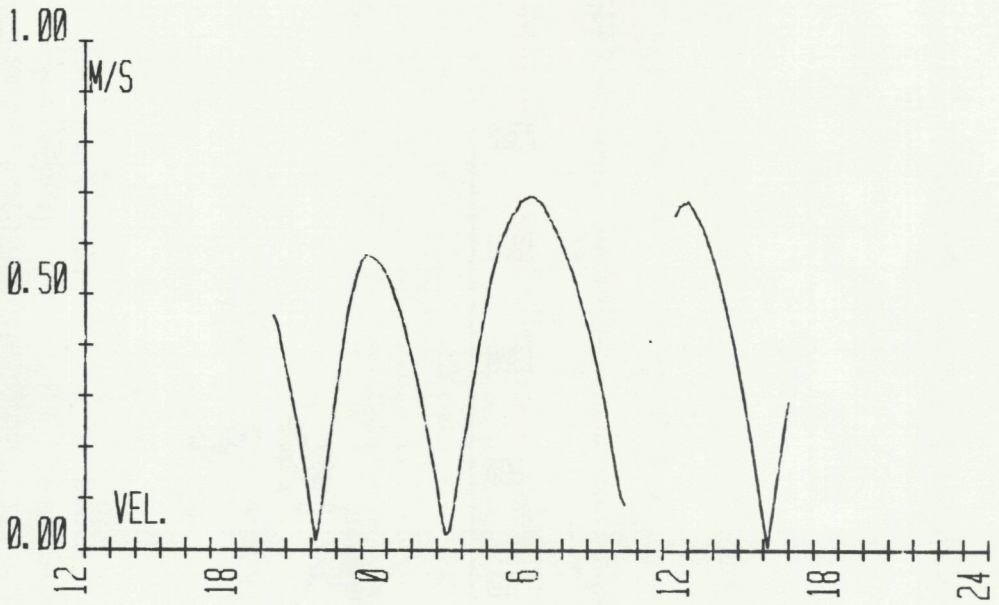


Fig. 46. 21 and 22 may 1980. Absolute value of velocity of the centroid of drifters.

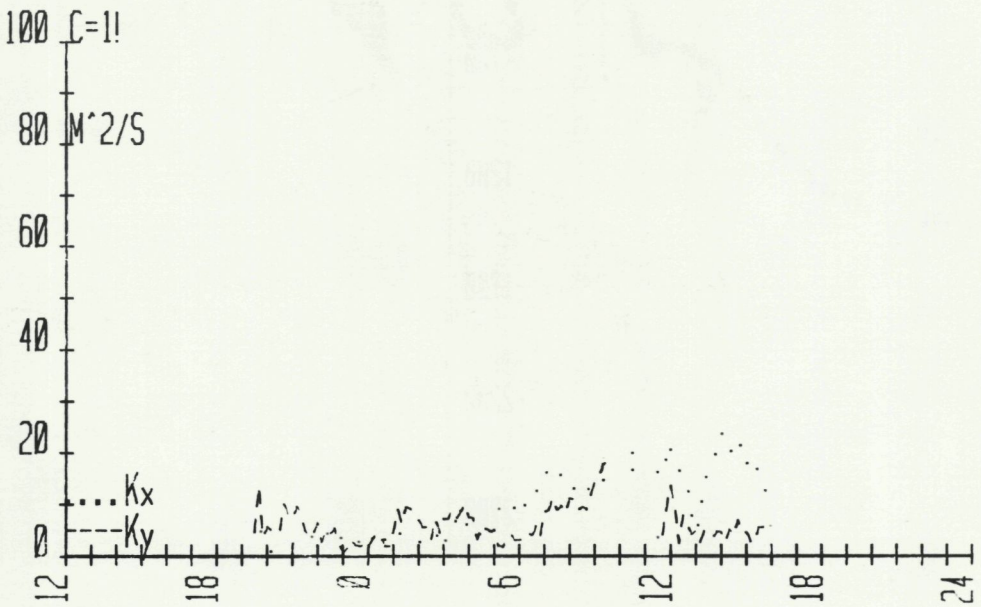


Fig. 47. 21 and 22 may 1980. Turbulent diffusion coefficient of the cluster of drifters in the X- and Y direction.

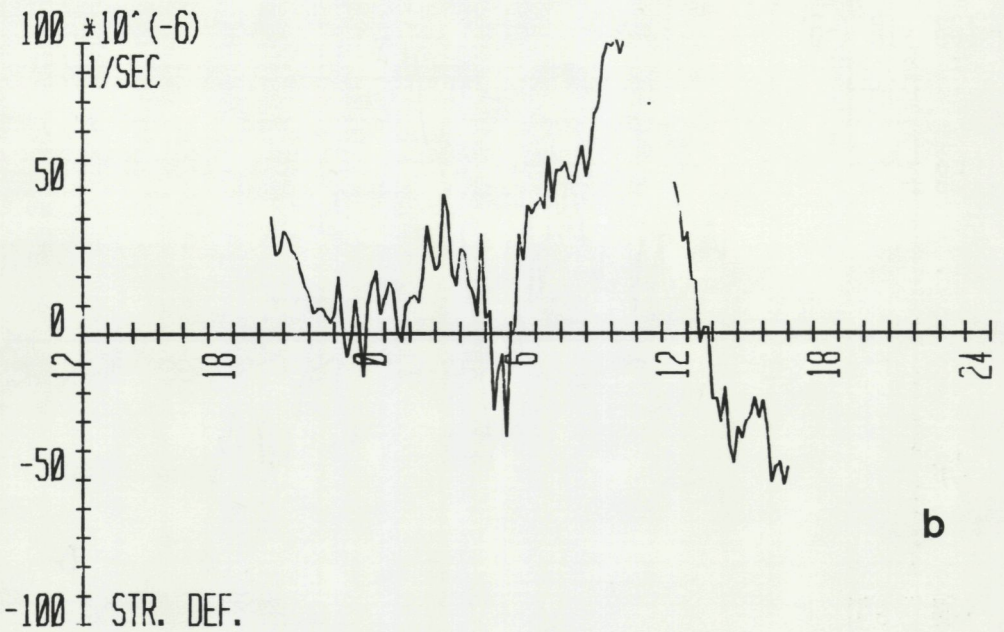
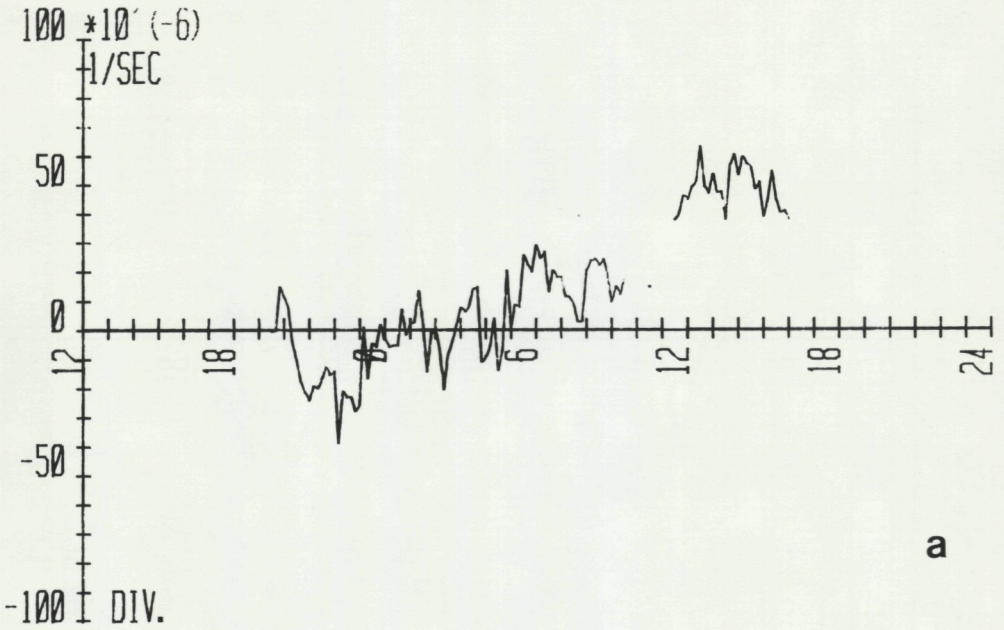


Fig. 48. 21 and 22 may 1980. Drifters.

a) Divergence. b) Stretching deformation.

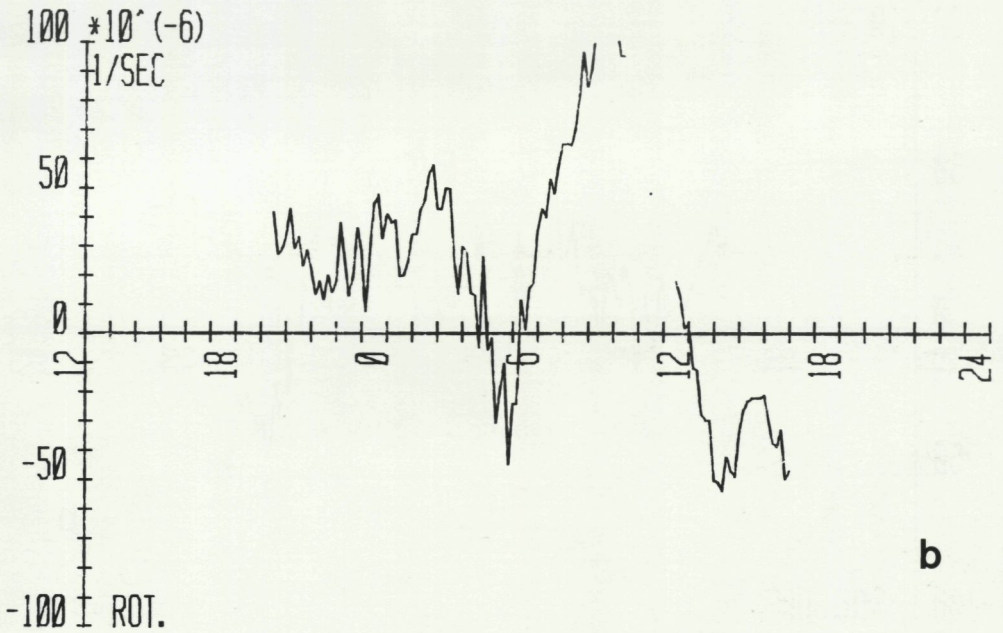
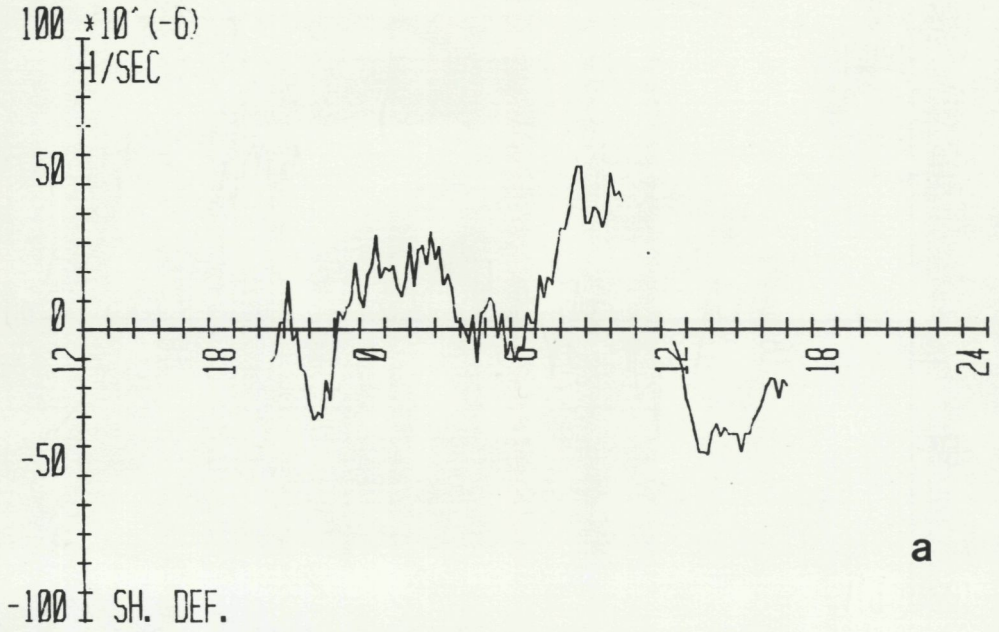


Fig. 49. 21 and 22 may 1980. Drifters.  
a) Shearing deformation. b) Vorticity.

8.4. 16 and 17 June 1980

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1606	14.20	615021.08 5889517.36					
	14.30	614875.54 5889259.94	614637.69 5888136.33				
	14.40	614703.01 5888981.74	614519.20 5887936.05				
	14.50	614535.54 5888702.26	614359.25 5887635.37		614836.92 5888312.25		
	15.00	614443.29 5888510.59	614260.40 5887410.97		614668.12 5888063.29		
	15.10	614282.60 5888209.12	614153.66 5887192.69		614536.69 5887824.57	613596.72 5888206.39	
	15.20	614149.30 5887968.41	614031.86 5886951.47		614406.21 5887569.08	613466.70 5887940.70	
	15.30	614022.89 5887749.13	613920.40 5886741.07		614275.03 5887310.22	613289.87 5887645.17	613212.34 5887012.18
	15.40	613915.09 5887553.71	613799.82 5886520.62		614144.15 5887121.16	613123.89 5887418.89	612984.38 5886692.18
	15.50	613790.95 5887289.53	613670.22 5886306.95		614049.66 5886915.25	612984.26 5887199.74	612839.92 5886496.55
	16.00	613671.94 5887095.93	613563.16 5886110.62		613930.22 5886719.70	612832.87 5886976.58	612666.97 5886295.87
	16.10	613525.67 5886848.12	613434.02 5885934.84	612281.60 5886688.92	613751.11 5886435.48	612694.48 5886779.25	612510.94 5886113.63
	16.20	613379.36 5886625.23	613279.34 5885709.99	612102.70 5886433.21	613666.47 5886299.79	612560.66 5886553.18	612381.46 5885921.70
	16.30	613263.82 5886475.13	613188.60 5885598.44	611956.88 5886248.00	613570.11 5886153.52	612415.14 5886353.10	612060.46 5885523.62
	16.40	613147.77 5886344.36	613079.00 5885485.41	611825.10 5886087.23	613461.85 5885987.73	612287.44 5886187.64	611922.56 5885348.32
	16.50	613037.04 5886206.58	612963.55 5885338.23	611698.30 5885944.91	613407.00 5885883.35	612167.57 5886009.32	611815.03 5885216.80
	17.00	612944.56 5886079.38	612869.15 5885232.40	611572.24 5885789.84	613314.42 5885771.77	612069.89 5885884.43	611699.81 5885082.24
	17.10	612839.51 5885958.33	612804.33 5885153.45	611450.16 5885667.21	613257.02 5885695.27	611973.75 5885765.53	611584.02 5884944.40
	17.20	612770.41 5885867.84	612732.56 5885088.57	611326.08 5885537.33	613198.71 5885609.77	611878.76 5885663.66	611493.86 5884875.67
	17.30	612722.43 5885837.48	612671.30 5885023.11	611225.29 5885445.38	613164.07 5885575.57	611780.58 5885547.98	611396.34 5884772.03
	17.40	612678.36 5885787.89	612627.30 5884991.38	611127.79 5885371.12	613143.90 5885567.14	611710.41 5885518.54	611314.92 5884698.40
	17.50	612647.10 5885777.76	612613.41 5884992.32	611045.74 5885343.06	613122.43 5885537.32	611672.96 5885522.83	611270.96 5884736.37
	18.00	612643.46 5885803.19	612606.10 5885021.28	610969.54 5885312.55	613116.51 5885544.45	611610.66 5885490.22	611199.79 5884701.71
	18.10	612644.99 5885833.26	612625.60 5885065.01	610916.51 5885311.79	613152.11 5885601.79	611606.78 5885553.06	611181.81 5884767.46
	18.20	612714.29 5885938.14	612676.06 5885157.52	610905.67 5885389.30	613209.75 5885695.13	611608.20 5885625.22	611190.85 5884841.54
	18.30	612778.83 5886080.42	612769.10 5885308.52	610928.09 5885505.40	613304.78 5885836.25	611643.14 5885750.49	611238.30 5884997.60
	18.40	612881.51 5886261.87	612879.17 5885493.60	610985.98 5885698.80	613430.11 5886032.52	611729.88 5885955.44	611306.44 5885228.32

Table 18. 16 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1606	18.50	613041.39 5886516.13	613063.98 5885816.67	611082.46 5885977.02	613591.01 5886275.28	611835.50 5886205.90	611408.18 5885513.24
	19.00	613223.98 5886835.62	613161.83 5886026.84	611182.21 5886249.93	613766.37 5886575.70	611977.59 5886534.91	611532.14 5885842.47
	19.10	613425.25 5887171.51	613441.89 5886452.15	611316.37 5886612.58	613946.59 5886899.18	612149.04 5886907.78	611696.86 5886223.89
	19.20	613625.77 5887537.69	613662.90 5886811.56	611504.51 5887074.16	614156.63 5887347.55	612387.87 5887358.51	611900.49 5886692.20
	19.30	613882.41 5888004.77	613949.23 5887281.71	611714.85 5887590.66	614415.84 5887773.54	612653.11 5887847.73	612130.91 5887193.60
	19.40	614145.73 5888479.26	614199.96 5887732.74	611936.72 5888092.70	614664.41 5888255.76	612911.24 5888346.82	612402.91 5887760.01
	19.50	614407.92 5888956.89	614477.02 5888194.94	612201.06 5888697.78	614942.21 5888767.03	613177.49 5888900.08	612715.85 5888338.71
	20.00	614694.71 5889467.22	614738.21 5888690.53	612485.59 5889288.21	615230.91 5889289.46	613494.01 5889487.83	612999.30 5888895.38
	20.10	615001.14 5890026.50	615011.95 5889211.22	612756.65 5889907.81	615488.20 5889809.44	613800.06 5890089.60	613308.48 5889502.16
	20.20	615267.74 5890494.45	615268.22 5889693.35	613031.39 5890479.98	615756.50 5890296.28	614097.66 5890683.76	613615.08 5890088.98
	20.30	615547.01 5890971.64	615531.58 5890203.81	613287.73 5891031.97	616049.46 5890805.80	614356.85 5891202.53	613931.94 5890662.01
	20.40	615764.44 5891376.97	615749.51 5890625.48	613531.28 5891550.34	616326.56 5891301.55	614648.22 5891742.08	614201.45 5891186.94
	20.50	615989.83 5891773.73	615990.63 5891061.62	613773.70 5892108.28	616520.44 5891661.91	614929.42 5892295.84	614478.04 5891715.92
	21.00	616205.70 5892184.33	616194.35 5891474.16	613996.13 5892626.20	616753.23 5892095.09	615169.28 5892745.56	614746.20 5892297.85
	21.10	616380.40 5892544.46	616406.61 5891865.72	614158.40 5893044.75	616971.66 5892509.02	615395.70 5893217.12	614997.03 5892771.31
	21.20	616579.82 5892942.71	616591.96 5892206.56	614373.11 5893505.76	617151.50 5892850.21	615635.04 5893647.37	615222.90 5893228.16
	21.30	616772.55 5893307.41	616749.36 5892516.23	614574.62 5893963.30	617341.28 5893185.21	615842.24 5894020.80	615442.86 5893639.84
	21.40	616919.47 5893583.22	616971.67 5892902.16	614746.03 5894351.86	617498.58 5893498.25	616024.70 5894387.29	615684.67 5894062.68
	21.50	617137.59 5893945.52	617139.11 5893188.12	614943.88 5894744.26	617645.01 5893725.25	616235.97 5894761.23	615896.01 5894434.50
	22.00	617269.58 5894174.91	617294.30 5893476.63	615102.18 5895043.57	617807.16 5894008.55	616428.26 5895109.57	616083.11 5894768.43
	22.10	617393.06 5894396.70	617439.59 5893730.12	615262.73 5895360.23	617945.92 5894255.77	616604.25 5895396.18	616305.89 5895102.30
	22.20	617538.62 5894657.67	617570.04 5893937.43	615428.41 5895607.82	618089.68 5894513.52	616802.91 5895721.17	616474.01 5895367.74
	22.30	617689.16 5894901.97	617706.03 5894175.82	615615.73 5895951.79	618173.27 5894672.27	616988.79 5896052.72	616643.63 5895669.00
	22.40	617871.45 5895180.18	617881.81 5894409.65	615788.57 5896218.80	618375.14 5894949.70	617110.08 5896269.73	616850.07 5895955.53
	22.50	617994.63 5895346.39	617964.87 5894549.66	615910.81 5896438.67	618483.87 5895133.87	617253.55 5896514.27	616952.78 5896123.32
	23.00	618111.28 5895520.56	618065.70 5894705.28	616032.53 5896612.22	618555.15 5895227.21	617379.35 5896685.29	617098.34 5896352.38
	23.10	618212.70 5895688.67	618214.82 5894898.00	616157.72 5896798.27	618657.88 5895356.43	617495.22 5896863.01	617211.69 5896529.71

Table 19. 16 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1606	23.20	618283.89 5895792.41	618310.75 5895036.84	616247.82 5896942.03	618757.55 5895467.80	617609.33 5897012.63	617348.65 5896745.14
	23.30	618388.29 5895924.30	618368.98 5895066.84	616380.44 5897125.20	618872.83 5895598.46	617700.76 5897133.39	617452.17 5896895.75
	23.40	618504.48 5896063.83	618416.17 5895109.63	616460.05 5897258.44	618904.81 5895264.64	617812.53 5897281.37	617534.42 5897008.27
	23.50	618580.40 5896145.30	618519.99 5895189.75	616541.07 5897331.44	618985.51 5895688.89	617927.49 5897432.32	617632.99 5897124.74
1706	0.00	618655.37 5896219.38	618528.64 5895159.74	616615.38 5897431.44	619064.42 5895762.07	617985.85 5897484.63	617691.77 5897186.23
	0.10	618700.59 5896290.86	618647.35 5895248.82	616676.42 5897526.19	619071.21 5895743.40	618054.27 5897528.76	617764.57 5897270.51
	0.20	618730.37 5896298.06	618713.02 5895287.48	616702.37 5897501.08	619078.06 5895699.83	618147.39 5897608.51	617833.78 5897334.95
	0.30	618768.57 5896305.55	618654.82 5895162.79	616730.41 5897539.53	619138.97 5895712.67	618190.08 5897624.30	617864.31 5897324.95
	0.40	618757.81 5896277.16	618731.44 5895163.34	616748.12 5897544.53	619145.40 5895664.67	618217.94 5897671.79	617912.70 5897340.92
	0.50	618730.96 5896204.62	618755.16 5895143.55	616700.41 5897472.70	619178.72 5895638.70	618162.22 5897527.73	617909.47 5897315.55
	1.00	618702.60 5896155.13	618740.19 5895067.37	616692.08 5897419.60	619110.24 5895498.20	618140.12 5897535.12	617876.94 5897265.02
	1.10	618687.10 5896129.24	618717.29 5894973.77	616643.70 5897357.44	619101.50 5895422.35	618114.73 5897485.05	617820.02 5897188.04
	1.20	618684.48 5896125.97	618627.59 5894811.94	616590.72 5897284.33	619012.79 5895257.28	618050.56 5897409.41	617788.24 5897162.07
	1.30	618592.10 5895995.93	618582.08 5894728.50	616523.79 5897204.56	618961.21 5895102.91	617973.05 5897273.11	617700.12 5897034.97
	1.40	618464.48 5895834.40	618523.24 5894589.45	616405.06 5897050.80	618897.96 5894964.92	617837.73 5897067.50	617659.26 5896973.59
	1.50	618361.98 5895679.37	618445.46 5894444.39	616302.28 5896917.22	618820.23 5894801.18	617744.37 5896934.42	617540.04 5896856.12
	2.00	618284.51 5895586.50	618312.14 5894195.24	616148.94 5896719.61	618732.50 5894623.20	617633.30 5896798.71	617417.80 5896682.36
	2.10	618125.51 5895362.02	618246.61 5894041.48	615995.44 5896538.73	618574.53 5894348.56	617463.27 5896551.28	617278.57 5896486.91
	2.20	618006.38 5895205.69	618144.26 5893831.97	615833.10 5896328.13	618495.16 5894184.99	617344.08 5896397.24	617085.09 5896230.06
	2.30	617873.67 5895027.28	618001.45 5893583.51	615691.22 5896146.07	618356.67 5893901.61	617178.77 5896178.34	616938.57 5896038.03
	2.40	617707.77 5894794.11		615526.43 5895933.18		616986.22 5895938.74	616840.08 5895867.55
	2.50	617554.60 5894582.88		615331.47 5895659.40		616889.01 5895798.63	616627.61 5895591.61
	3.00	617414.38 5894367.77		615180.22 5895475.88		616714.74 5895552.59	616507.30 5895435.84
	3.10	617231.97 5894082.59		614999.43 5895209.08		616571.75 5895375.55	616379.12 5895234.83
	3.20	617096.94 5893875.30		614831.58 5894971.89		616402.55 5895097.09	616211.57 5894992.47
	3.30	616980.58 5893691.59		614665.30 5894699.05		616253.70 5894869.70	616048.04 5894733.65
	3.40	616862.10 5893495.36		614510.86 5894487.80		616072.15 5894602.39	615935.71 5894561.66

Table 20. 16 and 17 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1706	3.50	616725.66 5893268.74		614325.94 5894219.74		615933.89 5894376.40	615799.05 5894357.60
	4.00	616604.38 5893067.59		614163.29 5893967.94		615787.71 5894161.99	615667.22 5894128.42
	4.10	616458.60 5892847.67		613972.25 5893690.85		615657.42 5893930.91	615472.05 5893851.63
	4.20	616339.80 5892645.81		613835.46 5893484.93		615493.35 5893663.68	615370.62 5893692.03
	4.30	616233.13 5892468.74		613648.44 5893191.67		615379.67 5893489.00	615215.42 5893443.30
	4.40	616134.36 5892306.86		613479.42 5892922.86		615258.95 5893329.22	615068.80 5893234.63
	4.50	615962.74 5892043.80		613328.86 5892691.79		615108.22 5893090.61	614926.69 5893020.95
	5.00	615913.79 5891967.02		613204.05 5892502.41		615000.16 5892929.58	614797.78 5892810.97
	5.10	615833.59 5891837.79		613051.67 5892280.60		614927.62 5892825.05	614740.26 5892734.61
	5.20	615720.12 5891661.84		612926.44 5892097.19		614798.05 5892660.18	614629.61 5892579.68
	5.30	615671.50 5891609.71		612825.12 5891957.59		614685.61 5892512.68	614520.83 5892424.76
	5.40	615616.79 5891503.02		612727.72 5891802.92		614606.10 5892408.43	614414.31 5892271.48
	5.50	615558.30 5891420.95		612645.35 5891697.79		614511.35 5892296.81	614353.83 5892192.06
	6.00	615551.50 5891427.68		612568.09 5891597.33		614463.17 5892241.74	614303.77 5892143.46
	6.10	615527.30 5891401.26		612513.37 5891552.49		614418.04 5892215.63	614271.08 5892118.21
	6.20	615538.89 5891389.79		612492.03 5891535.15		614391.67 5892192.05	614237.39 5892091.26
	6.30	615623.76 5891543.23		612506.21 5891585.80		614401.17 5892217.49	614265.80 5892129.33
	6.40	615676.03 5891630.34		612555.17 5891670.75		614457.46 5892315.92	614315.65 5892259.01
	6.50	615815.92 5891859.55		612656.70 5891811.83		614546.75 5892458.23	614413.46 5892434.66
	7.00	615965.55 5892083.82		612747.07 5892004.79		614689.36 5892700.01	614541.36 5892640.25
	7.10	616168.06 5892401.59		612919.69 5892286.05		614863.52 5892986.95	614743.71 5892971.22
	7.20	616366.09 5892738.38		613105.78 5892632.97		615069.16 5893315.89	614928.40 5893261.20
	7.30	616616.89 5893148.96		613326.32 5893007.28		615339.61 5893748.07	615173.14 5893654.57
	7.40	616924.72 5893650.38		613620.28 5893485.72		615588.16 5894144.44	615442.65 5894086.31
	7.50	617215.70 5894140.98		613901.72 5894008.61		615856.60 5894578.02	615721.98 5894563.79
	8.00	617525.22 5894640.24		614209.07 5894535.29		616108.12 5895024.33	616028.40 5895049.03
	8.10	617846.42 5895185.29		614477.24 5895032.52		616389.96 5895537.83	616345.93 5895568.45

Table 21. 17 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
1706	8.20	618118.05 5895721.22		614796.82 5895558.14		616671.58 5896053.10	616661.33 5896103.88
	8.30	618416.32 5896257.64		615079.21 5896124.36		616949.35 5896539.50	616924.34 5896594.17
	8.40	618732.43 5896840.10		615350.05 5896669.10		617256.26 5897115.96	617274.49 5897181.75
	8.50	619041.03 5897372.06		615687.54 5897247.69		617542.51 5897654.20	617534.58 5897656.08
	9.00	619295.74 5897858.95		615957.70 5897745.47		617853.47 5898213.22	617891.77 5898259.85
	9.10	619646.16 5898426.21		616230.26 5898201.00		618154.10 5898740.54	618170.42 5898731.72
	9.20	619975.89 5898915.70		616499.33 5898680.86		618472.42 5899251.91	618488.12 5899274.68
	9.30			616765.98 5899100.40		618764.26 5899732.96	618757.30 5899689.38
	9.40			617042.55 5899504.93		619111.87 5900241.69	619036.89 5900094.86
	9.50			617363.35 5899994.17		619333.65 5900561.78	619337.98 5900497.70
	10.00			617591.07 5900349.01		619629.22 5900943.97	619598.96 5900826.46
	10.10			617871.81 5900731.40		619905.10 5901231.60	
	10.20			618109.28 5901082.52		620174.98 5901513.17	
	10.30			618346.87 5901400.19			
	10.40			618581.29 5901703.81			
	10.50						

Table 22. 17 june 1980. UTM co-ordinates.

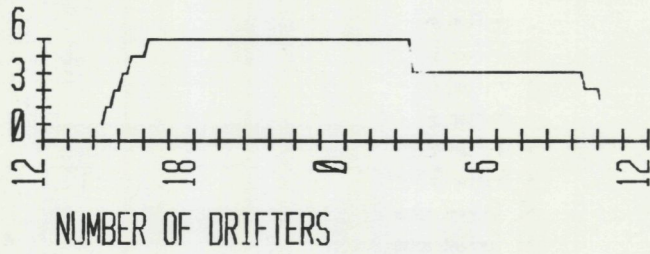


Fig. 50. 16 and 17 june 1980. Number of drifters.

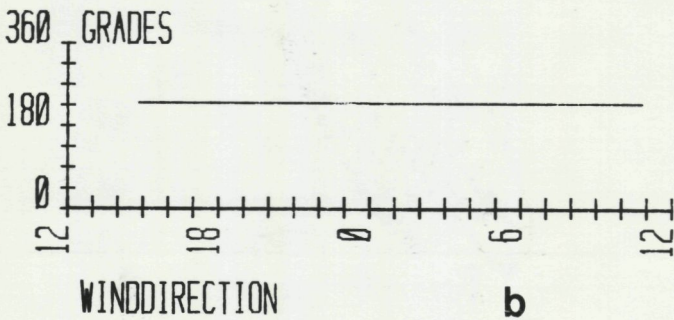
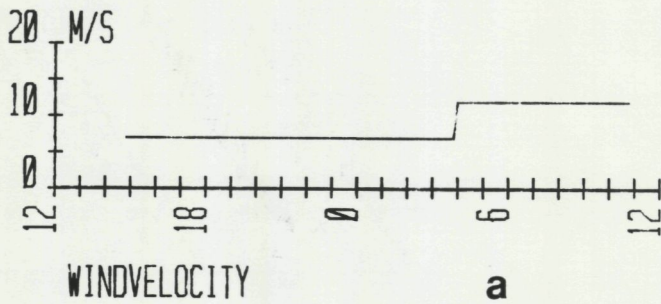


Fig. 51. 16 and 17 june 1980. a) Wind velocity. b) Wind direction.

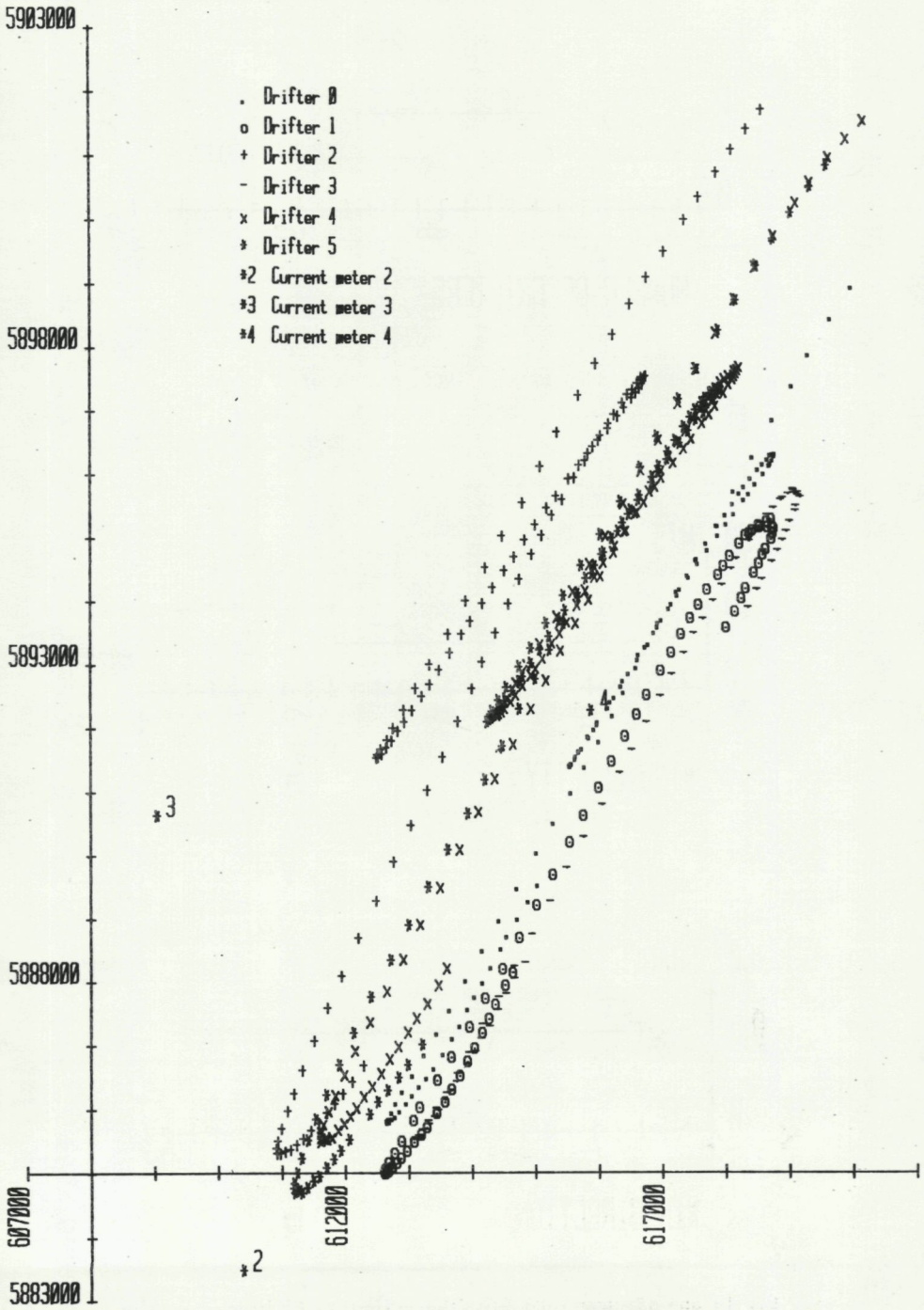


Fig. 52. 16 and 17 June 1980. Drifter trajectories.

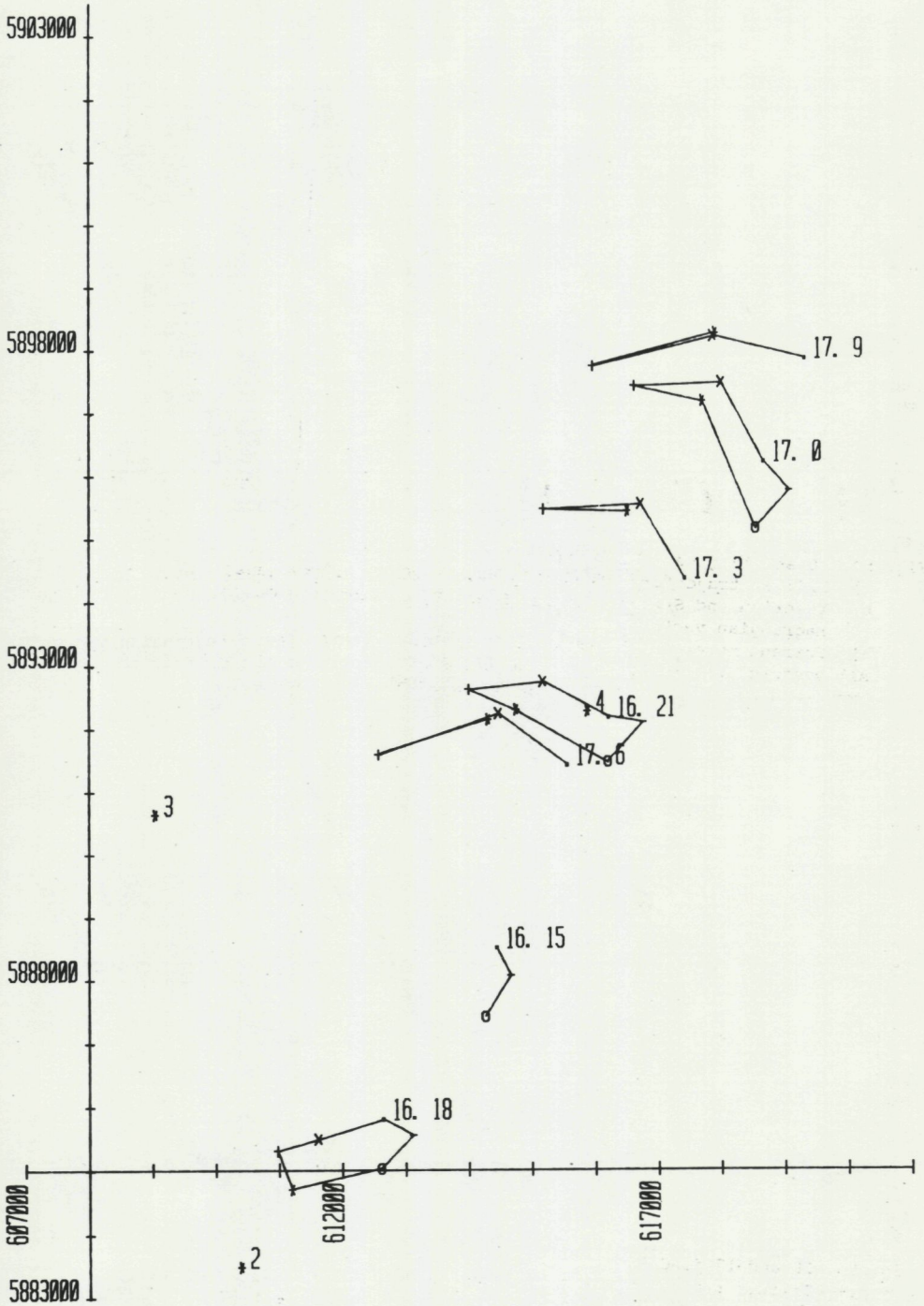


Fig. 53. 16 and 17 june 1980. Shape of the cluster of drifters, every 3 hours.

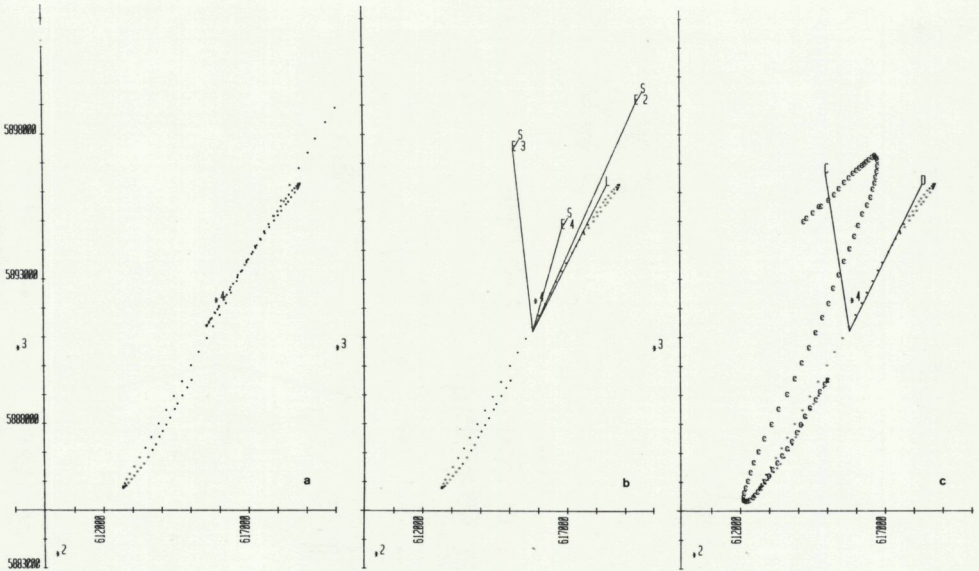


Fig. 54. 16 and 17 June 1980. Drifter 0.

- Drifter trajectory, from 16 June, 14.20 h till 17 June, 09.20 h.
- Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ .
- Current meters 2, 3 and 4 interpolation vector  $C$  and Lagrangian vector  $D$ . All vectors are plotted at the centroid of a part of the drifter trajectory. From 16 June, 14.20 h till 17 June, 02.50 h, 750 minutes.

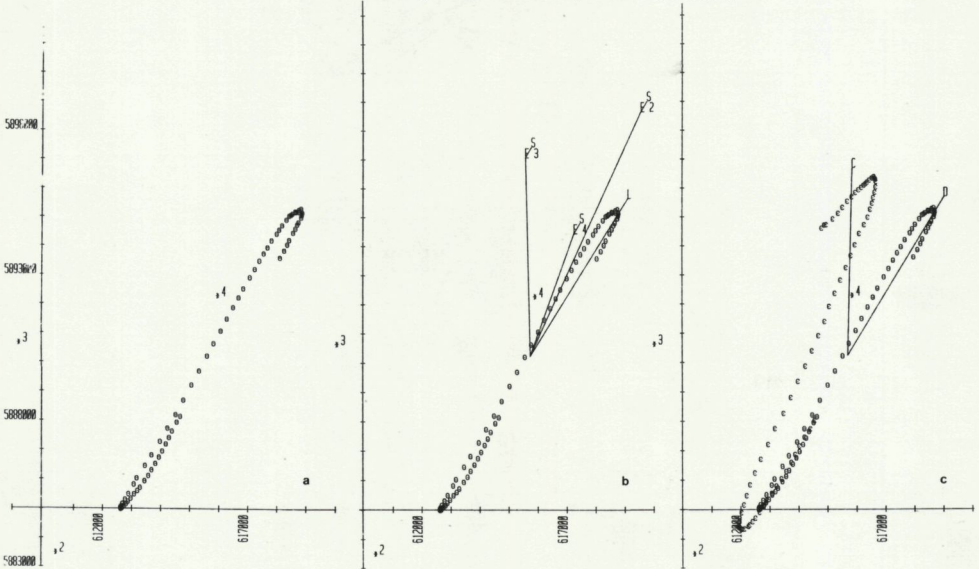


Fig. 55. 16 and 17 June 1980. Drifter 1.

- Drifter trajectory, from 16 June, 14.30 h till 17 June, 02.30 h.
- Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 2, 3 and 4 and Lagrangian vector  $L$ .
- Current meters 2, 3 and 4 interpolation vector  $C$  and Lagrangian vector  $D$ . All vectors are plotted at the centroid of the drifter trajectory. From 16 June, 14.30 h till 17 June, 02.30 h, 720 minutes.

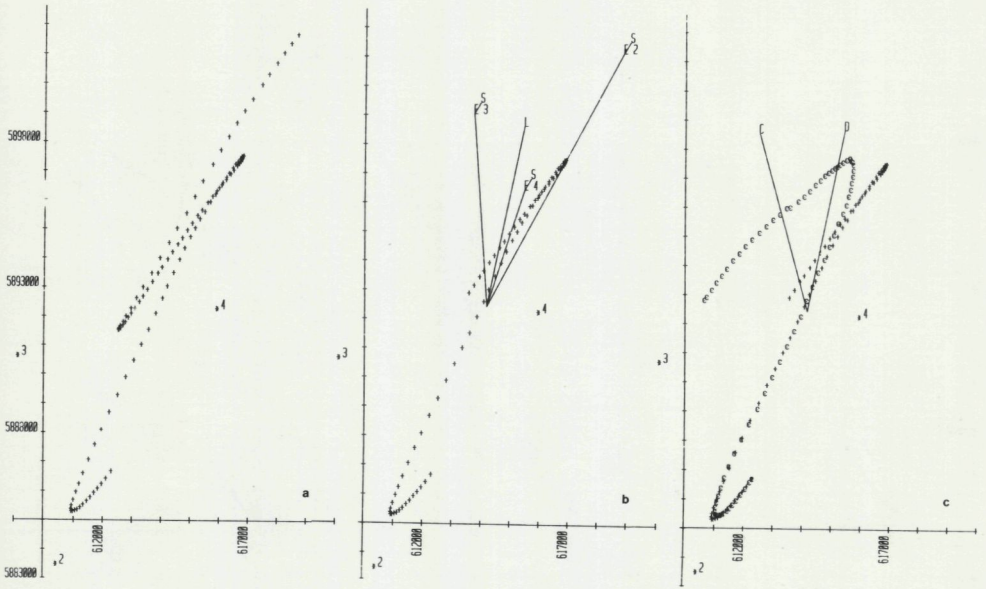


Fig. 56. 16 and 17 June 1980. Drifter 2.

- Drifter trajectory, from 16 June, 16.10 h till 17 June, 10.40 h.
  - Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
  - Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroid of a part of the drifter trajectory. From 16 June, 16.10 h till 17 June, 04.40 h, 750 minutes.

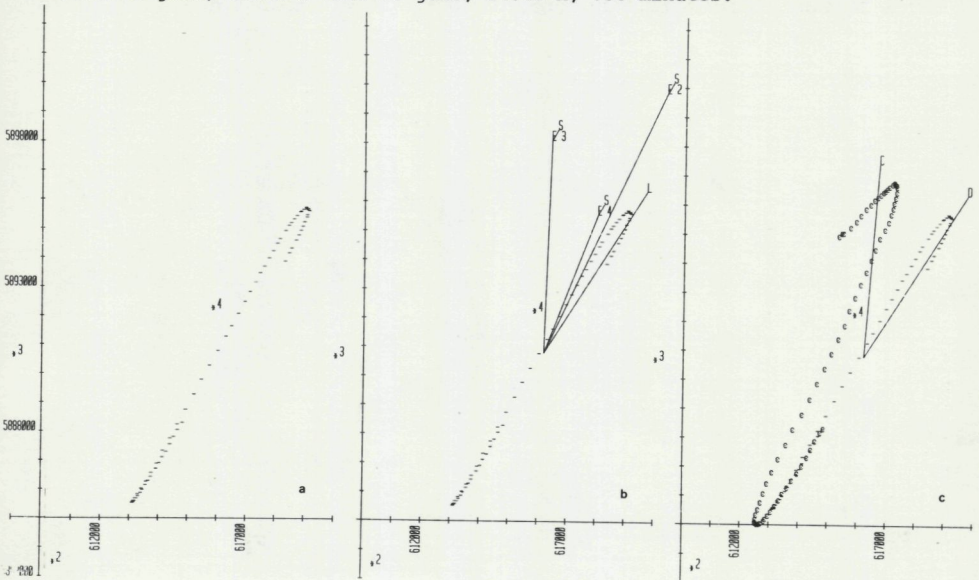


Fig. 57. 16 and 17 June 1980. Drifter 3.

- Drifter trajectory, from 16 June, 14.50 h till 17 June, 02.30 h.
  - Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
  - Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroid of the drifter trajectory. From 16 June, 14.50 h till 17 June, 02.30 h, 700 minutes.

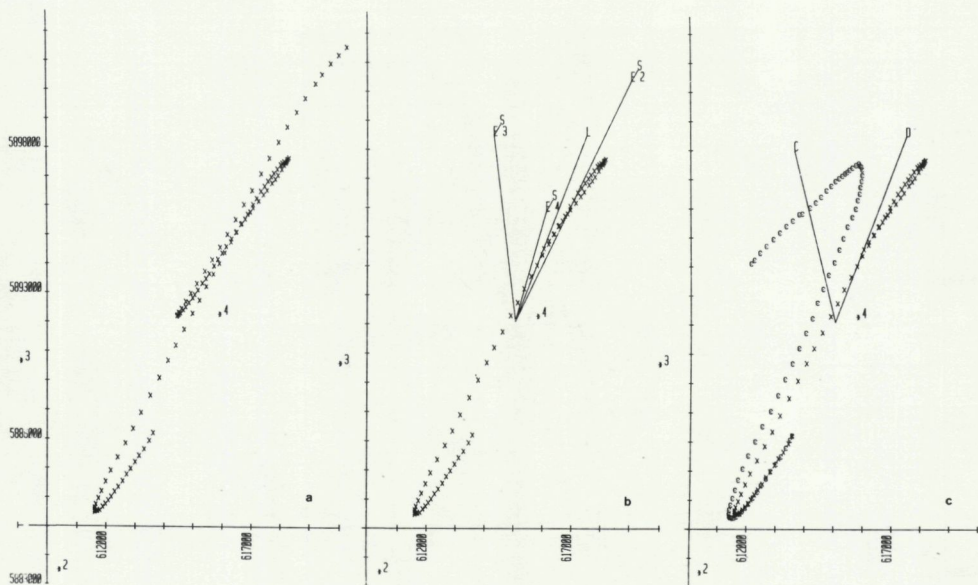


Fig. 58. 16 and 17 June 1980. Drifter 4.

- Drifter trajectory, from 16 June, 15.10 h till 17 June, 10.20 h.
- Eulerian end Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
- Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D. All vectors are plotted at the centroid of a part of the drifter trajectory. From 16 June, 15.10 h till 17 June, 03.40 h, 750 minutes.

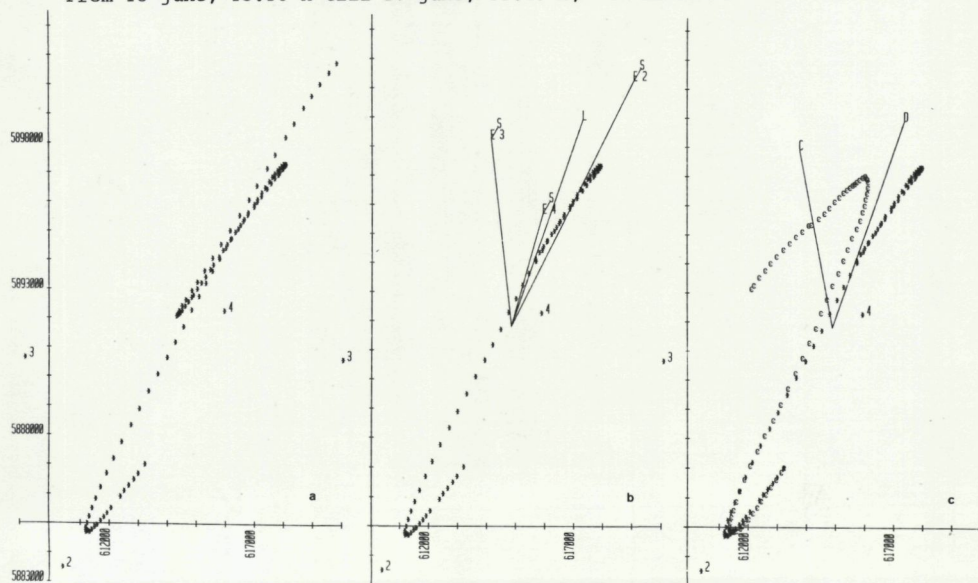


Fig. 59. 16 and 17 June 1980. Drifter 5.

- Drifter trajectory, from 16 June, 15.30 h till 17 June, 10.00 h.
- Eulerian and Stokes vectors, E and S, of current meters 2, 3 and 4 and Lagrangian vector L.
- Current meters 2, 3 and 4 interpolation vector C and Lagrangian vector D. All vectors are plotted at the centroid of a part of the drifter trajectory. From 16 June, 15.30 h till 17 June, 04.00 h, 750 minutes.

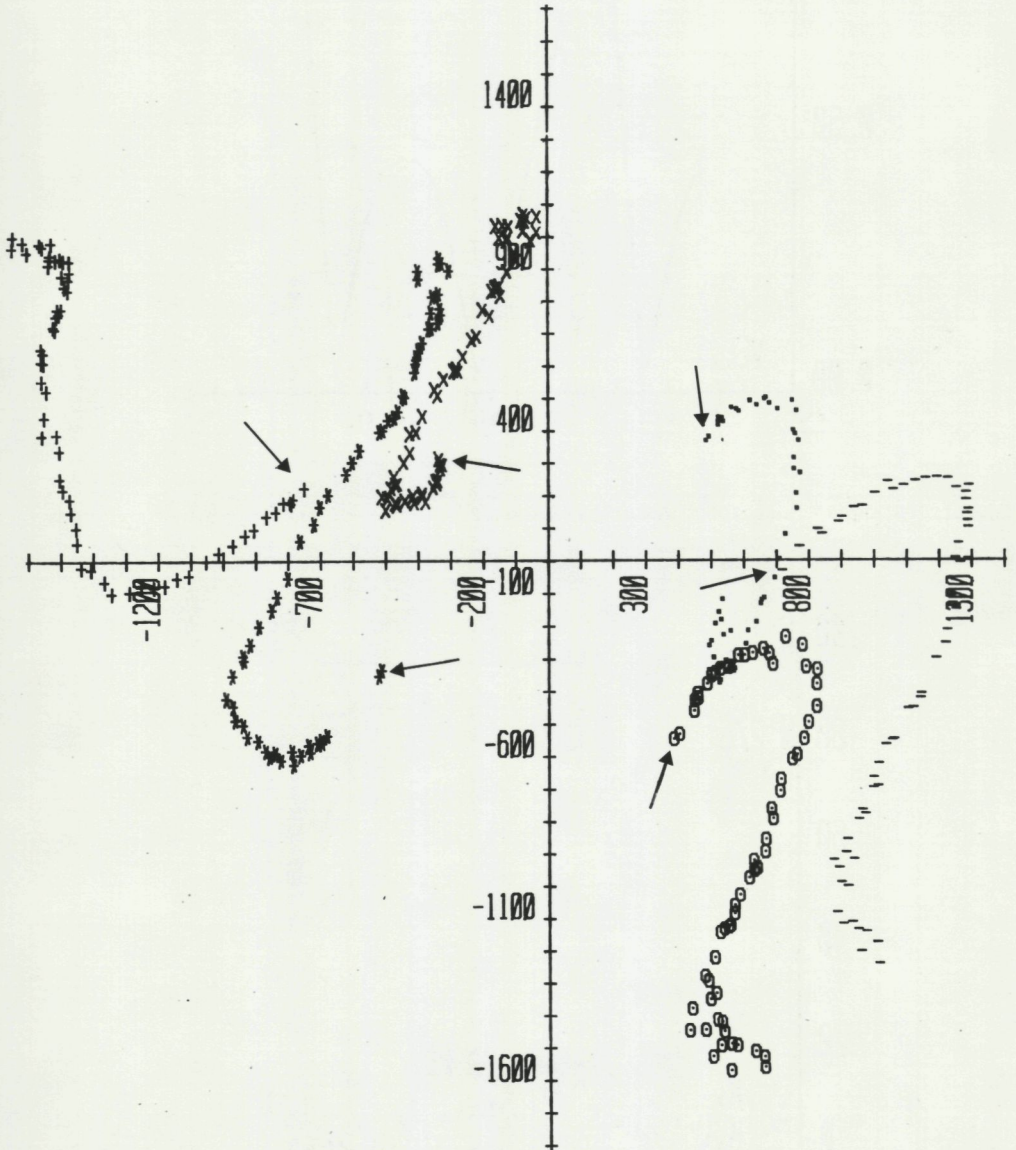


Fig. 60. 16 and 17 June 1980. Displacement of each drifter (m) relative to the centroid of 6 drifters. From 16 June, 16.10 h till 17 June, 02.30 h.

→ : starting point.

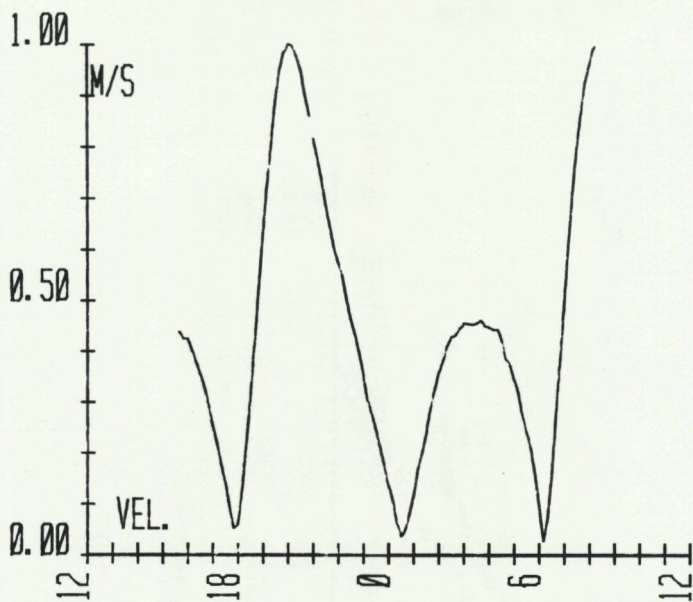


Fig. 61. 16 and 17 june 1980. Absolute value of velocity of the centroid of drifters.

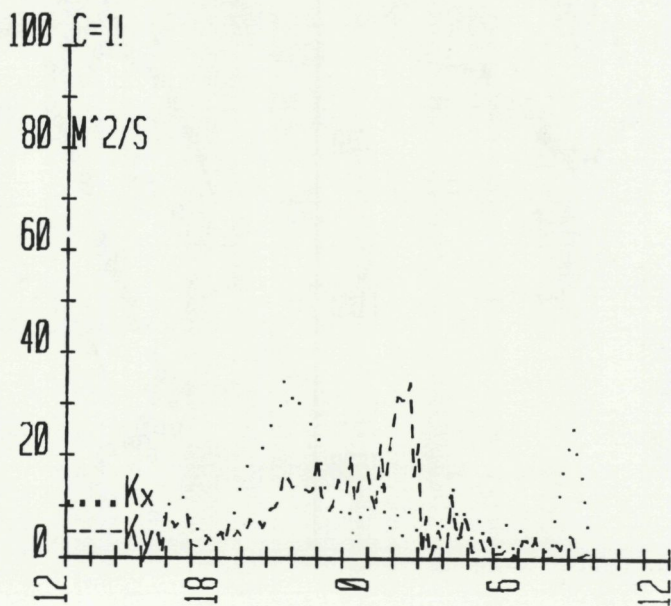


Fig. 62. 16 and 17 june 1980. Turbulent diffusion coefficient of the cluster of drifters in the X- and Y direction.

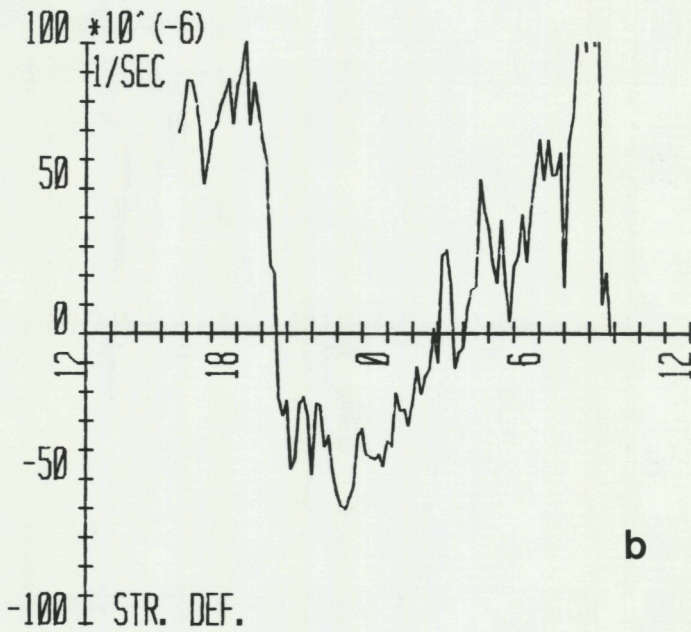
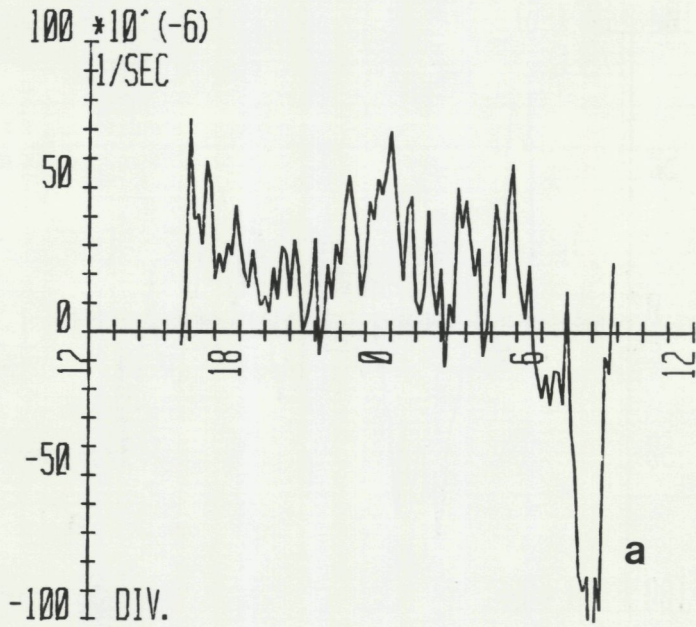


Fig. 63. 16 and 17 June 1980. Drifters.  
a) Divergence. b) Stretching deformation.

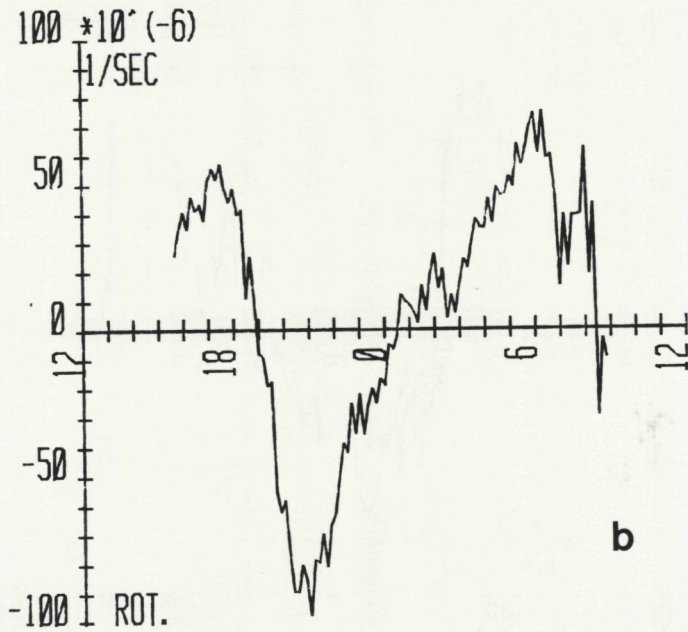
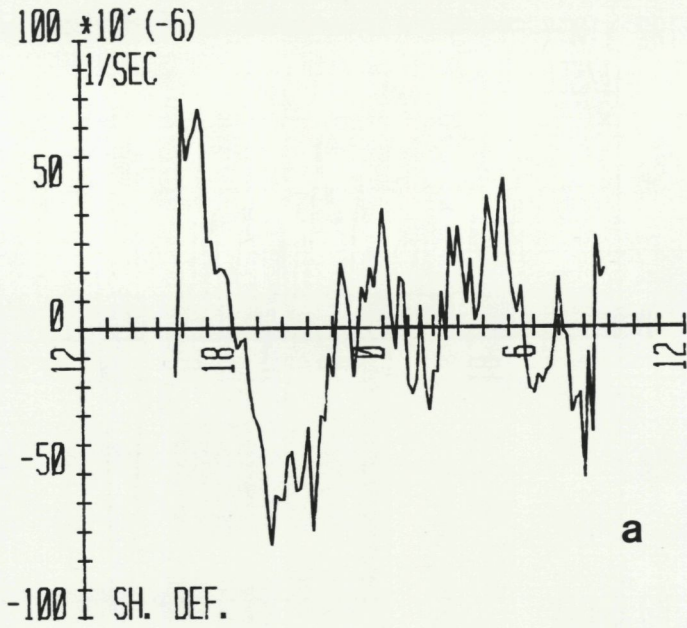


Fig. 64. 16 and 17 June 1980. Drifters.  
 a) Shearing deformation. b) Vorticity.

8.5. 23 and 24 June 1980

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2306	11.30	608099.46 5883242.05					
	11.40	608162.98 5883474.48					
	11.50	608244.94 5883730.15					
	12.00	608352.66 5884049.99					
	12.10	608488.09 5884397.34					
	12.20	608662.83 5884832.87					
	12.30	608838.53 5885311.99					608324.10 5885264.40
	12.40	609069.80 5885790.74					608335.07 5885816.10
	12.50	609334.41 5886353.60					608372.62 5886449.00
	13.00	609588.57 5886893.21					608392.55 5886997.26
	13.10	609873.46 5887486.10					608447.96 5887426.93
	13.20	610154.34 5888059.38					608627.46 5888070.05
	13.30	610469.66 5888668.73					608926.94 5888641.92
	13.40	610811.10 5889315.98					609230.35 5889209.26
	13.50	611140.35 5889893.37					609519.33 5889768.05
	14.00	611499.66 5890521.85					609860.98 5890387.80
	14.10	611856.55 5891122.99	610602.13 5889953.69				610168.64 5890928.12
	14.20	612190.81 5891745.45	611132.34 5890735.88				610528.44 5891550.75
	14.30	612541.78 5892347.75	611500.55 5891358.83				610853.31 5892080.59
	14.40	612873.91 5892913.19	611852.83 5891948.40				611180.88 5892649.24
	14.50	613210.21 5893465.40	612208.09 5892554.18				611517.94 5893170.42
	15.00	613574.80 5894011.61	612534.12 5893111.87				611885.03 5893732.77
	15.10	613918.73 5894529.62	612877.52 5893645.64		613717.42 5893032.27		612227.11 5894242.10
	15.20	614266.59 5895016.34	613214.78 5894182.29		613988.18 5893500.49		612628.64 5894782.47
	15.30	614592.49 5895489.81	613554.03 5894700.43		614272.33 5893989.08		612965.55 5895229.24
	15.40	614939.88 5895967.68	613898.14 5895217.80		614476.01 5894393.95		613338.43 5895737.08
	15.50	615256.25 5896417.12	614240.87 5895676.63		614647.23 5894757.38		613729.46 5896253.21

Table 23. 23 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2306	16.00	615533.81 5896779.57	614531.73 5896098.63		614787.39 5895059.76		614061.55 5896637.56
	16.10	615856.10 5897154.80	614837.38 5896553.40		614945.00 5895413.76		614552.80 5897291.88
	16.20	616155.44 5897547.23	615150.21 5896946.77		615120.29 5895719.88		614925.80 5897746.90
	16.30	616379.19 5897788.34	615411.69 5897341.69		615296.98 5896065.80		615295.22 5898139.29
	16.40	616682.07 5898195.21	615678.81 5897742.44		615452.58 5896352.78		615651.37 5898532.52
	16.50	616823.49 5898356.89	615934.13 5898078.80		615586.82 5896610.23		615953.25 5898864.74
	17.00	617061.79 5898619.99	616209.08 5898430.30		615724.74 5896851.04		616223.21 5899226.63
	17.10	617236.22 5898784.37	616405.30 5898678.71		615829.72 5897037.37		616503.73 5899571.52
	17.20	617442.09 5898992.19	616613.23 5898942.25		615932.35 5897237.48		616600.08 5899638.58
	17.30	617626.53 5899204.25	616806.79 5899212.17		615997.81 5897408.41	617289.57 5898185.74	616880.63 5900042.51
	17.40	617764.32 5899328.32	616978.25 5899405.96		616077.61 5897572.10	617373.18 5898295.97	617066.36 5900275.42
	17.50	617911.42 5899451.71	617181.61 5899459.64		616123.05 5897697.36	617454.19 5898400.91	617255.71 5900524.98
	18.00	618005.43 5899472.51	617324.48 5899771.10		616178.79 5897839.22	617550.15 5898508.66	617430.62 5900734.53
	18.10	618133.67 5899641.80	617478.80 5899956.63		616206.33 5897975.18	617613.51 5898621.91	617573.38 5900933.26
	18.20	618234.15 5899711.37	617576.17 5900038.65		616194.18 5898081.00	617595.76 5898607.58	617686.36 5901080.58
	18.30	618264.48 5899745.24	617659.25 5900113.21		616142.34 5898131.63	617602.47 5898635.02	617741.03 5901174.55
	18.40	618297.57 5899746.80	617728.95 5900173.83		616080.09 5898186.22	617657.25 5898737.89	617840.35 5901369.27
	18.50	618315.53 5899734.17	617882.37 5900389.08		616029.75 5898272.47	617596.27 5898684.08	617891.78 5901515.96
	19.00	618289.10 5899698.61	617820.48 5900298.14		615955.67 5898271.62	617536.12 5898645.08	617869.60 5901580.96
	19.10	618222.71 5899589.71	617837.09 5900340.58		615806.11 5898182.06	617469.17 5898588.77	617899.52 5901720.71
	19.20	618152.71 5899475.80	617820.90 5900300.25	616901.11 5900115.39	615743.47 5898226.59	617405.56 5898539.27	617876.71 5901826.39
	19.30	618130.39 5899409.97	617781.31 5900265.33	616873.51 5900156.75	615652.25 5898255.67	617293.93 5898451.53	617818.78 5901885.95
	19.40	618052.22 5899281.93	617708.15 5900189.36	616813.41 5900119.95	615505.30 5898183.70	617168.34 5898311.91	617809.88 5902033.09
	19.50	617994.61 5899200.09	617661.06 5900182.14	616788.49 5900129.14	615395.34 5898120.14	617072.75 5898212.06	617766.72 5902124.30
	20.00	617908.42 5899057.16	617547.75 5900059.26	616680.14 5900057.44	615292.70 5898079.27	616939.06 5898091.25	617710.15 5902183.40
	20.10	617777.12 5898843.85	617435.15 5899973.97	616576.19 5899951.68	615166.34 5897962.77	616787.99 5897923.69	617589.08 5902148.71
	20.20	617609.29 5898613.08	617243.43 5899784.32	616463.76 5899863.67	615079.27 5897933.91	616666.89 5897789.45	617548.62 5902235.37

Table 24. 23 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2306	20.30	617480.11 5898416.31	617108.94 5899653.44	616387.41 5899813.90	614955.23 5897843.47	616488.60 5897542.89	617410.25 5902209.43
	20.40	617340.83 5898237.80	616958.62 5899471.54	616225.98 5899642.54	614805.04 5897690.37	616397.28 5897402.92	617304.44 5902185.86
	20.50	617211.09 5898030.21	616779.73 5899268.54	616178.77 5899608.75	614662.33 5897562.24	616230.81 5897165.68	617224.41 5902236.30
	21.00	617109.17 5897872.18	616605.36 5899052.33	616019.47 5899429.06	614529.08 5897440.78	616129.56 5896983.19	617032.25 5902091.47
	21.10	616928.09 5897585.00	616436.10 5898821.57	615880.14 5899256.59	614399.70 5897297.81	615987.73 5896728.66	616927.97 5902100.44
	21.20	616795.79 5897354.90	616286.00 5898599.22	615749.40 5899103.00	614275.50 5897167.42	615887.51 5896531.89	616829.16 5902099.01
	21.30	616677.08 5897175.63	616158.06 5898427.18	615594.84 5898918.83	614141.71 5896995.10	615715.53 5896257.68	616609.42 5901967.34
	21.40	616504.29 5896900.20	615959.61 5898123.21	615434.42 5898737.73	614017.82 5896846.27	615604.82 5896067.78	616422.08 5901866.66
	21.50	616429.06 5896776.55	615814.68 5897887.62	615318.63 5898615.76	613887.74 5896684.78	615482.86 5895856.80	616309.64 5901902.54
	22.00	616203.94 5896416.29	615657.03 5897623.75	615154.34 5898391.05	613751.14 5896477.06	615318.97 5895568.26	616095.55 5901722.02
	22.10	616143.72 5896311.33	615522.92 5897399.24	614998.34 5898186.11	613628.73 5896299.37	615226.32 5895402.72	615894.26 5901612.68
	22.20	616000.41 5896093.16	615389.90 5897180.69	614889.42 5898058.66	613505.51 5896126.57	615096.76 5895184.22	615715.73 5901538.82
	22.30	615934.15 5895943.64	615281.84 5896997.87	614771.61 5897899.69	613386.16 5895953.50	614980.83 5894991.35	615565.17 5901496.00
	22.40	615778.72 5895661.64	615138.90 5896784.26	614631.09 5897699.63	613253.74 5895781.13	614860.35 5894794.96	615384.72 5901439.27
	22.50	615715.01 5895537.32	615098.69 5896698.68	614539.34 5897533.08	613148.87 5895652.85	614782.34 5894687.10	615231.81 5901375.83
	23.00	615672.88 5895425.98	614981.33 5896473.60	614443.77 5897394.95	613041.52 5895514.93	614681.10 5894549.00	615033.71 5901237.38
	23.10	615589.94 5895254.77	614943.76 5896344.63	614359.43 5897267.43	612947.15 5895372.13	614609.11 5894442.27	614869.18 5901159.52
	23.20	615551.36 5895151.96	614886.14 5896200.35	614290.75 5897142.28	612875.37 5895295.38	614541.32 5894347.40	614770.43 5901170.04
	23.30	615553.36 5895129.20	614883.65 5896137.14	614233.10 5897021.82	612801.70 5895206.96	614484.91 5894266.71	614638.93 5901129.57
	23.40	615542.88 5895048.39	614861.75 5896019.36	614233.29 5897018.57	612735.09 5895168.41	614447.42 5894203.82	614542.72 5901145.78
	23.50	615537.34 5895014.15	614845.86 5895968.35	614176.04 5896918.26	612695.86 5895155.07	614406.93 5894162.76	614508.53 5901300.38
2406	0.00	615563.00 5895014.72	614852.92 5895962.95	614160.35 5896900.54	612634.15 5895105.05	614446.14 5894260.15	614410.68 5901306.22
	0.10	615605.55 5895075.38	614912.72 5896067.98	614189.82 5896952.64	612674.23 5895260.11	614409.54 5894264.71	614357.33 5901389.53
	0.20	615735.01 5895219.68	614919.00 5896173.03	614199.03 5896989.28	612686.78 5895368.79	614432.22 5894356.82	614401.40 5901611.19
	0.30	615811.60 5895331.60	614990.26 5896338.74	614268.90 5897117.32	612744.76 5895518.89	614411.96 5894492.63	614426.59 5901801.52
	0.40	615942.15 5895397.43	615067.92 5896531.07	614397.28 5897329.31	612834.66 5895642.15	614576.54 5894708.06	614476.87 5902067.68
	0.50	616115.69 5895755.19	615165.03 5896725.24	614505.26 5897511.17	612960.86 5895970.62	614744.44 5895027.25	614538.91 5902388.19

Table 25. 23 and 24 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2406	1.00	616315.96 5896096.16	615351.80 5897060.28	614688.65 5897798.61	613150.26 5896319.55	614906.30 5895332.28	614783.85 5902789.04
	1.10	616546.19 5896411.34	615533.52 5897385.57	614853.88 5898073.10	613337.22 5896631.48	615087.99 5895644.90	614760.54 5902966.48
	1.20	616740.37 5896722.37	615790.31 5897834.20	615083.26 5898450.46	613578.60 5897036.22	615339.55 5896092.62	614942.28 5903368.54
	1.30	616999.11 5897128.94	616042.85 5898250.00	615378.05 5898909.28	613846.81 5897517.75	615544.55 5896475.07	615163.01 5903855.89
	1.40	617328.54 5897609.25	616327.30 5898685.16	615655.46 5899293.87	614121.24 5897966.66	615848.66 5896948.72	615389.62 5904301.41
	1.50	617617.10 5898054.99	616496.36 5899023.34	615988.36 5899773.06	614425.99 5898442.26	616117.87 5897462.89	615660.90 5904811.73
	2.00	617939.87 5898560.50		616363.91 5900265.13	614782.38 5899005.86	616375.34 5897910.43	615972.31 5905360.77
	2.10	618241.55 5899000.11		616777.19 5900812.52	615109.86 5899483.89	616700.28 5898406.47	616265.24 5905856.88
	2.20	618613.85 5899503.98		617183.38 5901309.79	615502.64 5900023.49	617038.95 5898924.08	616576.01 5906372.22
	2.30	618971.10 5900027.76		617615.04 5901847.66	615901.80 5900571.42	617363.60 5899412.05	616948.13 5906985.81
	2.40	619347.47 5900494.48		618069.90 5902341.91	616343.92 5901142.70	617681.00 5899886.07	617309.73 5907515.84
	2.50	619675.53 5900872.73		618522.16 5902819.28	616765.05 5901664.82	618074.83 5900455.73	617712.28 5908112.34
	3.00	619946.14 5901204.46		619059.98 5903403.31	617199.35 5902141.32	618469.48 5901006.53	618127.87 5908667.25
	3.10	620317.16 5901622.28		619518.91 5903835.26	617748.82 5902804.61	618812.61 5901426.29	618536.09 5909189.66
	3.20	620677.68 5901997.51		620025.08 5904339.91	618150.52 5903193.67	619194.37 5901924.50	618979.48 5909742.62
	3.30	621217.64 5902593.89		620470.69 5904723.22	618763.12 5903901.23	619423.15 5902284.17	619400.10 5910218.78
	3.40	621997.92 5903368.82		620934.57 5905185.64	619033.58 5904092.77	619975.18 5902845.56	619854.61 5910727.84
	3.50	622406.99 5903748.06		621408.94 5905644.08	619576.99 5904657.23	620312.67 5903156.07	620342.79 5911256.34
	4.00	622635.22 5903913.77		621921.92 5906174.85	620058.27 5905135.05	620683.03 5903535.46	620769.32 5911680.75
	4.10	623017.77 5904247.13		622312.17 5906498.42	620453.64 5905464.46	621020.87 5903878.13	621197.00 5912111.55
	4.20	623274.63 5904480.84		622702.35 5906824.62	620887.37 5905835.56	621320.46 5904128.79	621635.43 5912565.89
	4.30	623499.47 5904605.66		623115.10 5907164.02	621325.85 5906238.57	621582.31 5904345.95	622060.56 5913029.08
	4.40	623948.46 5905045.08		623447.74 5907461.83	621831.79 5906725.27	621915.56 5904652.11	622433.90 5913455.71
	4.50	624028.18 5905035.88		623988.48 5907943.31	622201.73 5907032.23	622133.85 5904826.09	622798.36 5913840.37
	5.00	624335.23 5905292.07		624328.78 5908215.07	622590.81 5907363.64	622398.81 5905040.65	623125.28 5914194.08
	5.10	624685.06 5905581.63		624719.42 5908534.03		622710.46 5905305.81	
	5.20	624955.24 5905770.33		625132.62 5908908.88		622944.49 5905467.95	

Table 26. 24 june 1980. UTM co-ordinates.

DATE	TIME	DRIFTER 0	DRIFTER 1	DRIFTER 2	DRIFTER 3	DRIFTER 4	DRIFTER 5
2406	5.30	625183.36 5905912.69		625450.25 5909150.64		623160.58 5905625.89	
	5.40	625311.35 5905933.10		625779.43 5909425.34		623441.54 5905825.86	
	5.50	625618.21 5906173.93		626012.93 5909593.07		623648.52 5905926.52	
	6.00	625723.67 5906161.89		626281.37 5909822.75		623813.61 5906002.05	
	6.10	625938.65 5906334.46		626691.90 5910229.30		624085.01 5906187.77	
	6.20	626125.23 5906479.25		627042.42 5910523.88		624276.52 5906249.99	
	6.30	626295.90 5906578.52		627133.99 5910567.83		624458.91 5906381.71	
	6.40	626386.57 5906626.78		627369.45 5910813.70		624538.08 5906376.88	
	6.50	626506.60 5906693.19		627566.04 5910971.70		624686.44 5906434.83	
	7.00	626514.43 5906632.46		627960.49 5911406.86		624813.59 5906436.19	
	7.10	626583.91 5906696.05		627885.54 5911335.97		624915.51 5906478.18	
	7.20	626623.47 5906712.80		627963.67 5911426.47		624930.10 5906447.88	
	7.30			628186.03 5911700.93		625036.54 5906524.45	
	7.40			628216.65 5911764.77		625022.57 5906472.03	
	7.50			628289.47 5911886.00		625065.74 5906487.72	
	8.00			628305.95 5911948.36		625048.76 5906473.44	
	8.10			628302.46 5912024.53		625051.11 5906500.02	
	8.20			628260.46 5912043.06		625003.07 5906462.77	
	8.30			628057.66 5911886.71		624756.94 5906213.52	
	8.40			628189.46 5912146.63		624798.60 5906301.95	
	8.50			628022.16 5912076.15		624600.45 5906103.99	
	9.00			627974.42 5912106.75		624576.40 5906118.02	
	9.10			627752.83 5912014.99		624352.49 5905908.28	
	9.20			627584.48 5911960.31		624222.89 5905820.30	
	9.30			627379.91 5911863.91		624067.35 5905680.53	
	9.40			627321.83 5911942.58		624005.11 5905672.51	
	9.50					623794.32 5905472.40	

Table 27. 24 june 1980. UTM co-ordinates.

<u>DATE</u>	<u>TIME</u>	<u>DRIFTER 0</u>	<u>DRIFTER 1</u>	<u>DRIFTER 2</u>	<u>DRIFTER 3</u>	<u>DRIFTER 4</u>	<u>DRIFTER 5</u>
2406	10.00					623666.21 5905398.69	
	10.10					623561.38 5905328.60	
	10.20					623457.49 5905312.04	
	10.30					623389.53 5905302.62	
	10.40					623282.28 5905234.76	
	10.50					623056.68 5905022.12	
	11.00					622885.59 5904859.85	
	11.10					622807.42 5904826.84	
	11.20					622716.34 5904725.14	

Table 28. 24 june 1980. UTM co-ordinates.

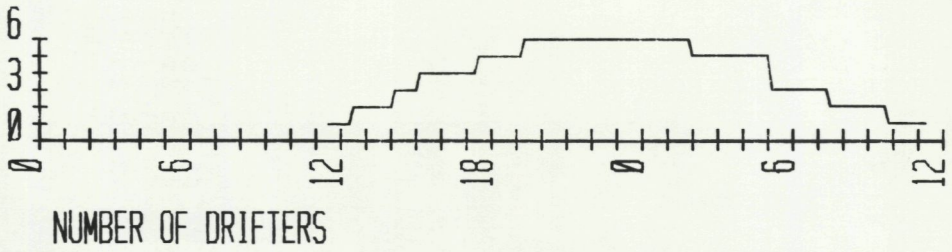
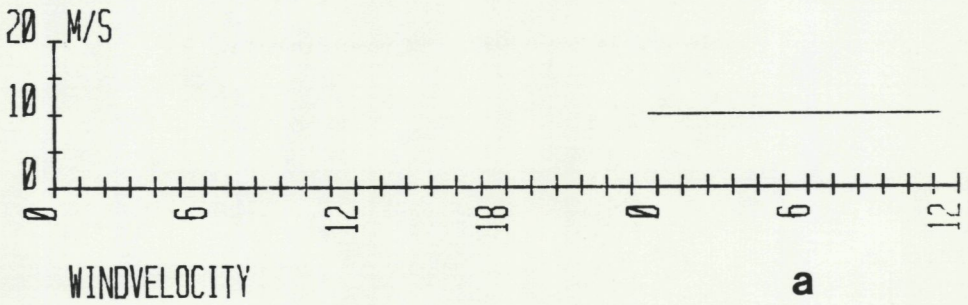
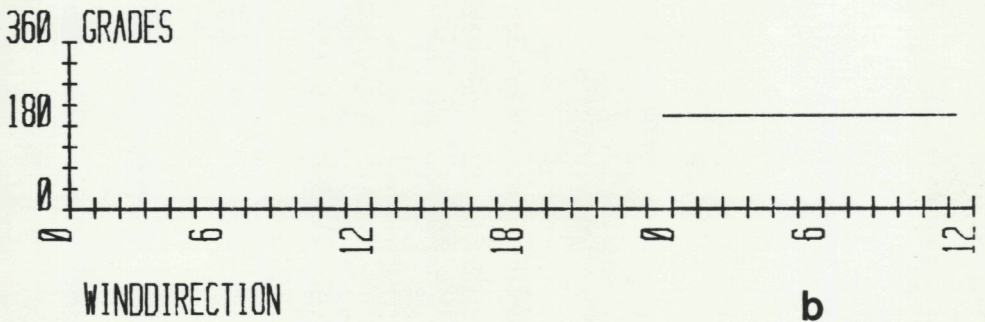


Fig. 65. 23 and 24 June 1980. Numbers of drifters.



**a**



**b**

Fig. 66. 23 and 24 June 1980. a) Wind velocity. b) Wind direction.

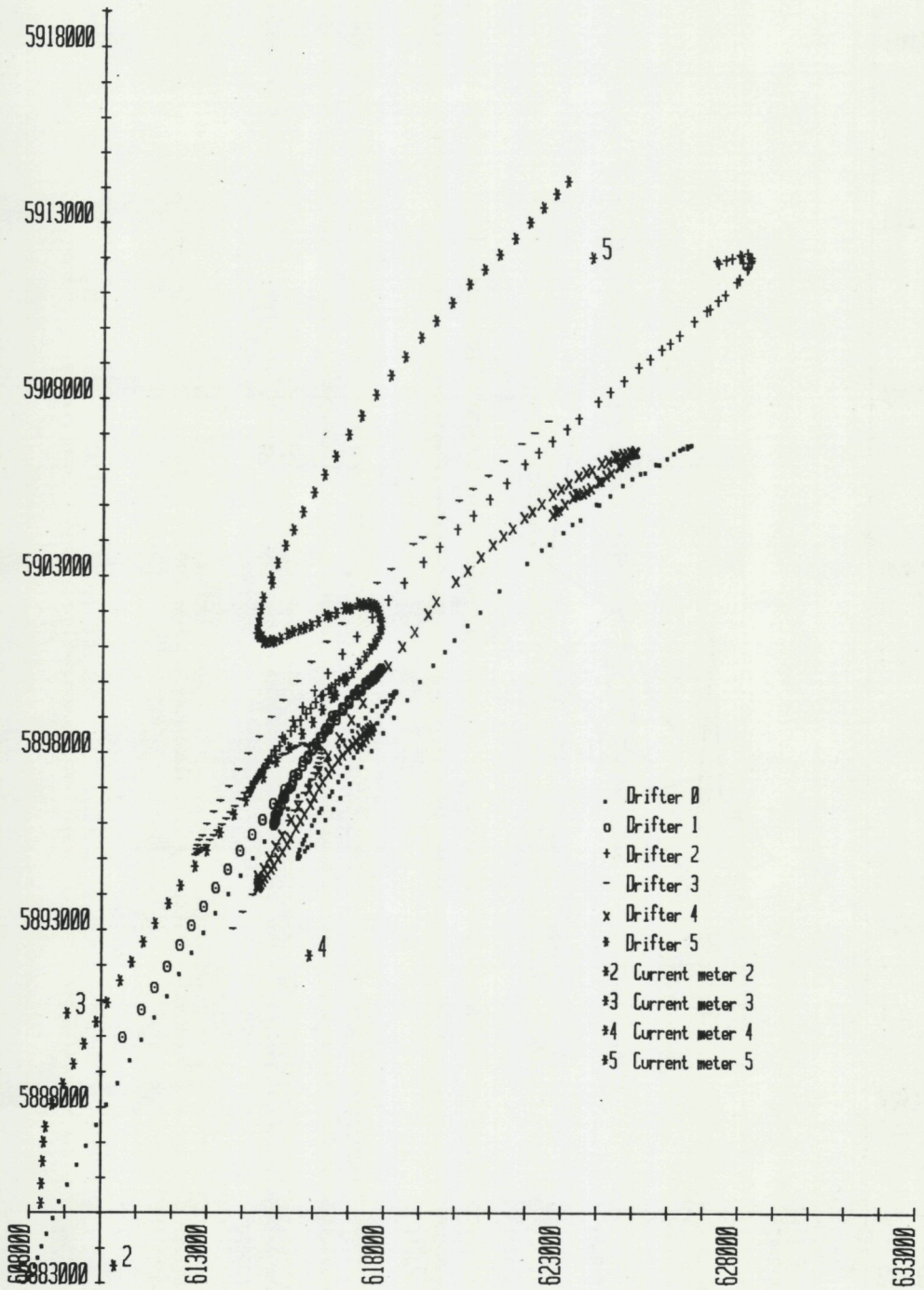


Fig. 67. 23 and 24 June 1980. Drifter trajectories.

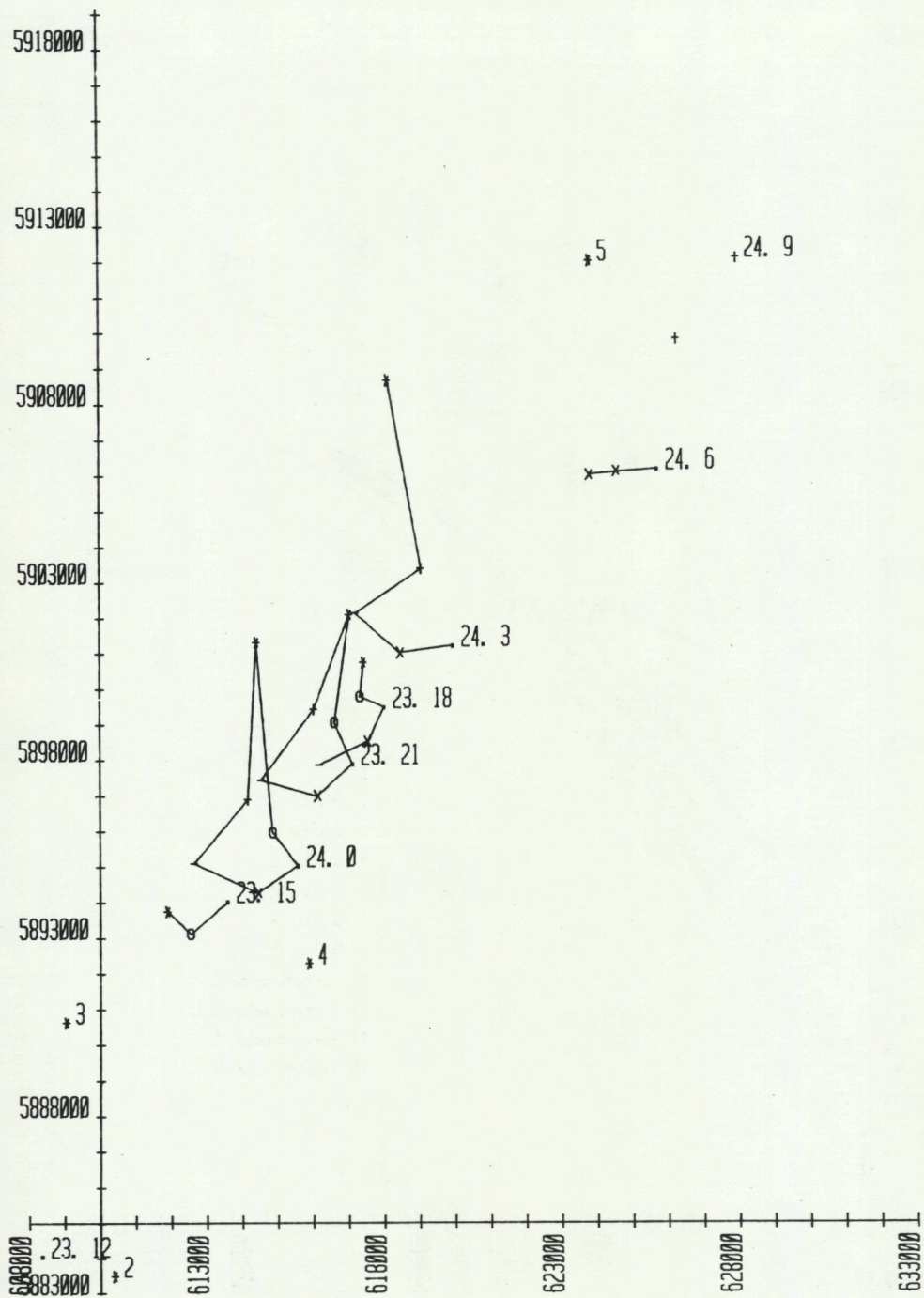


Fig. 68. 23 and 24 June 1980. Shape of the cluster of drifters, every 3 hours.

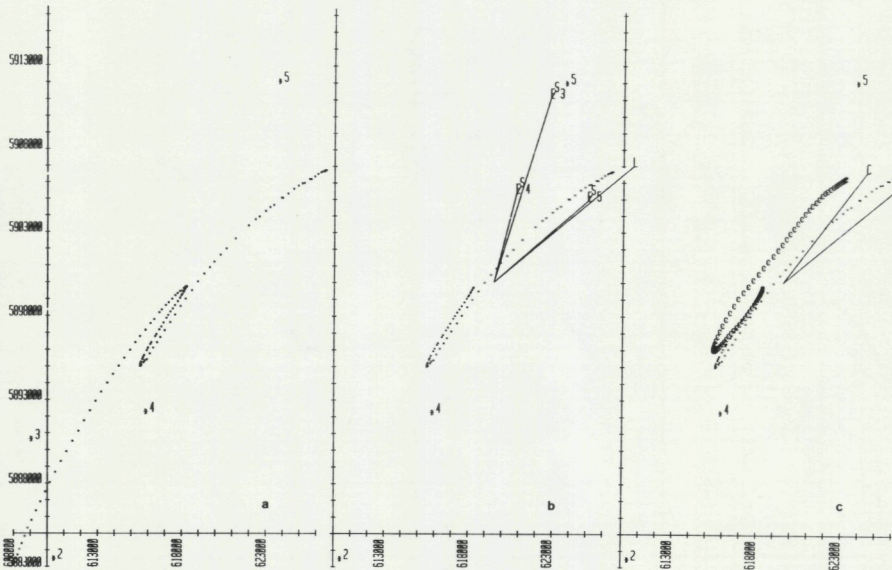


Fig. 69. 23 and 24 June 1980. Drifter 0.

- Drifter trajectory, from 23 June, 11.30 h till 24 June, 07.20 h.
  - Eulerian and Stokes vectors, E and S, of current meters 3, 4 and 5 and Lagrangian vector L.
  - Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroid of a part of the drifter trajectory. From 23 June, 18.50 h till 24 June, 07.20 h, 750 minutes.

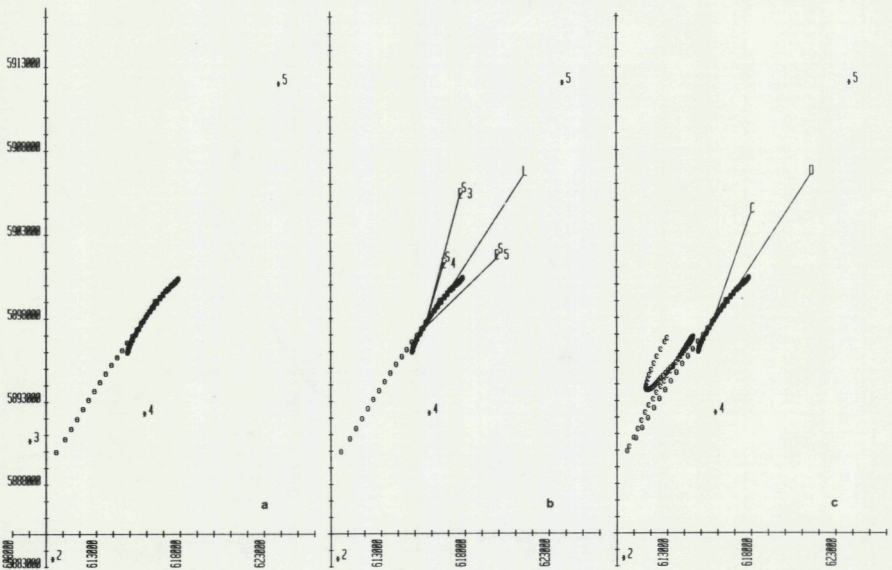


Fig. 70. 23 and 24 June 1980. Drifter 1.

- Drifter trajectory, from 23 June, 14.10 h till 24 June, 01.50 h.
  - Eulerian and Stokes vectors, E and S, of current meters 3, 4 and 5 and Lagrangian vector L.
  - Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D.
- All vectors are plotted at the centroid of the drifter trajectory. From 23 June, 14.10 h till 24 June, 01.50 h, 700 minutes.

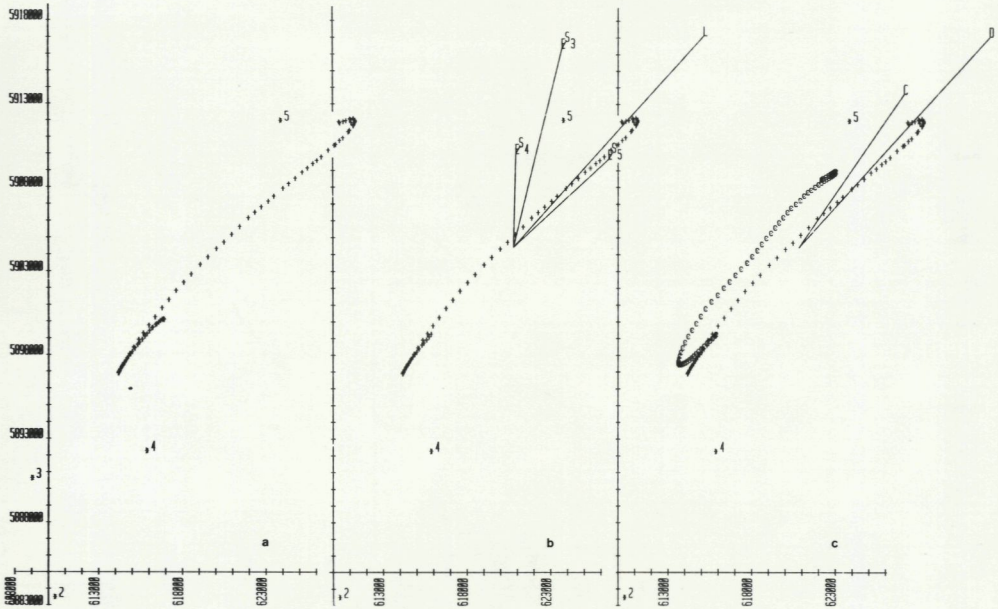


Fig. 71. 23 and 24 June 1980. Drifter 2.

- Drifter trajectory, from 23 June, 19.20 h till 24 June, 09.40 h.
- Eulerian and Stokes vectors, E and S, of current meters 3, 4 and 5 and Lagrangian vector L.
- Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D. All vectors are plotted at the centroid of a part of the drifter trajectory. From 23 June, 21.10 h till 24 June, 09.40 h, 750 minutes.

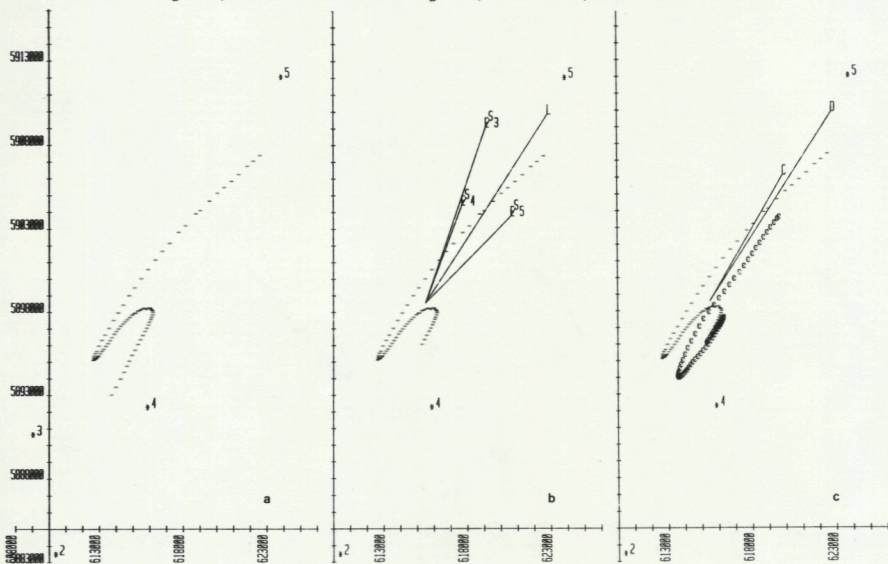


Fig. 72. 23 and 24 June 1980. Drifter 3.

- Drifter trajectory, from 23 June, 15.10 h till 24 June, 05.00 h.
- Eulerian and Stokes vectors, E and S, of current meters 3, 4 and 5 and Lagrangian vector L.
- Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D. All vectors are plotted at the centroid of a part of the drifter trajectory. From 23 June, 16.30 h till 24 June, 05.00 h, 750 minutes.

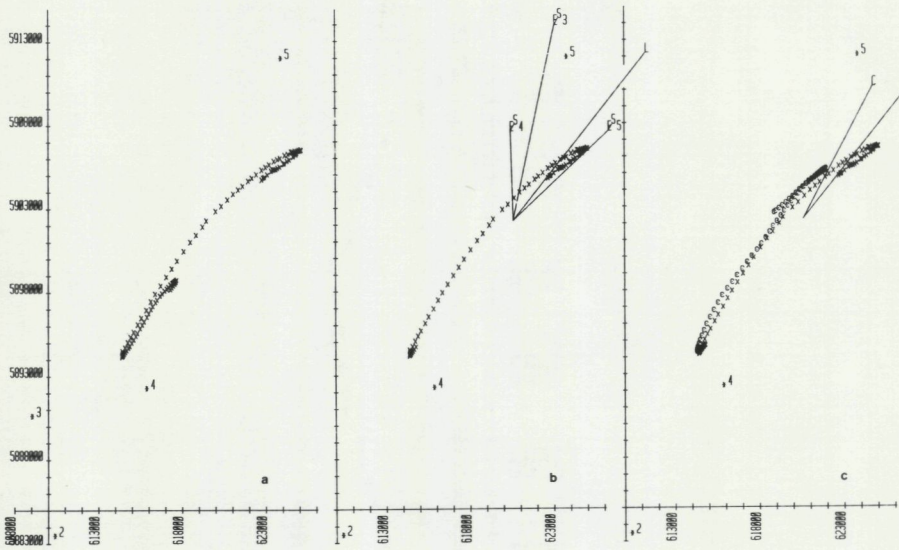


Fig. 73. 23 and 24 June 1980. Drifter 4.

- Drifter trajectory, from 23 June, 17.30 h till 24 June, 11.20 h.
- Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 3, 4 and 5 and Lagrangian vector  $L$ .
- Current meters 3, 4 and 5 interpolation vector  $C$  and Lagrangian vector  $D$ . All vectors are plotted at the centroid of a part of the drifter trajectory. From 23 June, 22.50 h till 24 June, 11.20 h, 750 minutes.

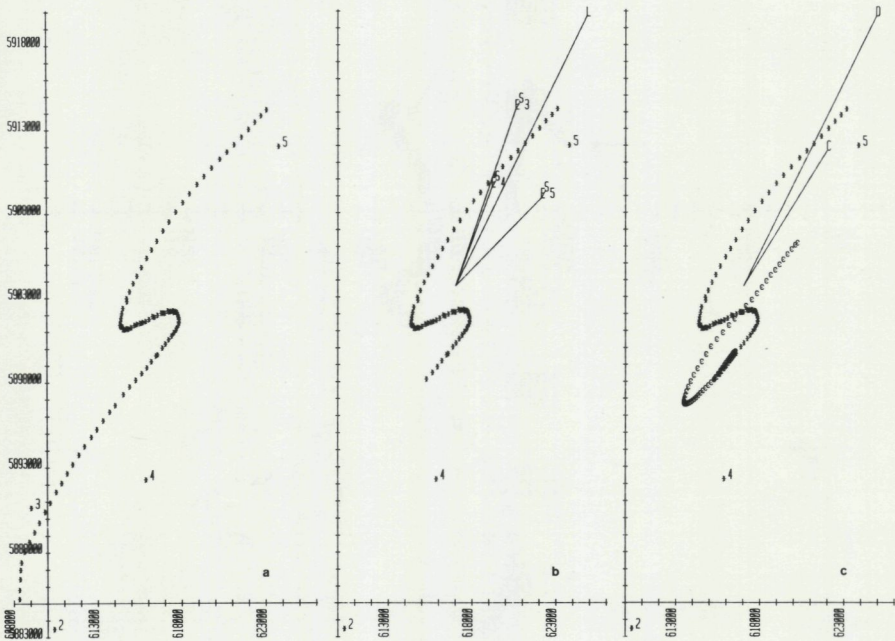


Fig. 74. 23 and 24 June 1980. Drifter 5.

- Drifter trajectory, from 23 June, 12.30 h till 24 June, 05.00 h.
- Eulerian and Stokes vectors,  $E$  and  $S$ , of current meters 3, 4 and 5 and Lagrangian vector  $L$ .
- Current meters 3, 4 and 5 interpolation vector  $C$  and Lagrangian vector  $D$ . All vectors are plotted at the centroid of a part of the drifter trajectory. From 23 June, 16.30 h till 24 June, 05.00 h, 750 minutes.

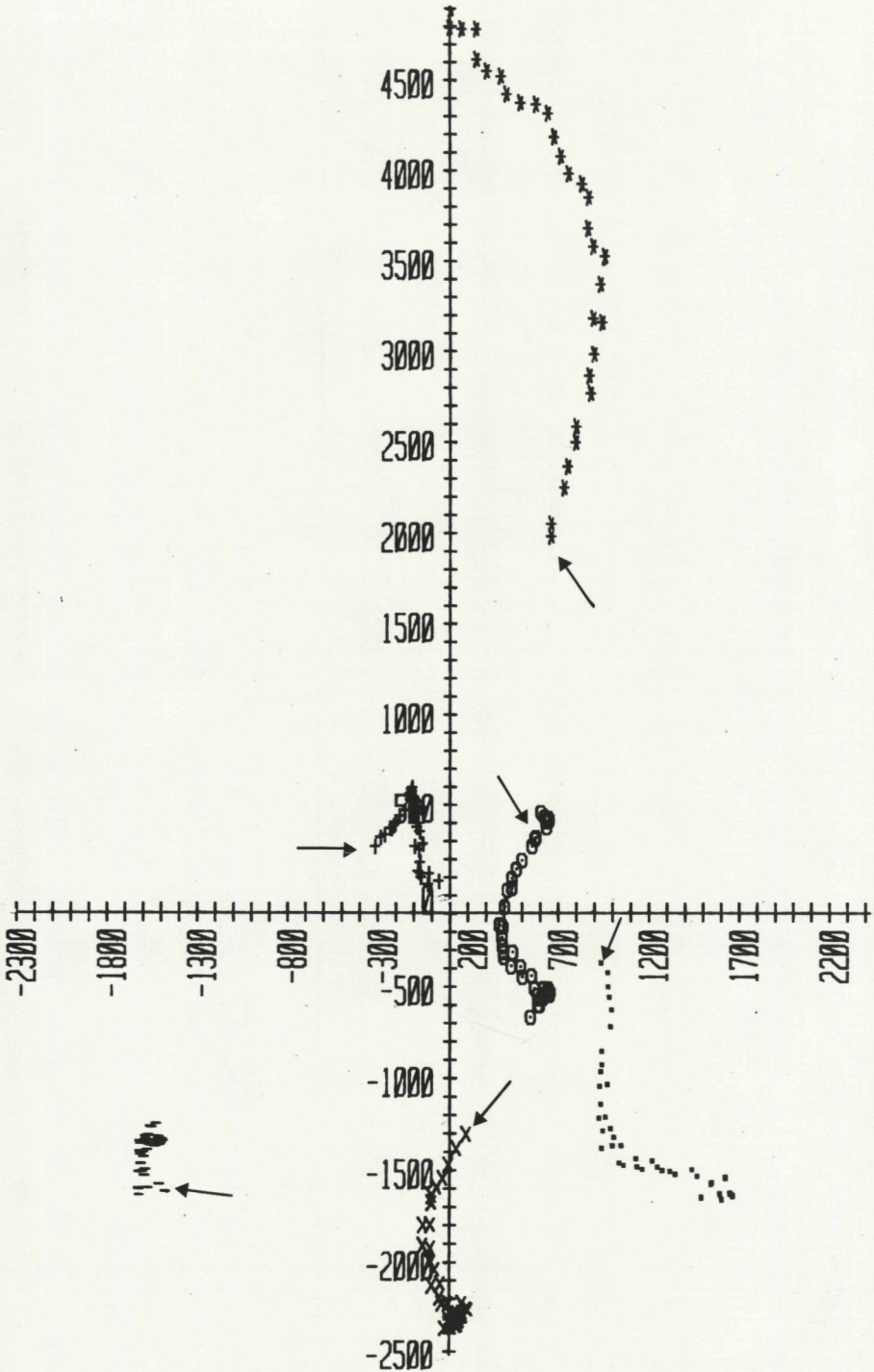


Fig. 75. 23 and 24 June 1980. Displacement of each drifter (m) relative to the centroid of 6 drifters. From 23 June, 19.20 h till 24 June, 01.50 h.

→ : starting point.

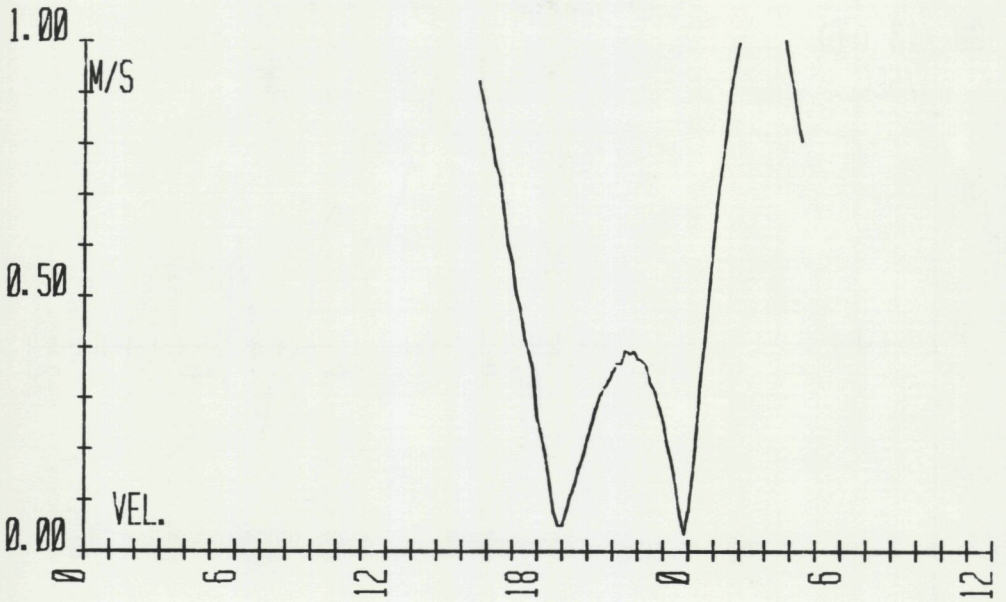


Fig. 76. 23 and 24 June 1980. Absolute value of velocity of the centroid of drifters.

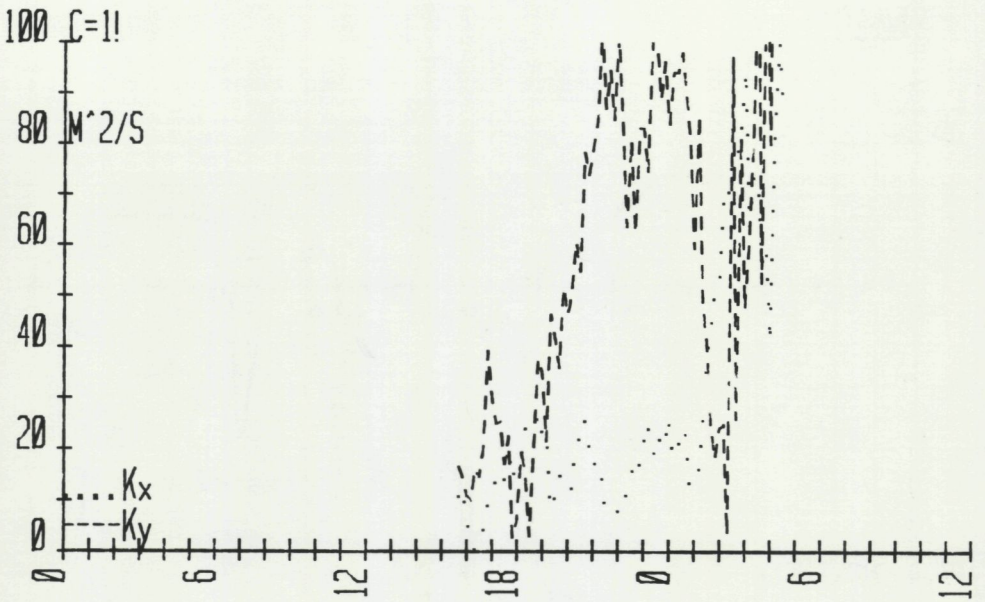


Fig. 77. 23 and 24 June 1980. Turbulent diffusion coefficient of the cluster of drifters in the X- and Y direction.

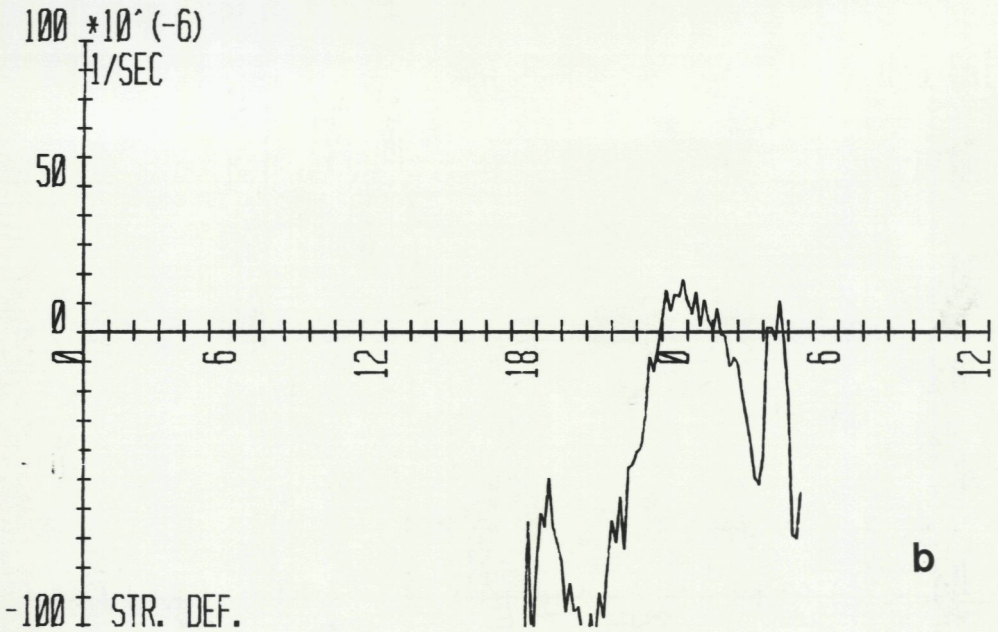
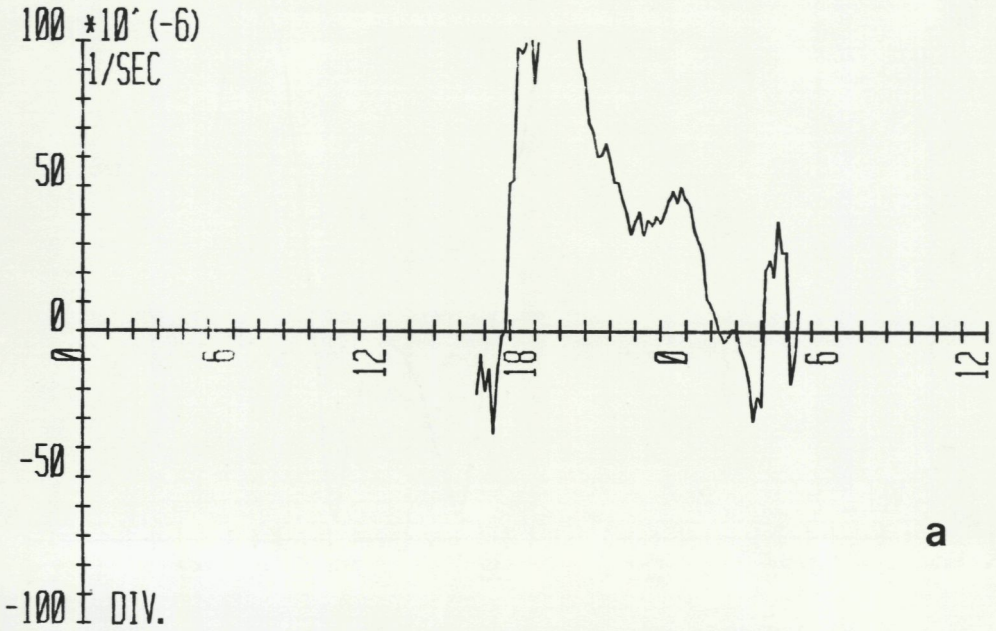


Fig. 78. 23 and 24 June 1980. Drifters. a) divergence. b) Stretching deformation.

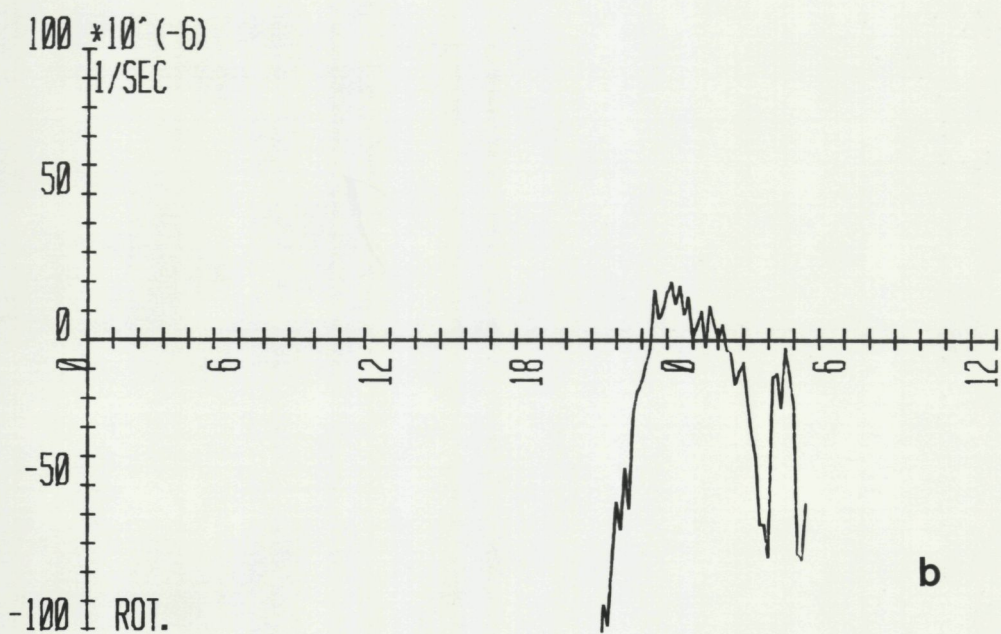
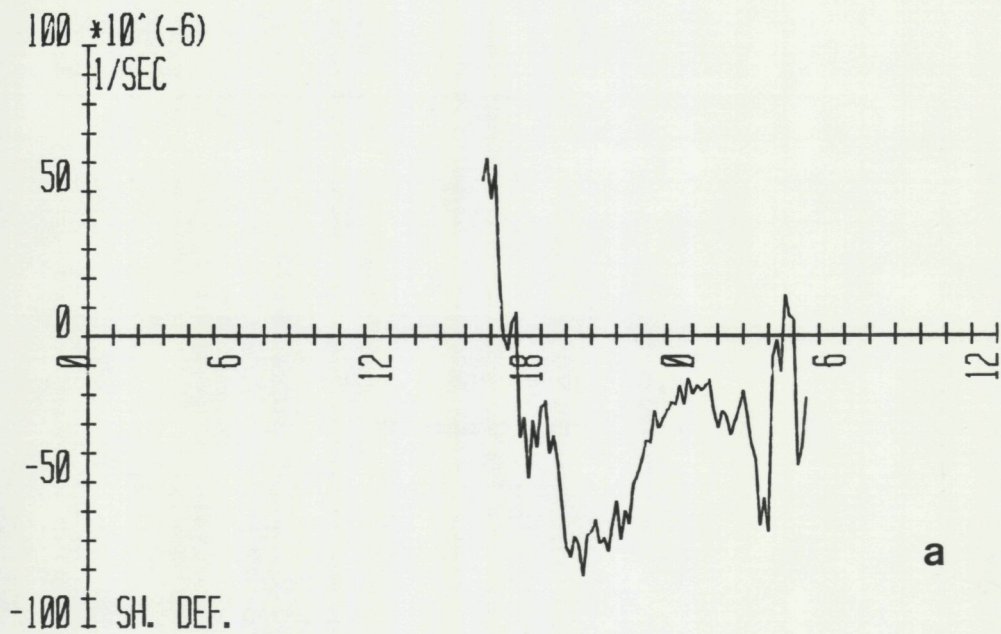


Fig. 79. 23 and 24 June 1980. Drifters. a) Shearing deformation. b) Vorticity.

8.6. Tables and figures

Current meters

TIME ====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	156	0.10	176	0.20	184	0.23	184	0.30	184	0.03	196	0.63
1	204	0.43	204	0.50	204	0.57	216	0.63	204	0.63	216	0.67
2	204	0.70	204	0.73	204	0.73	204	0.70	204	0.70	204	0.70
3	204	0.70	204	0.70	204	0.67	204	0.67	204	0.70	204	0.63
4	204	0.63	204	0.63	204	0.60	204	0.53	204	0.53	204	0.50
5	204	0.50	216	0.50	216	0.50	216	0.43	216	0.36	216	0.30
6	224	0.23	224	0.20	236	0.13	276	0.06	316	0.10	356	0.16
7	4	0.30	16	0.40	16	0.53	16	0.60	16	0.73	24	0.84
8	24	0.90	24	0.94	24	0.94	24	0.90	24	0.90	24	0.87
9	24	0.84	36	0.84	24	0.77	24	1.00	24	0.60	24	0.67
10	24	0.73	24	0.36	24	0.43	24	0.43	24	0.43	24	0.40
11	24	0.33	24	0.26	36	0.26	36	0.16	44	0.16	24	0.10
12	4	0.06	24	0.00	136	0.00	176	0.13	184	0.20	196	0.23
13	196	0.13	204	0.50	204	0.33	204	0.16	204	0.70	204	0.50
14	204	0.57	204	0.60	204	0.63	204	0.67	216	0.70	204	0.73
15	204	0.73	204	0.70	204	0.70	216	0.77	204	0.73	204	0.70
16	204	0.67	204	0.63	196	0.67	196	0.60	196	0.57	196	0.57
17	204	0.53	216	0.57	216	0.53	216	0.47	216	0.43	216	0.40
18	216	0.36	224	0.30	224	0.26	236	0.23	244	0.16	264	0.10
19	304	0.13	336	0.13	356	0.20	4	0.33	16	0.43	16	0.50
20	16	0.57	16	0.73	16	0.77	16	0.90	24	0.90	24	0.97
21	24	0.94	24	0.94	24	0.87	24	0.80	24	0.77	24	0.73
22	24	0.77	36	0.73	24	0.43	36	0.77	36	0.53	36	0.47
23	36	0.43	36	0.43	36	0.40	44	0.36	44	0.30	44	0.26

Table 29. 19 may 1980. Current meter 2. Velocity and direction.

TIME ====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	44	0.20	44	0.16	44	0.10	56	0.03	64	0.03	136	0.03
1	156	0.13	176	0.16	176	0.20	184	0.30	196	0.33	196	0.36
2	196	0.43	204	0.50	204	0.55	204	0.60	204	0.63	204	0.63
3	204	0.70	204	0.70	204	0.70	204	0.70	204	0.73	204	0.70
4	204	0.70	204	0.70	204	0.70	204	0.70	204	0.70	204	0.67
5	204	0.67	204	0.67	204	0.63	196	0.63	204	0.53	196	0.50
6	204	0.43	196	0.43	196	0.36	204	0.36	204	0.30	216	0.26
7	216	0.20	216	0.13	224	0.06	316	0.03	356	0.13	16	0.23
8	16	0.40	24	0.47	24	0.57	24	0.67	24	0.77	24	0.80
9	24	0.87	24	0.87	24	0.87	24	0.84	24	0.80	24	0.80
10	24	0.84	24	0.73	24	0.67	24	0.67	24	0.60	24	0.53
11	24	0.50	24	0.50	24	0.43	36	0.43	36	0.40	36	0.33
12	36	0.36	36	0.26	36	0.26	36	0.23	36	0.13	44	0.10
13	24	0.06	84	0.00	136	0.06	164	0.06	176	0.16	184	0.20
14	184	0.26	196	0.26	196	0.33	196	0.40	204	0.40	204	0.43
15	204	0.47	204	0.53	204	0.57	204	0.33	204	0.84	204	0.63
16	204	0.63	204	0.63	204	0.67	204	0.63	204	0.63	204	0.63
17	204	0.60	204	0.60	204	0.60	204	0.57	204	0.57	204	0.53
18	204	0.53	216	0.47	216	0.43	216	0.40	216	0.36	216	0.33
19	224	0.30	224	0.23	236	0.16	244	0.13	276	0.10	316	0.10
20	344	0.10	356	0.23	4	0.33	4	0.43	4	0.50	16	0.60
21	16	0.73	16	0.77	16	0.84	16	0.84	24	0.87	24	0.87
22	24	0.90	24	0.87	24	0.80	24	0.77	36	0.73	24	0.67
23	36	0.67	24	0.63	36	0.57	36	0.53	24	0.50	36	0.43

Table 30. 20 may 1980. Current meter 2. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOURL ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	36	0.43	36	0.36	36	0.33	36	0.26	36	0.23	36	0.16
1	24	0.13	16	0.06	24	0.03	124	0.03	144	0.03	176	0.10
2	184	0.20	184	0.20	196	0.30	196	0.33	196	0.40	196	0.43
3	196	0.50	196	0.50	196	0.50	196	0.57	204	0.60	204	0.63
4	204	0.67	204	0.70	204	0.73	216	0.73	216	0.77	216	0.77
5	216	0.73	216	0.77	216	0.77	204	0.73	204	0.70	204	0.63
6	204	0.63	204	0.57	204	0.50	204	0.50	204	0.47	204	0.36
7	204	0.63	204	0.13	204	0.33	204	0.30	216	0.23	216	0.16
8	216	0.10	296	0.00	324	0.06	4	0.13	16	0.23	24	0.36
9	24	0.47	24	0.53	24	0.60	24	0.67	16	0.73	24	0.73
10	24	0.80	24	0.77	24	0.77	24	0.67	24	0.67	36	0.63
11	24	0.57	24	0.67	24	0.63	24	0.63	36	0.57	36	0.53
12	36	0.53	24	0.43	24	0.40	36	0.36	36	0.26	36	0.26
13	24	0.20	16	0.16	24	0.13	16	0.06	356	0.06	256	0.00
14	116	0.03	176	0.03	176	0.06	184	0.16	196	1.37	204	2.55
15	204	0.36	204	0.40	216	0.50	216	0.53	216	0.60	216	0.67
16	216	0.70	216	0.73	216	0.77	216	0.77	216	0.80	216	0.80
17	216	0.80	216	0.80	216	0.77	216	0.77	204	0.70	204	0.70
18	204	0.63	204	0.60	196	0.53	204	0.53	204	0.50	204	0.50
19	204	0.47	204	0.40	204	0.43	204	0.33	196	0.26	204	0.26
20	204	0.26	204	0.20	204	0.16	216	0.13	216	0.06	176	0.03
21	236	0.00	356	0.00	24	0.13	24	0.16	16	0.26	16	0.33
22	24	0.40	24	0.43	24	0.53	24	0.60	24	0.57	16	0.63
23	16	0.67	24	0.67	24	0.67	24	0.63	24	0.63	24	0.57

Table 31. 21 may 1980. Current meter 2. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOURL ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	24	0.50	24	0.33	24	0.36	16	0.36	24	0.40	36	0.33
1	56	0.30	16	0.26	24	0.23	36	0.16	24	0.13	264	0.06
2	256	0.00	136	0.00	204	0.06	196	0.06	204	0.16	204	0.20
3	204	0.26	216	0.30	216	0.40	204	0.47	216	0.50	216	0.53
4	204	0.63	204	0.63	204	0.67	216	0.67	204	0.73	216	0.70
5	204	0.73	204	0.73	204	0.73	204	0.67	204	0.67	204	0.63
6	204	0.60	204	0.63	204	0.60	204	0.60	204	0.57	204	0.57
7	204	0.53	204	0.53	204	0.50	204	0.43	204	0.40	204	0.43
8	204	0.36	204	0.30	204	0.30	204	0.23	224	0.00	216	0.36
9	176	0.10	176	0.06	16	0.03	36	0.03	16	0.20	24	0.20
10	24	0.30	24	0.36	24	0.43	24	0.50	24	0.53	24	0.60
11	24	0.80	24	0.50	24	0.67	24	0.60	24	0.67	36	0.63
12	36	0.63	36	0.67	24	0.63	36	0.53	36	0.50	36	0.53
13	36	0.47	36	0.40	44	0.36	36	0.26	44	0.26	56	0.23
14	44	0.20	44	0.13	76	0.06	76	0.06	96	0.03	164	0.03
15	176	0.13	216	0.13	196	0.20	204	0.23	204	0.33	204	0.40
16	204	0.43	204	0.47	204	0.50	204	0.50	204	0.67	204	0.63
17	204	0.67	204	0.67	204	0.70	204	0.70	204	0.73	204	0.70
18	204	0.63	196	0.63	204	0.67	204	0.60	196	0.60	204	0.57
19	204	0.57	204	0.53	196	0.57	204	0.50	204	0.47	204	0.43
20	204	0.43	196	0.43	204	0.43	216	0.30	204	0.33	204	0.33
21	216	0.30	204	0.30	204	0.20	216	0.20	204	0.16	204	0.10
22	196	0.06	336	0.00	336	0.03	24	0.06	44	0.13	24	0.20
23	24	0.23	36	0.30	24	0.36	24	0.43	24	0.47	24	0.50

Table 32. 22 may 1980. Current meter 2. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOURL ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	172	0.20	176	0.20	164	0.26	176	0.26	180	0.30	180	0.33
1	184	0.33	196	0.36	192	0.43	196	0.43	196	0.50	196	0.47
2	204	0.57	204	0.53	204	0.60	212	0.60	212	0.63	216	0.63
3	204	0.63	212	0.63	216	0.63	216	0.60	216	0.60	212	0.57
4	216	0.53	216	0.53	216	0.40	224	0.36	224	0.36	244	0.23
5	236	0.20	264	0.10	284	0.10	280	0.06	336	0.10	356	0.23
6	12	0.33	20	0.47	20	0.67	24	0.80	24	0.90	24	1.04
7	24	1.14	24	1.07	36	1.07	24	1.10	24	1.04	24	0.97
8	24	0.94	24	0.84	24	0.84	32	0.77	24	0.70	24	0.67
9	32	0.63	32	0.60	24	0.57	36	0.50	36	0.60	44	0.57
10	40	0.50	36	0.47	36	0.40	44	0.36	44	0.26	44	0.16
11	36	0.16	132	0.00	60	0.06	112	0.03	152	0.06	164	0.13
12	164	0.16	176	0.20	180	0.23	192	0.30	184	0.30	184	0.33
13	184	0.36	184	0.36	184	0.43	196	0.43	196	0.47	200	0.53
14	204	0.53	204	0.53	212	0.57	212	0.50	216	0.53	216	0.57
15	212	0.60	212	0.57	212	0.57	216	0.63	216	0.50	216	0.53
16	212	0.50	216	0.47	216	0.43	224	0.40	220	0.43	224	0.26
17	232	0.26	236	0.13	244	0.30	264	0.13	280	0.13	304	0.16
18	336	0.10	356	0.20	4	0.33	16	0.36	16	0.50	16	0.60
19	16	0.73	20	0.80	20	0.94	24	1.00	24	1.04	24	1.04
20	16	1.00	24	1.00	32	0.97	24	0.94	24	0.90	24	0.87
21	24	0.84	36	0.80	40	0.80	32	0.77	36	0.73	36	0.70
22	36	0.67	32	0.60	44	0.53	36	0.53	36	0.43	44	0.40
23	36	0.36	44	0.36	44	0.33	44	0.30	44	0.30	44	0.26

Table 33. 16 june 1980. Current meter 2. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOURL ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	40	0.40	44	0.33	40	0.26	44	0.20	56	0.10	44	0.06
1	64	0.03	72	0.06	104	0.03	140	0.06	156	0.03	164	0.13
2	184	0.16	180	0.20	196	0.23	196	0.23	204	0.30	204	0.30
3	204	0.30	200	0.33	204	0.40	204	0.40	204	0.36	204	0.36
4	204	0.36	200	0.36	204	0.33	216	0.33	216	0.30	212	0.33
5	200	0.26	244	0.26	220	0.20	224	0.20	164	0.10	264	0.06
6	316	0.06	312	0.03	340	0.10	16	0.20	20	0.33	24	0.47
7	24	0.60	16	0.73	24	0.77	24	0.87	36	0.87	24	0.90
8	20	0.94	24	0.90	24	0.90	24	0.84	24	0.80	24	0.80
9	24	0.84	24	0.80	24	0.70	24	0.70	24	0.84	36	0.73
10	40	0.73	36	0.70	36	0.70	36	0.60	24	0.53	32	0.43
11	40	0.43	40	0.47	40	0.50	36	0.26	44	0.30	40	0.26
12	32	0.20	24	0.13	32	0.10	32	0.10	20	0.03	104	0.00
13	124	0.06	156	0.03	160	0.10	180	0.16	180	0.16	180	0.16
14	192	0.23	196	0.26	200	0.33	200	0.33	200	0.33	200	0.36
15	204	0.33	200	0.40	200	0.36	200	0.40	196	0.40	200	0.40
16	204	0.43	204	0.40	204	0.40	204	0.36	216	0.30	236	0.30
17	224	0.33	240	0.30	232	0.26	236	0.23	256	0.23	256	0.16
18	264	0.13	296	0.10	320	0.13	324	0.13	344	0.16	356	0.23
19	12	0.33	12	0.50	16	0.40	16	0.63	24	0.77	24	0.84
20	24	0.94	24	1.17	24	0.84	24	1.07	24	0.97	24	1.04
21	24	1.00	24	1.00	24	1.00	24	0.97	24	0.84	36	0.77
22	36	0.84	36	0.77	36	0.73	36	0.53	36	0.50	32	0.43
23	36	0.40	40	0.40	36	0.36	40	0.40	44	0.30	32	0.23

Table 34. 17 june 1980. Current meter 2. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	20	0.70	24	0.77	20	0.77	20	0.90	24	0.97	24	1.04
1	24	1.10	32	1.10	32	1.10	24	0.97	32	0.94	36	0.97
2	32	0.87	36	0.97	24	0.87	24	0.80	32	0.80	32	0.87
3	32	0.84	32	0.80	40	0.73	36	0.73	40	0.73	36	0.73
4	40	0.67	44	0.57	40	0.57	40	0.57	40	0.50	44	0.43
5	40	0.40	44	0.40	36	0.36	44	0.23	56	0.30	44	0.26
6	44	0.20	36	0.13	24	0.10	224	0.03	196	0.00	184	0.03
7	176	0.03	156	0.06	156	0.06	196	0.06	200	0.13	204	0.16
8	196	0.20	196	0.20	204	0.16	204	0.23	204	0.25	204	0.25
9	204	0.23	204	0.23	204	0.20	212	0.20	204	0.20	212	0.16
10	200	0.13	204	0.13	204	0.10	216	0.03	216	0.03	336	0.03
11	324	0.03	0	0.06	16	0.10	24	0.23	24	0.36	24	0.40
12	24	0.50	24	0.60	32	0.70	32	0.80	32	0.90	32	0.97
13	32	0.94	32	0.94	32	0.97	20	0.97	24	0.90	24	0.94
14	20	0.84	24	0.84	20	0.87	24	0.67	16	0.73	32	0.70
15	24	0.70	24	0.67	24	0.70	24	0.70	36	0.67	36	0.67
16	32	0.63	32	0.57	36	0.57	36	0.47	32	0.40	32	0.33
17	44	0.33	44	0.33	44	0.23	24	0.16	44	0.13	36	0.10
18	4	0.00	76	0.03	156	0.03	164	0.00	176	0.06	180	0.13
19	196	0.13	184	0.16	196	0.20	204	0.26	204	0.26	204	0.30
20	204	0.33	204	0.36	204	0.33	212	0.36	212	0.40	212	0.43
21	212	0.36	212	0.47	212	0.40	212	0.40	212	0.36	220	0.40
22	220	0.40	220	0.36	216	0.33	216	0.30	216	0.26	216	0.23
23	224	0.20	244	0.16	284	0.03	296	0.13	316	0.06	344	0.10

Table 35. 23 june 1980. Current meter 2. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	0	0.20	12	0.20	12	0.36	16	0.43	16	0.57	16	0.67
1	24	0.70	24	0.77	24	0.73	24	0.73	24	0.77	24	0.80
2	24	0.77	16	0.87	24	0.94	24	0.87	36	0.87	24	0.87
3	24	0.80	32	0.70	36	0.73	36	0.67	36	0.63	24	0.63
4	36	0.60	36	0.57	32	0.47	40	0.36	52	0.30	40	0.30
5	32	0.36	44	0.36	52	0.40	52	0.40	52	0.50	56	0.43
6	56	0.43	56	0.33	64	0.30	64	0.23	80	0.23	92	0.16
7	80	0.16	96	0.10	116	0.10	124	0.10	136	0.10	140	0.10
8	136	0.13	140	0.16	140	0.16	140	0.16	160	0.23	156	0.20
9	172	0.23	172	0.26	192	0.30	192	0.30	196	0.30	196	0.30
10	192	0.33	204	0.33	196	0.33	200	0.33	204	0.33	216	0.33
11	196	0.26	204	0.26	212	0.26	216	0.16	196	0.13	156	0.06
12	140	0.00	316	0.03	356	0.06	4	0.16	16	0.26	24	0.33
13	32	0.33	36	0.47	32	0.63	32	0.70	40	0.77	36	0.84
14	40	0.84	44	0.87	32	0.84	24	0.80	24	0.80	24	0.77
15	24	0.80	24	0.77	32	0.67	32	0.67	36	0.57	24	0.63
16	24	0.60	36	0.67	24	0.60	16	0.70	24	0.70	24	0.67
17	24	0.63	24	0.57	16	0.57	20	0.43	24	0.47	36	0.43
18	36	0.33	44	0.30	36	0.30	44	0.20	64	0.13	64	0.13
19	64	0.10	244	0.06	172	0.00	164	0.03	196	0.16	204	0.20
20	204	0.30	216	0.26	224	0.36	216	0.33	220	0.33	220	0.33
21	216	0.47	216	0.47	216	0.50	216	0.47	204	0.53	204	0.53
22	204	0.53	204	0.53	204	0.53	204	0.50	204	0.47	204	0.47
23	204	0.40	204	0.43	204	0.36	204	0.33	220	0.33	204	0.30

Table 36. 24 june 1980. Current meter 2. Velocity and direction.

TIME	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
====	=====		=====		=====		=====		=====		=====	
-----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	76	0.23	76	0.16	84	0.16	104	0.13	144	0.16	156	0.16
1	176	0.23	184	0.30	196	0.30	196	0.36	204	0.43	204	0.47
2	204	0.50	204	0.00	16	1.20	204	0.60	204	0.63	204	0.60
3	204	0.63	204	0.63	196	0.63	204	0.60	204	0.63	204	0.63
4	204	0.67	204	0.63	216	0.67	204	0.67	216	0.70	216	0.67
5	216	0.63	216	0.67	216	0.67	216	0.67	216	0.60	216	0.60
6	216	0.50	216	0.47	216	0.40	216	0.33	216	0.26	216	0.20
7	216	0.10	224	0.00	356	0.06	4	0.16	16	0.33	16	0.47
8	24	0.57	16	0.67	16	0.77	24	0.87	24	0.90	24	0.90
9	24	0.94	24	0.94	24	0.90	24	0.90	24	0.84	24	0.84
10	24	0.87	36	0.80	24	0.73	24	0.70	36	0.60	36	0.57
11	24	0.50	36	0.50	36	0.47	36	0.43	36	0.43	56	0.36
12	64	0.33	64	0.26	76	0.26	84	0.23	104	0.16	124	0.16
13	136	0.16	156	0.20	164	0.26	176	0.33	176	0.36	184	0.33
14	196	0.33	196	0.40	204	0.47	196	0.50	204	0.57	204	0.57
15	204	0.67	204	0.67	204	0.67	204	0.70	204	0.70	204	0.63
16	204	0.67	216	0.63	204	0.67	216	0.70	216	0.67	216	0.67
17	216	0.70	216	0.63	216	0.70	216	0.63	216	0.60	216	0.60
18	216	0.57	216	0.50	216	0.53	216	0.47	216	0.40	224	0.36
19	224	0.33	224	0.26	224	0.16	244	0.13	284	0.06	324	0.10
20	356	0.16	4	0.26	16	0.40	16	0.53	16	0.60	16	0.73
21	16	0.84	16	0.84	16	0.94	24	0.94	24	0.90	24	0.94
22	24	0.94	24	0.87	36	0.84	24	0.77	24	0.73	24	0.67
23	36	0.63	24	0.57	36	0.57	24	0.47	32	0.80	40	0.43

Table 37. 19 may 1980. Current meter 3. Velocity and direction.

TIME	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
====	=====		=====		=====		=====		=====		=====	
-----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	52	0.50	52	0.47	52	0.47	56	0.40	60	0.36	64	0.33
1	76	0.26	96	0.23	104	0.20	136	0.16	156	0.20	156	0.23
2	164	0.26	176	0.33	184	0.33	184	0.43	184	0.47	204	0.50
3	204	0.57	204	0.60	204	0.63	204	0.60	204	0.63	204	0.67
4	204	0.60	204	0.67	204	0.63	204	0.67	204	0.63	204	0.60
5	204	0.63	204	0.67	204	0.67	204	0.67	204	0.67	204	0.60
6	204	0.60	204	0.57	204	0.53	204	0.47	204	0.43	204	0.47
7	204	0.36	204	0.33	204	0.26	224	0.20	236	0.10	264	0.03
8	344	0.03	4	0.13	16	0.26	20	0.40	20	0.50	20	0.57
9	24	0.70	24	0.84	24	0.87	24	0.90	24	0.90	24	0.87
10	24	0.90	24	0.87	24	0.80	24	0.84	24	0.73	24	0.70
11	24	0.70	32	0.67	36	0.67	36	0.67	36	0.57	36	0.53
12	36	0.50	44	0.43	44	0.43	44	0.40	44	0.33	44	0.36
13	44	0.33	44	0.26	56	0.23	56	0.16	64	0.10	84	0.06
14	136	0.03	156	0.06	164	0.13	176	0.20	176	0.23	196	0.26
15	196	0.33	196	0.33	196	0.43	196	0.47	204	0.53	204	0.53
16	204	0.60	204	0.63	204	0.63	204	0.67	204	0.60	204	0.63
17	204	0.63	204	0.60	204	0.63	204	0.40	204	0.80	204	0.57
18	204	0.57	204	0.50	204	0.57	204	0.50	204	0.50	216	0.47
19	216	0.43	220	0.36	224	0.36	224	0.33	236	0.30	240	0.20
20	244	0.20	256	0.10	276	0.10	316	0.10	344	0.20	356	0.26
21	4	0.36	16	0.50	16	0.60	20	0.67	20	0.73	20	0.84
22	20	0.87	20	0.87	20	0.90	20	0.87	20	0.84	24	0.80
23	32	0.73	32	0.73	32	0.73	36	0.77	36	0.77	36	0.73

Table 38. 20 may 1980. Current meter 3. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOOR ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	24	0.70	24	0.67	24	0.60	24	0.53	24	0.50	24	0.43
1	24	0.36	24	0.30	24	0.26	16	0.23	16	0.13	16	0.10
2	356	0.06	296	0.00	156	0.03	184	0.03	196	0.10	196	0.13
3	204	0.16	204	0.26	204	0.30	204	0.33	204	0.40	204	0.43
4	204	0.53	204	0.53	204	0.60	204	0.67	196	0.70	196	0.70
5	204	0.70	204	0.70	204	0.67	204	0.73	204	0.70	204	0.67
6	204	0.67	204	0.60	204	0.60	204	0.57	204	0.57	204	0.57
7	204	0.47	204	0.43	204	0.40	204	0.40	204	0.33	204	0.33
8	204	0.23	184	0.16	196	0.06	156	0.03	44	0.03	24	0.10
9	24	0.20	36	0.26	24	0.36	24	0.47	24	0.53	24	0.60
10	24	0.70	24	0.67	24	0.73	24	0.77	24	0.73	24	0.77
11	24	0.77	24	0.77	24	0.73	24	0.73	24	0.70	36	0.67
12	0	0.00	36	0.60	36	0.60	36	0.53	36	0.47	36	0.43
13	36	0.40	36	0.33	24	0.30	36	0.30	44	0.23	44	0.20
14	44	0.13	56	0.10	76	0.06	124	0.06	156	0.06	184	0.10
15	184	0.13	196	0.20	204	0.23	204	0.30	204	0.40	204	0.47
16	204	0.50	204	0.53	204	0.60	204	0.67	204	0.67	204	0.67
17	204	0.67	204	0.67	204	0.70	204	0.70	216	0.70	204	0.67
18	204	0.70	204	0.70	204	0.67	204	0.63	204	0.60	204	0.63
19	204	0.53	204	0.47	204	0.47	204	0.50	204	0.43	204	0.47
20	196	0.40	204	0.40	204	0.40	216	0.30	204	0.23	204	0.16
21	216	0.16	196	0.10	184	0.00	124	0.00	16	0.06	16	0.13
22	24	0.20	24	0.26	24	0.33	24	0.40	24	0.47	24	0.50
23	24	0.57	24	0.63	24	0.63	24	0.63	24	0.63	24	0.60

Table 39. 21 may 1980. Current meter 3. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOOR ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	24	0.60	24	0.63	24	0.53	24	0.53	24	0.47	24	0.47
1	24	0.40	24	0.40	24	0.36	24	0.33	24	0.26	36	0.23
2	44	0.16	44	0.16	44	0.06	20	0.03	136	0.03	164	0.06
3	184	0.10	184	0.13	196	0.16	204	0.23	204	0.30	204	0.33
4	204	0.36	216	0.47	204	0.47	204	0.50	196	0.53	204	0.53
5	204	0.60	204	0.57	216	0.60	204	0.63	204	0.60	204	0.67
6	216	0.63	204	0.63	204	0.63	204	0.63	204	0.60	204	0.60
7	204	0.60	204	0.63	216	0.63	204	0.60	216	0.60	216	0.57
8	216	0.50	216	0.47	216	0.40	204	0.40	216	0.36	216	0.30
9	224	0.26	224	0.23	224	0.16	236	0.06	236	0.03	284	0.03
10	356	0.06	356	0.13	16	0.20	16	0.26	24	0.36	24	0.40
11	24	0.50	16	0.53	16	0.57	16	0.60	24	0.63	24	0.63
12	24	0.63	24	0.63	24	0.63	24	0.67	24	0.60	24	0.60
13	24	0.57	24	0.57	36	0.53	24	0.50	24	0.50	36	0.43
14	24	0.40	36	0.33	36	0.30	36	0.26	24	0.20	44	0.16
15	44	0.10	76	0.03	124	0.06	164	0.06	196	0.06	196	0.00
16	204	0.33	216	0.23	216	0.30	204	0.33	216	0.40	204	0.47
17	204	0.47	204	0.57	204	0.60	204	0.60	204	0.67	216	0.67
18	216	0.63	204	0.67	216	0.70	216	0.70	216	0.70	204	0.70
19	204	0.70	216	0.67	216	0.67	204	0.67	204	0.60	204	0.60
20	204	0.67	204	0.57	204	0.57	216	0.57	204	0.53	216	0.50
21	204	0.47	216	0.36	204	0.33	216	0.33	204	0.30	216	0.26
22	224	0.20	216	0.13	216	0.06	236	0.06	84	0.03	4	0.03
23	24	0.13	24	0.16	24	0.20	24	0.26	24	0.30	24	0.30

Table 40. 22 may 1980. Current meter 3. Velocity and direction.

TIME	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
====	=====		=====		=====		=====		=====		=====	
HOUR	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
----	----	----	----	----	----	----	----	----	----	----	----	----
0	192	0.06	204	0.13	204	0.20	212	0.23	212	0.23	212	0.33
1	216	0.36	216	0.36	216	0.47	216	0.47	216	0.50	216	0.50
2	216	0.57	216	0.57	216	0.60	212	0.57	212	0.57	212	0.63
3	212	0.63	216	0.63	216	0.67	216	0.63	216	0.57	216	0.60
4	216	0.57	220	0.60	216	0.60	216	0.53	216	0.50	216	0.43
5	216	0.43	216	0.33	216	0.33	232	0.26	240	0.16	264	0.13
6	316	0.03	356	0.13	16	0.20	16	0.36	20	0.60	20	0.73
7	24	0.80	24	0.90	24	1.04	24	1.04	24	1.04	24	1.10
8	32	1.07	24	1.07	24	1.07	24	1.00	32	0.90	24	0.87
9	24	0.84	24	0.77	24	0.77	24	0.73	32	0.63	24	0.63
10	24	0.67	24	0.57	24	0.47	36	0.47	36	0.53	36	0.50
11	36	0.50	36	0.43	40	0.36	44	0.30	44	0.30	56	0.20
12	52	0.10	44	0.13	56	0.10	76	0.03	112	0.03	156	0.06
13	184	0.06	180	0.10	216	0.10	220	0.20	220	0.23	220	0.30
14	216	0.33	216	0.40	220	0.47	220	0.53	220	0.50	216	0.53
15	216	0.53	216	0.57	216	0.57	216	0.57	216	0.57	216	0.60
16	216	0.53	216	0.57	220	0.57	220	0.50	216	0.50	220	0.47
17	224	0.43	224	0.47	216	0.36	224	0.36	224	0.30	224	0.26
18	252	0.20	256	0.13	296	0.10	340	0.10	356	0.13	12	0.26
19	16	0.43	16	0.53	20	0.67	24	0.77	32	0.90	24	1.00
20	20	1.04	24	1.00	24	1.04	24	1.04	24	1.00	24	1.04
21	24	1.04	24	0.97	24	0.97	32	0.87	24	0.87	24	0.84
22	24	0.77	20	0.70	24	0.63	16	0.60	24	0.50	16	0.53
23	16	0.47	16	0.40	16	0.33	12	0.30	16	0.20	12	0.26

Table 41. 16 june 1980. Current meter 3. Velocity and direction.

TIME	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
====	=====		=====		=====		=====		=====		=====	
HOUR	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
----	----	----	----	----	----	----	----	----	----	----	----	----
0	0	0.16	336	0.10	312	0.10	296	0.03	272	0.06	264	0.06
1	244	0.13	236	0.10	224	0.20	224	0.20	224	0.23	236	0.26
2	236	0.20	224	0.43	236	0.33	224	0.43	224	0.40	224	0.43
3	224	0.47	224	0.50	220	0.50	220	0.53	220	0.50	216	0.57
4	216	0.47	216	0.47	212	0.47	216	0.47	216	0.40	224	0.47
5	220	0.43	220	0.40	216	0.33	216	0.33	216	0.30	224	0.26
6	220	0.20	264	0.13	316	0.06	344	0.06	344	0.06	16	0.20
7	24	0.33	24	0.43	20	0.53	20	0.67	20	0.77	20	0.94
8	20	0.94	20	0.97	20	0.94	20	1.00	20	0.94	20	0.90
9	24	0.84	24	0.84	16	0.84	16	0.90	24	0.90	16	0.80
10	16	0.70	24	0.67	24	0.70	16	0.63	16	0.63	16	0.60
11	16	0.57	12	0.50	16	0.50	4	0.43	16	0.36	12	0.30
12	20	0.30	20	0.20	16	0.13	356	0.16	4	0.16	324	0.13
13	324	0.06	284	0.03	304	0.06	224	0.10	256	0.10	244	0.20
14	236	0.23	224	0.23	224	0.30	236	0.33	236	0.30	224	0.36
15	224	0.40	224	0.36	224	0.43	216	0.47	224	0.50	224	0.50
16	216	0.60	220	0.60	220	0.57	220	0.57	224	0.53	224	0.50
17	220	0.50	220	0.47	220	0.43	224	0.43	232	0.43	232	0.36
18	232	0.36	236	0.30	236	0.30	252	0.20	264	0.20	296	0.13
19	304	0.13	336	0.13	344	0.20	356	0.33	4	0.43	12	0.53
20	16	0.70	16	0.80	16	0.94	16	1.07	20	1.14	20	1.17
21	20	1.20	24	1.17	24	1.14	32	0.84	24	1.31	24	1.10
22	24	1.10	24	1.07	24	0.94	24	0.90	20	0.70	24	0.77
23	24	0.67	20	0.60	20	0.60	24	0.50	20	0.40	20	0.40

Table 42. 17 june 1980. Current meter 3. Velocity and direction.

TIME ====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOUR ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	20	0.60	20	0.67	16	0.73	16	0.84	16	0.90	20	0.97
1	24	1.04	24	1.04	24	1.10	24	1.14	24	1.10	24	1.07
2	24	1.00	32	0.97	32	0.90	32	0.87	24	0.87	32	0.87
3	24	0.77	32	0.67	32	0.67	24	0.57	36	0.53	32	0.57
4	24	0.50	32	0.40	36	0.36	36	0.40	44	0.43	44	0.50
5	44	0.53	56	0.50	56	0.47	56	0.47	64	0.40	64	0.36
6	76	0.30	76	0.20	96	0.20	92	0.13	100	0.06	116	0.06
7	120	0.10	144	0.10	136	0.10	144	0.06	156	0.16	160	0.16
8	160	0.20	164	0.23	172	0.23	164	0.26	176	0.23	180	0.26
9	180	0.26	184	0.26	204	0.26	216	0.26	204	0.26	224	0.30
10	224	0.36	224	0.26	232	0.26	232	0.23	236	0.20	244	0.16
11	280	0.13	280	0.16	316	0.06	352	0.10	4	0.16	20	0.20
12	16	0.33	24	0.36	24	0.57	36	0.63	36	0.67	24	0.87
13	32	0.97	32	1.00	24	1.10	24	1.14	24	1.10	24	1.10
14	24	1.10	24	1.14	24	1.10	24	1.07	24	1.00	24	1.00
15	24	0.90	32	0.84	24	0.80	32	0.77	32	0.67	24	0.67
16	32	0.57	32	0.50	32	0.47	24	0.40	24	0.33	24	0.30
17	16	0.23	16	0.23	16	0.16	36	0.16	16	0.13	4	0.10
18	12	0.06	0	0.03	12	0.00	112	0.03	140	0.00	192	0.06
19	204	0.10	204	0.13	216	0.13	204	0.23	216	0.23	216	0.23
20	212	0.23	216	0.30	224	0.30	212	0.30	216	0.36	216	0.36
21	220	0.40	216	0.36	224	0.36	232	0.30	224	0.33	220	0.33
22	220	0.33	224	0.33	216	0.26	216	0.23	216	0.16	224	0.16
23	236	0.13	244	0.10	264	0.10	284	0.06	296	0.06	336	0.06

Table 43. 23 june 1980. Current meter 3. Velocity and direction.

TIME ====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOUR ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	296	0.13	356	0.16	12	0.30	16	0.36	16	0.47	16	0.53
1	20	0.67	20	0.80	20	0.90	24	0.97	24	1.00	24	1.07
2	24	1.14	32	1.14	32	1.07	32	1.10	32	1.00	32	1.04
3	32	1.00	32	1.04	24	0.90	24	0.94	24	0.84	24	0.80
4	24	0.73	24	0.70	20	0.60	24	0.60	24	0.57	24	0.47
5	24	0.47	24	0.47	16	0.47	16	0.33	16	0.33	12	0.30
6	356	0.20	344	0.13	344	0.06	344	0.10	344	0.06	304	0.06
7	304	0.06	296	0.13	284	0.06	264	0.10	276	0.13	256	0.13
8	244	0.16	244	0.20	236	0.20	244	0.23	252	0.26	252	0.23
9	236	0.30	224	0.33	236	0.36	236	0.33	224	0.33	236	0.33
10	236	0.36	224	0.36	224	0.36	224	0.40	224	0.40	224	0.40
11	224	0.36	224	0.36	236	0.33	224	0.30	224	0.26	224	0.23
12	236	0.16	240	0.10	276	0.10	212	0.06	340	0.10	0	0.13
13	4	0.20	16	0.36	16	0.53	16	0.57	24	0.70	24	0.73
14	24	0.84	24	0.90	24	0.97	24	1.00	32	1.00	36	0.94
15	32	0.80	36	0.84	32	0.87	24	0.94	24	0.90	24	0.97
16	24	0.97	24	0.97	32	0.97	36	1.00	32	1.00	32	0.97
17	24	0.94	16	0.90	32	0.84	24	0.84	32	0.80	20	0.77
18	20	0.63	16	0.53	16	0.50	12	0.43	16	0.40	4	0.33
19	356	0.23	344	0.20	340	0.20	344	0.16	4	0.10	24	0.10
20	0	0.06	156	0.03	200	0.00	216	0.06	232	0.16	216	0.20
21	216	0.23	220	0.23	216	0.30	216	0.30	220	0.30	224	0.36
22	232	0.33	224	0.36	224	0.36	224	0.43	232	0.43	232	0.36
23	224	0.43	224	0.43	236	0.40	236	0.36	224	0.43	224	0.43

Table 44. 24 june 1980. Current meter 3. Velocity and direction.

TIME	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
HOUR	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	212	0.16	212	0.20	216	0.26	216	0.33	212	0.40	216	0.43
1	212	0.50	212	0.53	212	0.57	216	0.60	212	0.63	204	0.63
2	212	0.67	204	0.67	204	0.67	204	0.63	204	0.63	204	0.60
3	204	0.60	204	0.60	204	0.63	204	0.50	204	0.53	200	0.53
4	204	0.50	204	0.53	204	0.50	204	0.50	204	0.43	204	0.43
5	204	0.40	200	0.36	196	0.30	204	0.26	196	0.43	200	0.13
6	192	0.10	100	0.00	40	0.06	32	0.20	32	0.30	24	0.43
7	24	0.57	24	0.73	24	0.77	32	0.84	24	0.84	32	0.87
8	24	0.90	24	0.90	24	0.84	24	0.80	24	0.77	24	0.77
9	24	0.70	24	0.67	24	0.60	32	0.60	32	0.53	24	0.53
10	32	0.50	32	0.50	32	0.40	32	0.40	36	0.33	36	0.33
11	32	0.26	36	0.26	40	0.20	36	0.16	40	0.10	60	0.06
12	120	0.00	204	0.06	192	0.06	204	0.16	204	0.20	212	0.30
13	204	0.33	212	0.40	212	0.43	212	0.50	212	0.50	212	0.57
14	212	0.57	212	0.57	212	0.57	212	0.63	212	0.60	212	0.63
15	212	0.63	204	0.63	204	0.63	200	0.60	204	0.57	204	0.57
16	204	0.57	200	0.53	204	0.50	204	0.50	204	0.50	204	0.47
17	204	0.43	204	0.43	204	0.36	204	0.36	204	0.30	204	0.26
18	204	0.20	212	0.13	200	0.06	172	0.03	44	0.03	36	0.13
19	32	0.20	32	0.30	24	0.40	24	0.53	24	0.67	32	0.70
20	32	0.77	32	0.80	24	0.80	32	0.84	32	0.80	32	0.77
21	24	0.77	24	0.73	24	0.70	24	0.63	24	0.63	24	0.63
22	24	0.57	20	0.43	24	0.47	32	0.47	24	0.43	32	0.36
23	24	0.30	20	0.23	32	0.23	32	0.20	44	0.16	44	0.10

Table 45. 19 may 1980. Current meter 4. Velocity and direction.

TIME	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
HOUR	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	64	0.06	92	0.00	176	0.03	196	0.06	200	0.10	204	0.16
1	212	0.20	212	0.26	212	0.30	212	0.36	204	0.40	216	0.47
2	212	0.50	204	0.57	212	0.57	212	0.57	204	0.60	204	0.63
3	204	0.60	204	0.63	204	0.60	204	0.60	204	0.63	204	0.60
4	204	0.57	204	0.60	204	0.57	204	0.57	204	0.57	204	0.53
5	204	0.50	204	0.47	204	0.47	204	0.43	204	0.40	204	0.36
6	204	0.33	204	0.26	204	0.23	204	0.16	200	0.10	136	0.03
7	52	0.06	40	0.13	32	0.26	32	0.36	32	0.50	32	0.67
8	24	0.70	32	0.77	32	0.80	24	0.84	24	0.80	24	0.87
9	24	0.80	24	0.84	24	0.77	24	0.73	24	0.73	24	0.67
10	24	0.67	24	0.60	24	0.57	32	0.57	32	0.53	32	0.50
11	32	0.47	32	0.40	36	0.36	36	0.33	36	0.30	36	0.23
12	40	0.23	44	0.16	52	0.10	72	0.10	96	0.06	144	0.03
13	156	0.03	192	0.10	200	0.16	200	0.20	200	0.26	204	0.30
14	204	0.33	204	0.40	204	0.47	204	0.50	212	0.53	212	0.57
15	204	0.57	212	0.57	204	0.57	204	0.60	204	0.57	204	0.57
16	204	0.53	200	0.53	204	0.53	204	0.50	204	0.53	204	0.50
17	204	0.53	204	0.53	204	0.47	200	0.47	204	0.40	204	0.40
18	204	0.36	204	0.33	204	0.33	212	0.26	212	0.23	212	0.16
19	212	0.10	212	0.06	96	0.03	36	0.03	24	0.13	20	0.23
20	24	0.30	24	0.43	24	0.53	24	0.60	24	0.67	24	0.73
21	32	0.73	24	0.77	24	0.73	24	0.73	24	0.77	24	0.73
22	20	0.67	24	0.70	24	0.63	32	0.67	32	0.57	20	0.53
23	24	0.53	24	0.43	24	0.40	32	0.36	32	0.33	24	0.33

Table 46. 20 may 1980. Current meter 4. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	32	0.26	36	0.23	40	0.16	40	0.16	92	0.06	80	0.06
1	152	0.03	172	0.06	176	0.06	200	0.10	192	0.16	200	0.20
2	204	0.26	204	0.30	204	0.36	204	0.40	204	0.43	204	0.47
3	212	0.57	204	0.60	204	0.60	204	0.63	204	0.63	212	0.60
4	204	0.63	204	0.63	204	0.60	200	0.57	204	0.53	204	0.57
5	204	0.57	204	0.57	204	0.53	204	0.53	204	0.50	212	0.47
6	200	0.50	204	0.47	204	0.43	204	0.40	204	0.33	200	0.33
7	200	0.26	200	0.23	204	0.16	184	0.10	136	0.06	52	0.03
8	60	0.06	32	0.20	32	0.26	32	0.33	32	0.47	24	0.53
9	24	0.67	24	0.67	32	0.70	24	0.73	24	0.70	24	0.73
10	24	0.67	24	0.70	20	0.67	24	0.63	24	0.57	24	0.60
11	24	0.57	24	0.53	32	0.47	24	0.47	24	0.43	24	0.36
12	24	0.33	32	0.30	40	0.26	36	0.23	36	0.20	36	0.16
13	36	0.10	92	0.06	112	0.06	200	0.03	216	0.06	224	0.10
14	216	0.16	212	0.23	212	0.26	216	0.40	212	0.43	212	0.47
15	216	0.53	216	0.57	212	0.57	204	0.57	216	0.63	204	0.60
16	204	0.67	204	0.60	204	0.63	204	0.60	204	0.60	204	0.63
17	204	0.60	204	0.57	204	0.53	204	0.60	204	0.57	204	0.60
18	204	0.57	204	0.53	204	0.50	212	0.50	212	0.40	212	0.36
19	212	0.33	204	0.33	204	0.30	220	0.23	216	0.20	212	0.16
20	204	0.13	200	0.06	224	0.03	224	0.03	356	0.03	4	0.10
21	12	0.20	16	0.26	24	2.68	20	1.44	20	0.50	20	0.60
22	20	0.60	24	0.63	24	0.63	20	0.57	20	0.57	24	0.50
23	20	0.53	24	0.53	24	0.50	20	0.47	16	0.47	24	0.43

Table 47. 21 may 1980. Current meter 4. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	20	0.40	24	0.36	40	0.33	24	0.30	24	0.23	16	0.20
1	36	0.13	4	0.06	344	0.03	256	0.03	224	0.00	232	0.03
2	236	0.06	216	0.13	216	0.16	212	0.23	212	0.30	216	0.33
3	212	0.40	212	0.40	220	0.47	204	0.47	212	0.50	212	0.53
4	216	0.57	216	0.60	212	0.53	212	0.60	212	0.60	212	0.60
5	212	0.60	212	0.60	204	0.57	204	0.57	204	0.57	204	0.57
6	204	0.50	212	0.53	216	0.50	216	0.47	212	0.47	204	0.43
7	204	0.40	216	0.36	216	0.33	204	0.33	204	0.26	212	0.20
8	216	0.20	216	0.16	220	0.06	204	0.06	216	0.03	76	0.03
9	56	0.03	24	0.13	20	0.23	24	0.26	24	0.36	24	0.47
10	24	0.53	20	0.60	24	0.60	20	0.67	24	0.63	24	0.67
11	20	0.63	20	0.60	24	0.60	24	0.57	24	0.53	24	0.50
12	20	0.50	36	0.47	24	0.43	24	0.40	20	0.36	24	0.33
13	32	0.26	24	0.26	36	0.23	32	0.16	32	0.13	20	0.06
14	44	0.03	272	0.00	252	0.03	244	0.06	224	0.10	220	0.16
15	216	0.23	224	0.30	216	0.36	220	0.43	216	0.47	212	0.53
16	212	0.60	212	0.57	212	0.60	216	0.63	216	0.67	204	0.63
17	204	0.67	212	0.63	204	0.63	216	0.63	216	0.60	204	0.60
18	204	0.60	212	0.60	212	0.53	212	0.53	212	0.53	212	0.53
19	204	0.50	212	0.47	204	0.47	204	0.40	204	0.40	216	0.33
20	200	0.36	204	0.30	200	0.26	196	0.23	204	0.20	200	0.16
21	184	0.16	220	0.10	216	0.03	184	0.03	144	0.03	56	0.06
22	64	0.06	36	0.16	40	0.23	36	0.30	32	0.36	24	0.43
23	32	0.43	24	0.53	36	0.50	24	0.50	24	0.50	24	0.60

Table 48. 22 may 1980. Current meter 4. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOUR ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	204	0.10	212	0.10	212	0.20	216	0.23	216	0.30	216	0.36
1	212	0.40	212	0.43	216	0.50	216	0.50	216	0.60	212	0.60
2	212	0.60	212	0.60	212	0.60	216	0.60	216	0.60	212	0.60
3	204	0.60	212	0.60	212	0.57	212	0.53	212	0.57	212	0.53
4	212	0.53	212	0.47	212	0.50	212	0.43	212	0.40	212	0.36
5	212	0.30	216	0.30	216	0.23	216	0.20	232	0.10	324	0.06
6	16	0.03	24	0.13	24	0.23	24	0.40	32	0.57	24	0.73
7	24	0.87	24	0.94	24	0.94	24	0.97	24	1.00	24	1.04
8	24	1.00	32	0.94	24	0.94	36	0.87	24	0.87	24	0.80
9	36	0.73	24	0.73	24	0.67	32	0.67	32	0.57	32	0.57
10	24	0.50	32	0.50	24	0.40	24	0.33	24	0.30	36	0.33
11	32	0.26	32	0.23	16	0.13	16	0.13	4	0.10	344	0.03
12	304	0.00	236	0.06	244	0.03	232	0.10	224	0.16	220	0.20
13	220	0.23	220	0.30	220	0.33	220	0.40	216	0.43	216	0.47
14	212	0.43	216	0.50	216	0.53	216	0.53	204	0.53	216	0.57
15	212	0.53	204	0.53	204	0.50	204	0.53	212	0.53	216	0.50
16	216	0.50	216	0.50	204	0.47	204	0.47	204	0.43	212	0.43
17	204	0.36	204	0.36	196	0.30	212	0.26	204	0.20	204	0.16
18	184	0.13	144	0.06	116	0.03	32	0.10	32	0.16	24	0.30
19	24	0.36	32	0.53	32	0.67	32	0.84	24	0.90	36	0.97
20	32	1.00	24	1.00	24	0.97	24	0.94	24	0.94	24	0.87
21	16	0.90	24	0.80	24	0.80	24	0.77	24	0.73	24	0.63
22	24	0.67	32	0.57	32	0.47	24	0.47	24	0.36	24	0.30
23	24	0.30	24	0.30	16	0.30	24	0.13	16	0.10	20	0.10

Table 49. 16 june 1980. Current meter 4. Velocity and direction.

TIME =====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====	
HOUR ----	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	36	0.03	216	0.03	204	0.03	212	0.03	216	0.06	224	0.13
1	224	0.13	224	0.16	216	0.23	220	0.26	216	0.36	204	0.36
2	216	0.43	224	0.40	216	0.03	216	0.40	224	0.43	216	0.47
3	216	0.43	216	0.47	216	0.47	204	0.43	216	0.47	204	0.43
4	204	0.43	212	0.43	204	0.43	216	0.43	216	0.43	204	0.36
5	204	0.36	200	0.36	216	0.30	216	0.23	196	0.23	216	0.16
6	224	0.13	284	0.03	304	0.03	344	0.03	0	0.06	0	0.20
7	20	0.33	36	0.47	24	0.60	24	0.73	24	0.77	24	0.90
8	24	0.94	24	0.97	24	0.97	24	0.97	24	0.94	24	0.94
9	24	0.94	24	0.84	24	0.77	32	0.73	20	0.73	24	0.67
10	24	0.60	24	0.60	24	0.53	24	0.43	24	0.53	24	0.47
11	24	0.36	24	0.40	24	0.30	24	0.30	24	0.26	24	0.23
12	24	0.23	24	0.16	24	0.13	4	0.06	12	0.10	340	0.03
13	36	0.03	304	0.03	224	0.03	224	0.13	212	0.16	216	0.20
14	204	0.26	216	0.30	216	0.36	216	0.36	216	0.43	216	0.47
15	216	0.47	216	0.47	216	0.50	204	0.53	216	0.50	224	0.53
16	216	0.53	220	0.50	220	0.50	220	0.47	216	0.47	216	0.47
17	216	0.40	204	0.36	212	0.33	216	0.30	216	0.30	224	0.26
18	224	0.20	216	0.20	236	0.10	304	0.06	336	0.06	336	0.03
19	4	0.06	4	0.13	20	0.23	24	0.36	24	0.47	24	0.63
20	24	0.70	32	0.84	32	0.94	24	0.94	24	0.97	24	1.04
21	24	1.00	24	0.94	24	0.87	24	0.84	24	0.80	24	0.80
22	32	0.70	16	0.67	24	0.70	16	0.63	16	0.47	24	0.50
23	16	0.57	24	0.47	24	0.36	16	0.36	24	0.30	24	0.23

Table 50. 17 june 1980. Current meter 4. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	24	0.40	32	0.50	24	0.60	24	0.67	20	0.67	24	0.73
1	20	0.73	20	0.73	36	0.73	24	0.73	24	0.73	36	0.67
2	32	0.63	32	0.63	32	0.60	24	0.63	24	0.63	24	0.63
3	20	0.57	24	0.47	20	0.47	20	0.36	4	0.36	20	0.33
4	24	0.36	16	0.33	16	0.33	4	0.33	20	0.23	12	0.26
5	20	0.23	20	0.20	20	0.20	12	0.13	4	0.13	12	0.16
6	36	0.16	32	0.06	36	0.06	84	0.03	124	0.03	124	0.00
7	184	0.03	176	0.06	216	0.03	216	0.10	204	0.16	224	0.16
8	216	0.26	216	0.26	216	0.30	212	0.30	204	0.33	220	0.30
9	216	0.33	216	0.33	216	0.30	220	0.33	212	0.33	220	0.30
10	216	0.30	216	0.23	216	0.23	216	0.20	212	0.13	216	0.13
11	256	0.06	324	0.03	344	0.03	344	0.06	4	0.10	16	0.16
12	16	0.26	24	0.36	16	0.47	24	0.57	24	0.60	32	0.70
13	24	0.73	32	0.77	24	0.77	20	0.77	16	0.73	24	0.77
14	24	0.80	24	0.73	32	0.77	24	0.77	24	0.73	20	0.67
15	24	0.60	36	0.53	20	0.57	24	0.53	16	0.53	16	0.50
16	20	0.47	24	0.40	24	0.43	24	0.40	24	0.40	20	0.33
17	24	0.30	36	0.30	20	0.23	24	0.20	32	0.16	20	0.10
18	12	0.10	356	0.03	40	0.06	284	0.03	184	0.00	196	0.06
19	204	0.13	204	0.13	204	0.16	196	0.16	200	0.23	200	0.26
20	196	0.26	204	0.33	196	0.33	204	0.36	204	0.40	204	0.40
21	204	0.43	204	0.47	212	0.47	216	0.47	212	0.47	216	0.43
22	220	0.40	212	0.36	212	0.40	204	0.40	204	0.36	212	0.30
23	212	0.30	212	0.23	216	0.16	216	0.13	164	0.06	220	0.03

Table 51. 23 june 1980. Current meter 4. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	324	0.03	356	0.06	12	0.13	24	0.16	20	0.30	24	0.36
1	24	0.47	20	0.57	16	0.67	24	0.77	24	0.84	24	0.84
2	24	0.84	32	0.77	24	0.73	24	0.70	32	0.84	24	0.80
3	24	0.73	32	0.77	24	0.73	20	0.70	24	0.63	16	0.53
4	20	0.60	24	0.60	24	0.53	20	0.47	32	0.40	20	0.36
5	4	0.30	352	0.26	4	0.20	336	0.16	344	0.10	344	0.10
6	16	0.13	340	0.10	340	0.06	344	0.06	352	0.06	320	0.03
7	264	0.10	256	0.10	236	0.13	240	0.16	232	0.16	240	0.20
8	224	0.26	232	0.26	236	0.30	236	0.36	232	0.36	224	0.43
9	224	0.43	220	0.47	224	0.47	220	0.50	216	0.50	216	0.50
10	216	0.50	216	0.50	216	0.50	216	0.50	216	0.47	216	0.47
11	212	0.43	204	0.40	216	0.36	216	0.33	220	0.30	216	0.26
12	196	0.20	220	0.16	224	0.06	312	0.00	344	0.06	0	0.06
13	20	0.13	16	0.23	20	0.33	16	0.43	20	0.53	24	0.63
14	32	0.67	24	0.80	24	0.80	20	0.80	20	0.80	24	0.80
15	24	0.77	20	0.80	32	0.77	32	0.80	24	0.77	32	0.77
16	36	0.67	36	0.70	36	0.60	36	0.60	24	0.47	36	0.50
17	24	0.43	24	0.40	36	0.36	24	0.33	36	0.33	24	0.30
18	36	0.26	36	0.23	44	0.16	36	0.16	44	0.10	44	0.10
19	60	0.06	84	0.03	124	0.00	164	0.06	184	0.06	196	0.13
20	200	0.16	204	0.23	212	0.30	220	0.30	220	0.36	216	0.40
21	216	0.43	212	0.47	204	0.50	212	0.50	212	0.53	216	0.53
22	204	0.53	200	0.53	204	0.47	196	0.43	204	0.47	212	0.43
23	204	0.47	196	0.47	200	0.36	204	0.36	204	0.33	216	0.33

Table 52. 24 june 1980. Current meter 4. Velocity and direction.

TIME ====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====		
	HOUR ----	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---
0		84	0.13	92	0.13	96	0.10	120	0.03	164	0.06	184	0.13
1		200	0.13	216	0.26	220	0.30	220	0.36	224	0.40	224	0.43
2		236	0.50	236	0.50	232	0.53	232	0.60	232	0.60	224	0.60
3		232	0.63	232	0.67	232	0.63	224	0.63	232	0.67	236	0.67
4		236	0.70	236	0.63	236	0.63	236	0.67	236	0.63	236	0.57
5		236	0.60	236	0.57	236	0.50	236	0.57	236	0.43	236	0.40
6		236	0.30	232	0.16	232	0.13	112	0.03	56	0.03	56	0.20
7		60	0.30	56	0.47	56	0.60	56	0.67	56	0.73	52	0.80
8		52	0.87	56	0.87	52	0.87	56	0.87	56	0.87	52	0.80
9		56	0.84	60	0.77	56	0.77	60	0.67	60	0.73	56	0.63
10		56	0.60	60	0.53	52	0.60	52	0.57	56	0.53	56	0.53
11		56	0.50	52	0.47	56	0.47	56	0.43	56	0.33	52	0.36
12		56	0.33	44	0.23	36	0.20	36	0.20	24	0.10	4	0.06
13		320	0.06	304	0.10	304	0.10	300	0.16	292	0.20	280	0.26
14		276	0.36	272	0.40	264	0.43	256	0.47	240	0.53	236	0.57
15		240	0.63	236	0.63	236	0.60	232	0.57	232	0.60	232	0.63
16		236	0.63	236	0.63	236	0.67	236	0.63	236	0.67	236	0.63
17		236	0.60	236	0.60	236	0.57	236	0.53	236	0.50	236	0.50
18		236	0.40	236	0.40	236	0.33	240	0.26	240	0.20	244	0.06
19		36	0.03	44	0.10	56	0.20	52	0.33	56	0.43	56	0.60
20		56	0.67	56	0.73	56	0.77	56	0.80	56	0.84	52	0.90
21		56	0.84	56	0.73	52	0.77	52	0.70	56	0.73	56	0.77
22		52	0.80	52	0.77	56	0.73	52	0.57	52	0.57	56	0.57
23		52	0.60	56	0.63	44	0.50	52	0.50	56	0.43	56	0.43

Table 53. 16 june 1980. Current meter 5. Velocity and direction.

TIME ====	0 MIN. =====		10 MIN. =====		20 MIN. =====		30 MIN. =====		40 MIN. =====		50 MIN. =====		
	HOUR ----	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---	DEG ---	M/S ---
0		56	0.43	56	0.40	52	0.33	52	0.26	44	0.23	52	0.23
1		44	0.16	32	0.13	0	0.06	336	0.06	312	0.06	296	0.10
2		296	0.16	280	0.20	264	0.16	264	0.23	256	0.26	252	0.33
3		244	0.36	240	0.40	240	0.43	236	0.47	236	0.50	240	0.53
4		236	0.57	236	0.53	232	0.57	232	0.57	232	0.53	236	0.57
5		232	0.57	232	0.53	236	0.57	232	0.50	236	0.50	236	0.50
6		232	0.43	236	0.43	236	0.36	236	0.30	236	0.23	252	0.20
7		272	0.10	4	0.00	12	0.10	40	0.16	56	0.30	52	0.47
8		56	0.60	60	0.70	56	0.80	56	0.80	44	0.77	52	0.87
9		52	0.80	52	0.87	56	0.87	56	0.87	56	0.84	52	0.77
10		56	0.73	56	0.73	56	0.73	60	0.67	52	0.70	56	0.67
11		60	0.63	56	0.60	60	0.50	56	0.53	60	0.53	56	0.43
12		56	0.36	60	0.36	60	0.36	72	0.36	64	0.30	60	0.26
13		60	0.23	44	0.13	56	0.13	60	0.06	40	0.03	256	0.03
14		256	0.03	256	0.10	236	0.10	232	0.20	236	0.23	236	0.30
15		236	0.30	236	0.36	236	0.43	236	0.47	236	0.47	232	0.47
16		232	0.50	232	0.53	232	0.50	236	0.53	232	0.47	232	0.47
17		232	0.50	236	0.50	236	0.47	236	0.47	236	0.43	236	0.50
18		236	0.43	244	0.40	240	0.33	244	0.33	244	0.33	252	0.23
19		244	0.20	252	0.13	272	0.10	312	0.03	24	0.06	36	0.13
20		44	0.23	44	0.43	56	0.53	56	0.63	56	0.63	56	0.73
21		60	0.77	52	0.77	44	0.80	56	0.80	56	0.84	52	0.84
22		56	0.73	52	0.80	56	0.77	52	0.73	56	0.67	56	0.57
23		56	0.63	52	0.53	56	0.57	60	0.53	56	0.50	60	0.43

Table 54. 17 june 1980. Current meter 5. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	96	0.10	64	0.13	56	0.20	44	0.30	56	0.33	56	0.43
1	56	0.53	52	0.57	52	0.57	56	0.57	52	0.63	56	0.63
2	56	0.63	60	0.73	56	0.63	60	0.63	60	0.70	60	0.67
3	60	0.63	56	0.57	56	0.53	56	0.53	52	0.53	56	0.50
4	52	0.50	56	0.50	52	0.43	44	0.40	44	0.40	44	0.33
5	44	0.33	40	0.33	44	0.26	44	0.23	44	0.26	44	0.23
6	44	0.16	44	0.16	40	0.16	40	0.10	20	0.10	32	0.03
7	0	0.06	20	0.03	296	0.03	276	0.06	244	0.10	240	0.13
8	240	0.16	240	0.23	236	0.23	236	0.30	236	0.33	236	0.36
9	236	0.40	236	0.40	236	0.43	236	0.47	236	0.43	236	0.43
10	236	0.43	236	0.40	236	0.40	236	0.40	236	0.33	236	0.33
11	236	0.26	232	0.23	224	0.16	232	0.16	224	0.13	224	0.03
12	152	0.00	76	0.06	64	0.10	56	0.20	60	0.30	56	0.43
13	56	0.50	56	0.57	60	0.63	60	0.67	56	0.77	60	0.80
14	60	0.87	56	0.84	56	0.80	52	0.77	52	0.73	52	0.77
15	52	0.80	60	0.80	56	0.87	56	0.84	52	0.80	52	0.77
16	56	0.73	44	0.73	44	0.67	52	0.60	52	0.53	52	0.57
17	52	0.47	44	0.53	44	0.47	44	0.47	44	0.43	44	0.43
18	44	0.36	40	0.36	36	0.30	56	0.30	44	0.23	44	0.20
19	36	0.13	32	0.10	24	0.06	44	0.00	340	0.00	296	0.03
20	272	0.06	224	0.10	236	0.16	232	0.20	232	0.26	232	0.30
21	232	0.30	232	0.33	232	0.36	232	0.40	232	0.47	236	0.47
22	236	0.50	236	0.43	236	0.47	236	0.50	236	0.50	236	0.50
23	236	0.47	232	0.43	236	0.43	232	0.36	236	0.33	236	0.30

Table 55. 23 june 1980. Current meter 5. Velocity and direction.

TIME =====	0 MIN.		10 MIN.		20 MIN.		30 MIN.		40 MIN.		50 MIN.	
	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S	DEG	M/S
0	240	0.23	252	0.20	260	0.10	284	0.06	44	0.03	36	0.06
1	40	0.16	56	0.20	56	0.33	60	0.40	56	0.50	52	0.57
2	52	0.57	56	0.63	60	0.70	52	0.73	56	0.73	52	0.73
3	52	0.70	56	0.73	52	0.77	52	0.73	44	0.73	44	0.73
4	52	0.67	44	0.70	44	0.67	44	0.70	44	0.70	44	0.60
5	56	0.70	56	0.63	44	0.67	52	0.60	60	0.47	56	0.57
6	56	0.50	60	0.43	56	0.36	60	0.36	60	0.33	60	0.30
7	56	0.23	56	0.20	52	0.23	40	0.16	16	0.13	44	0.13
8	36	0.06	24	0.03	356	0.06	300	0.00	276	0.03	256	0.13
9	244	0.16	244	0.20	244	0.30	252	0.30	236	0.33	236	0.40
10	236	0.40	232	0.43	232	0.47	236	0.47	236	0.47	240	0.47
11	240	0.47	244	0.47	240	0.47	240	0.43	240	0.40	240	0.36
12	240	0.33	240	0.26	244	0.20	252	0.16	256	0.13	264	0.06
13	316	0.03	36	0.03	36	0.10	44	0.20	52	0.26	60	0.36
14	56	0.47	56	0.53	56	0.60	56	0.70	52	0.70	56	0.70
15	52	0.73	60	0.77	64	0.80	60	0.84	56	0.80	56	0.77
16	60	0.77	72	0.80	60	0.73	60	0.70	56	0.70	56	0.73
17	56	0.73	56	0.84	56	0.73	60	0.70	44	0.73	56	0.67
18	56	0.63	56	0.60	52	0.57	44	0.53	44	0.50	52	0.47
19	44	0.40	44	0.40	44	0.33	40	0.33	40	0.23	44	0.23
20	32	0.16	24	0.13	12	0.10	324	0.10	304	0.10	276	0.13
21	276	0.16	264	0.20	256	0.23	252	0.26	244	0.36	240	0.40
22	240	0.43	240	0.47	240	0.50	240	0.50	244	0.50	244	0.50
23	244	0.50	236	0.50	240	0.47	240	0.47	240	0.47	236	0.53

Table 56. 24 june 1980. Current meter 5. Velocity and direction.

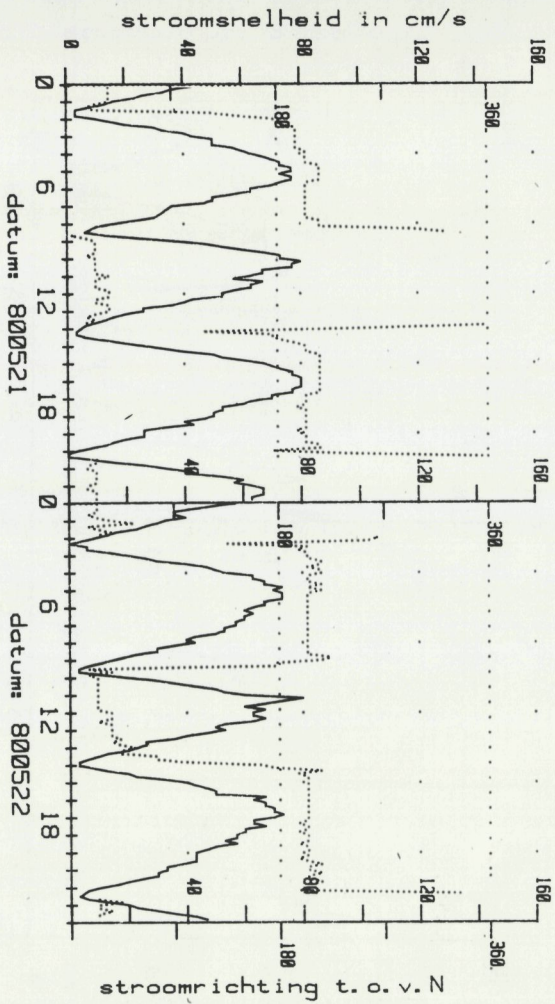
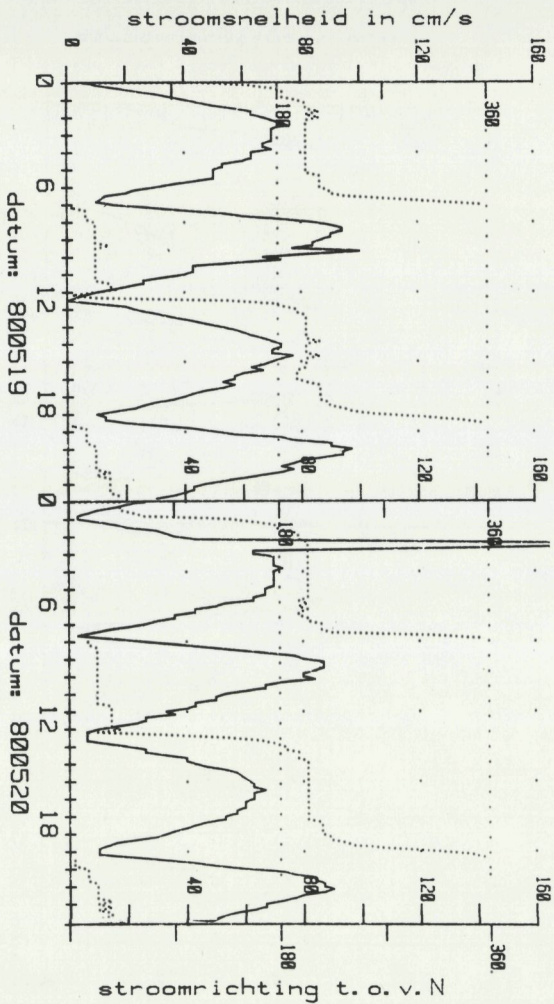


Fig. 80. 19, 20, 21 and 22 may 1980. Current meter 2.  
Current speed (solid curve) and direction (dashed curve).

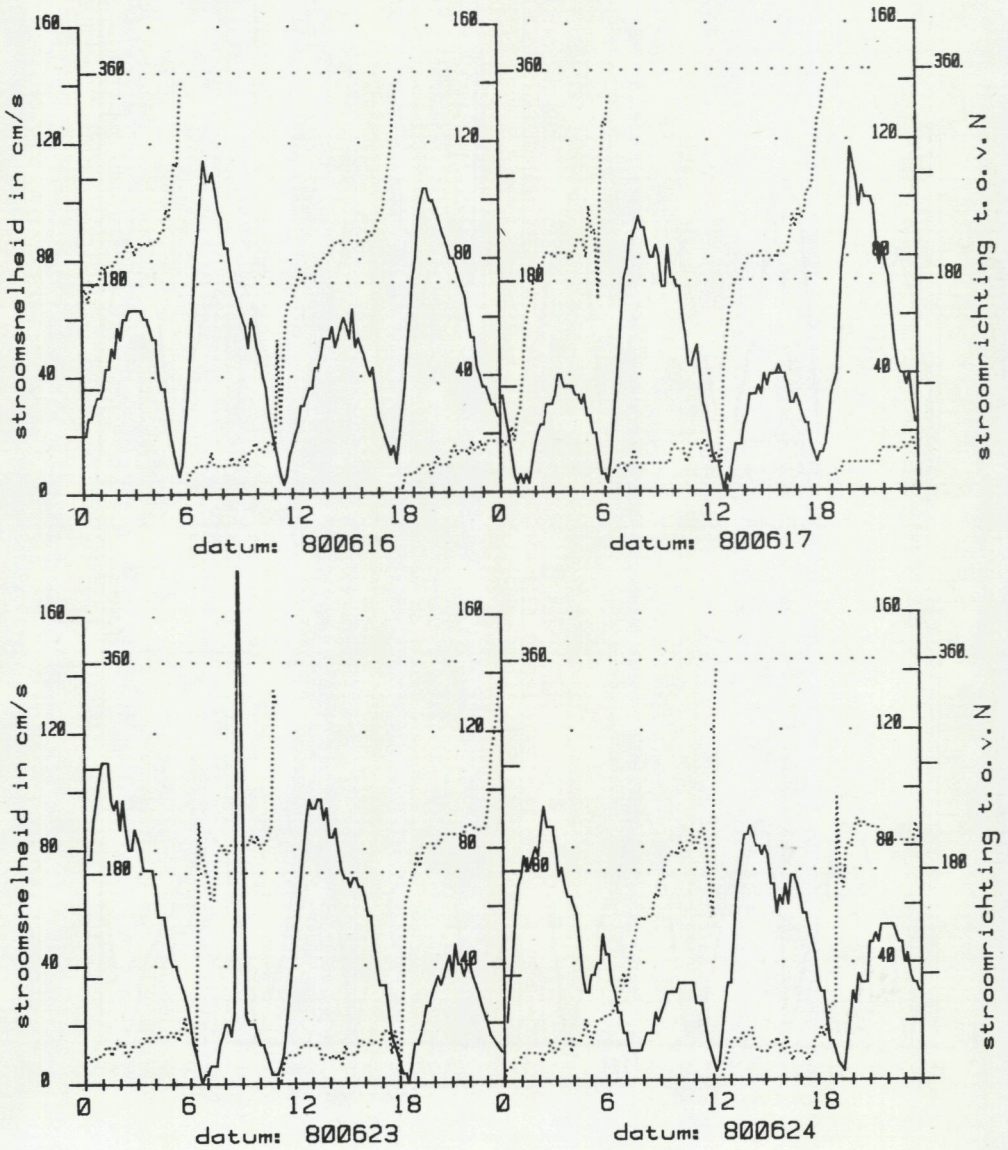


Fig. 81. 16, 17, 23 and 24 June 1980. Current meter 2.  
Current speed (solid curve) and direction (dashed curve).

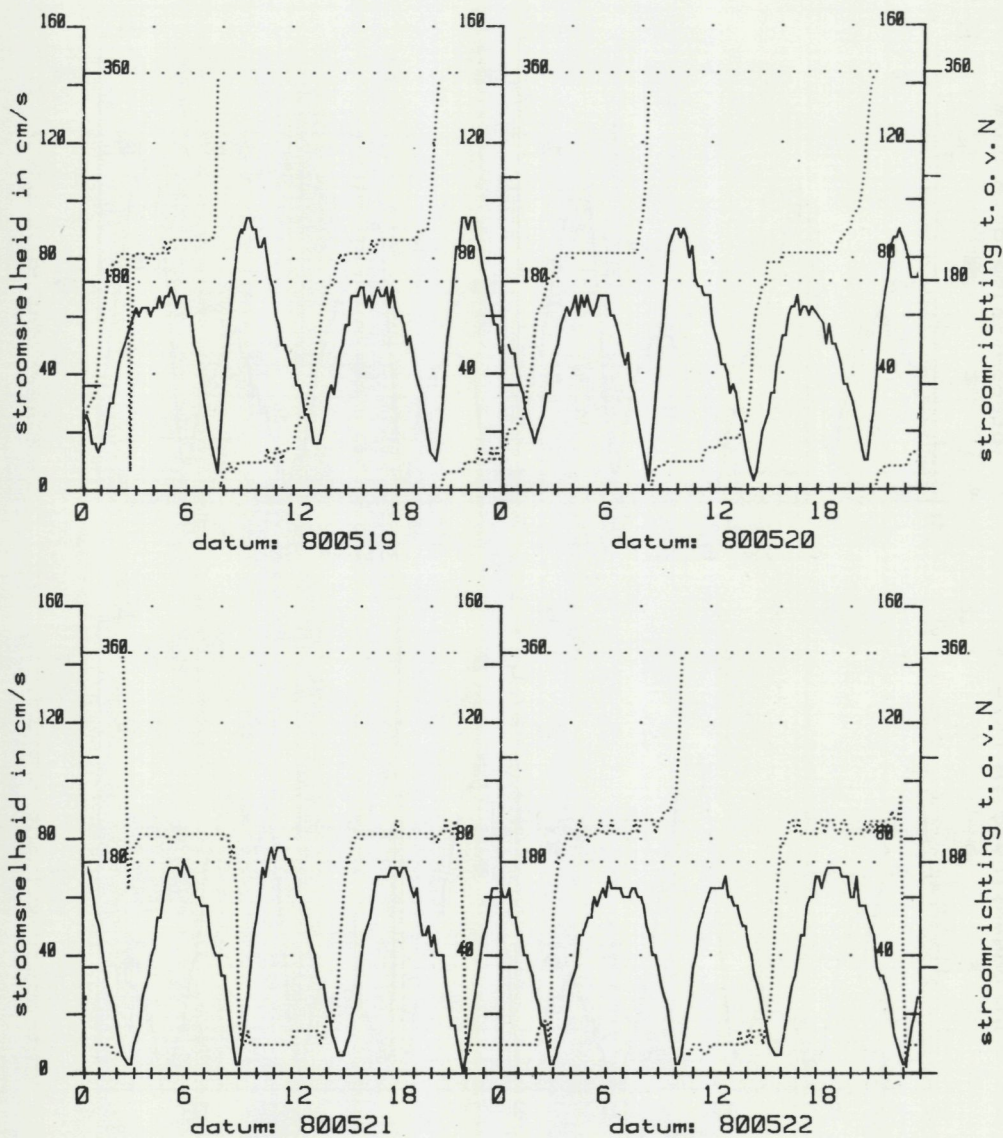


Fig. 82. 19, 20, 21 and 22 may 1980. Current meter 3.  
Current speed (solid curve) and direction (dashed curve).

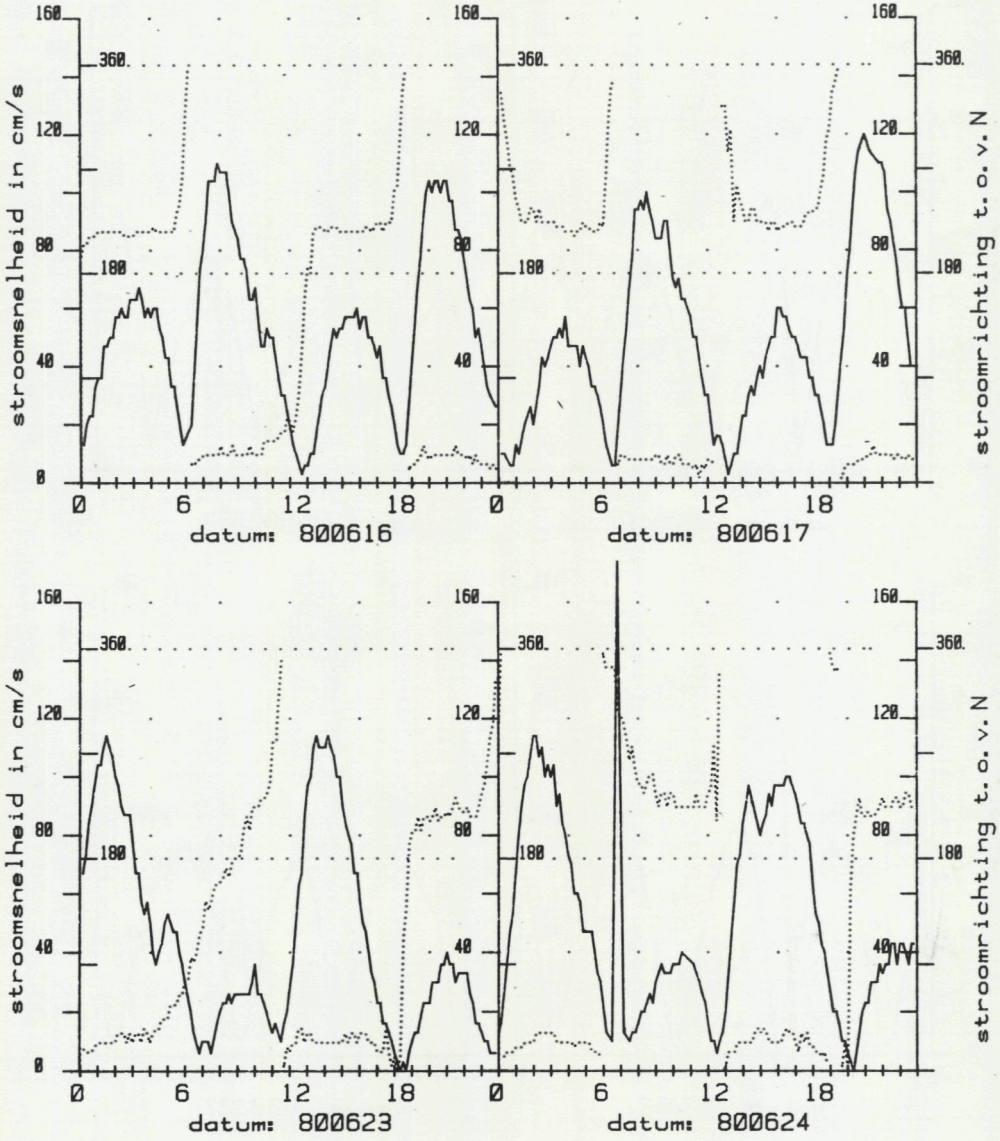


Fig. 83. 16, 17, 23 and 24 june 1980. Current meter 3.  
Current speed (solid curve) and direction (dashed curve).

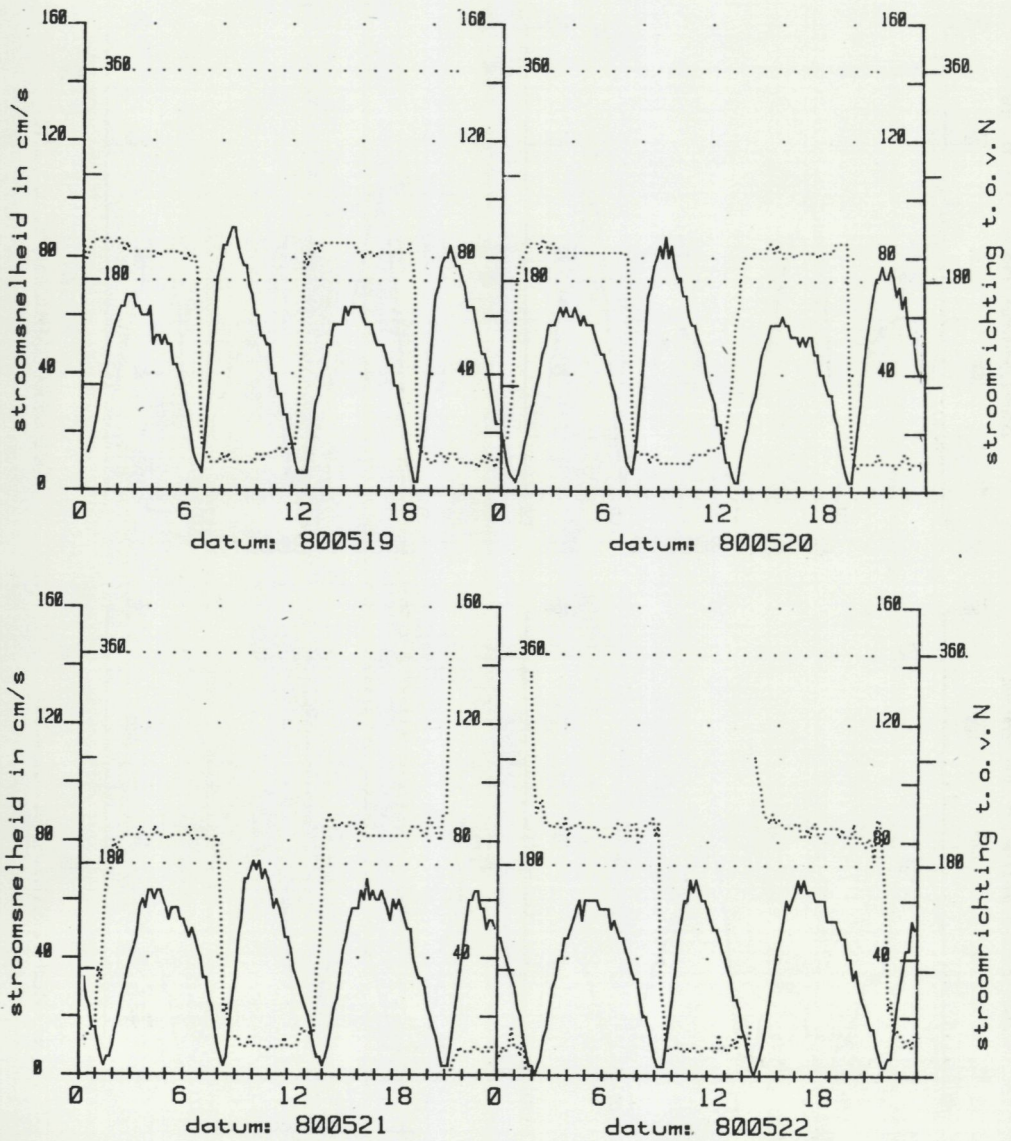


Fig. 84. 19, 20, 21 and 22 may 1980. Current meter 4.  
Current speed (solid curve) and direction (dashed curve).

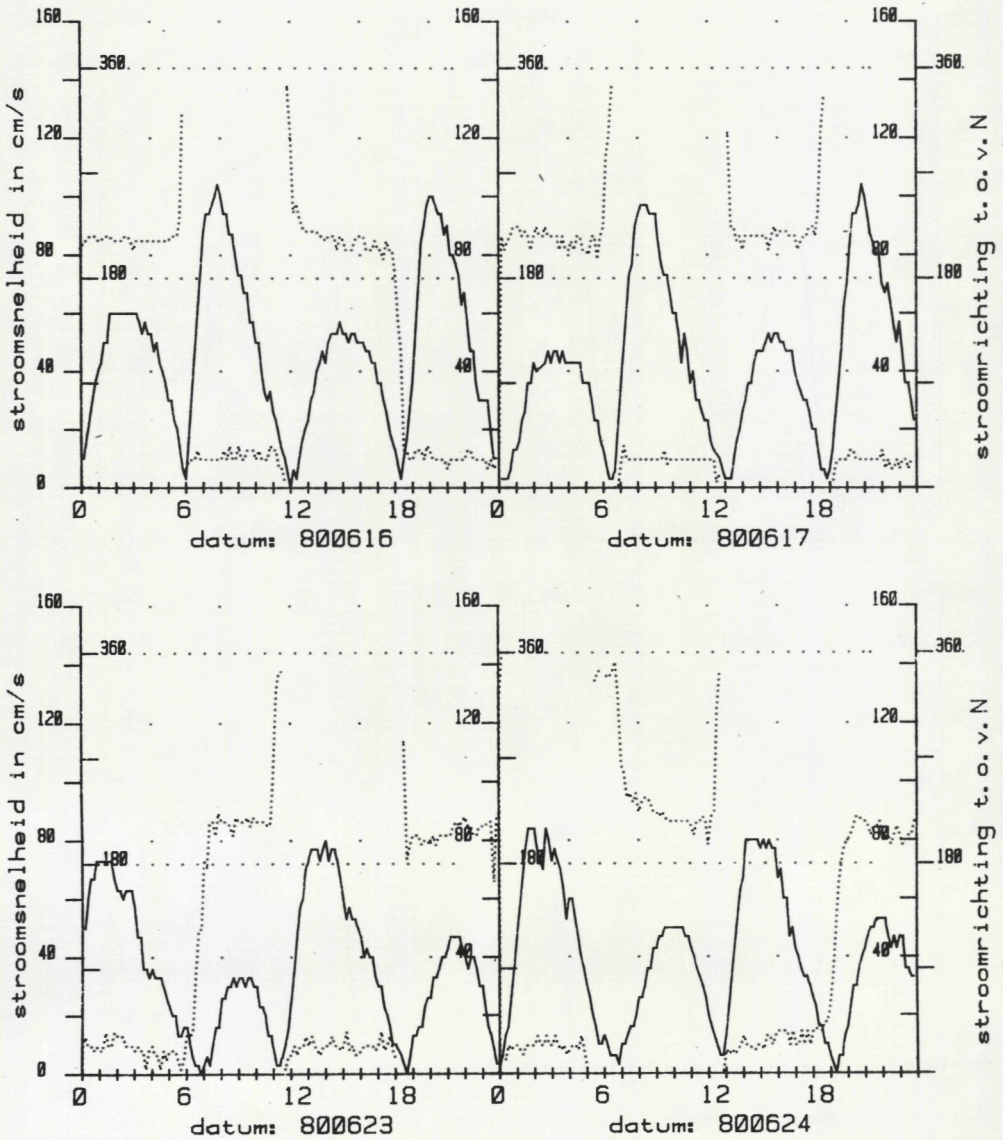


Fig. 85. 16, 17, 23 and 24 June 1980. Current meter 4.  
Current speed (solid curve) and direction (dashed curve).

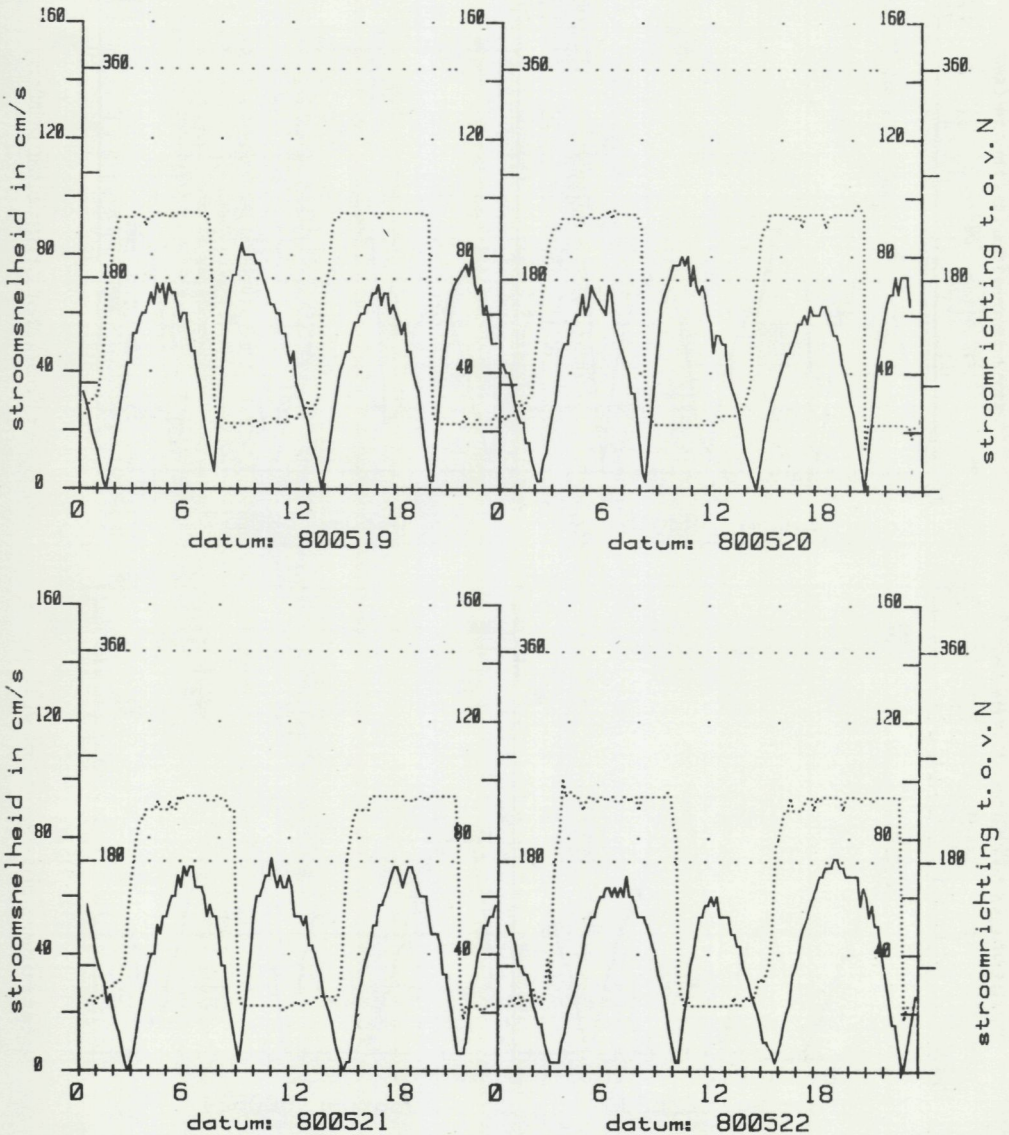


Fig. 86. 19, 20, 21 and 22 may 1980. Current meter 5.  
Current speed (solid curve) and direction (dashed curve).

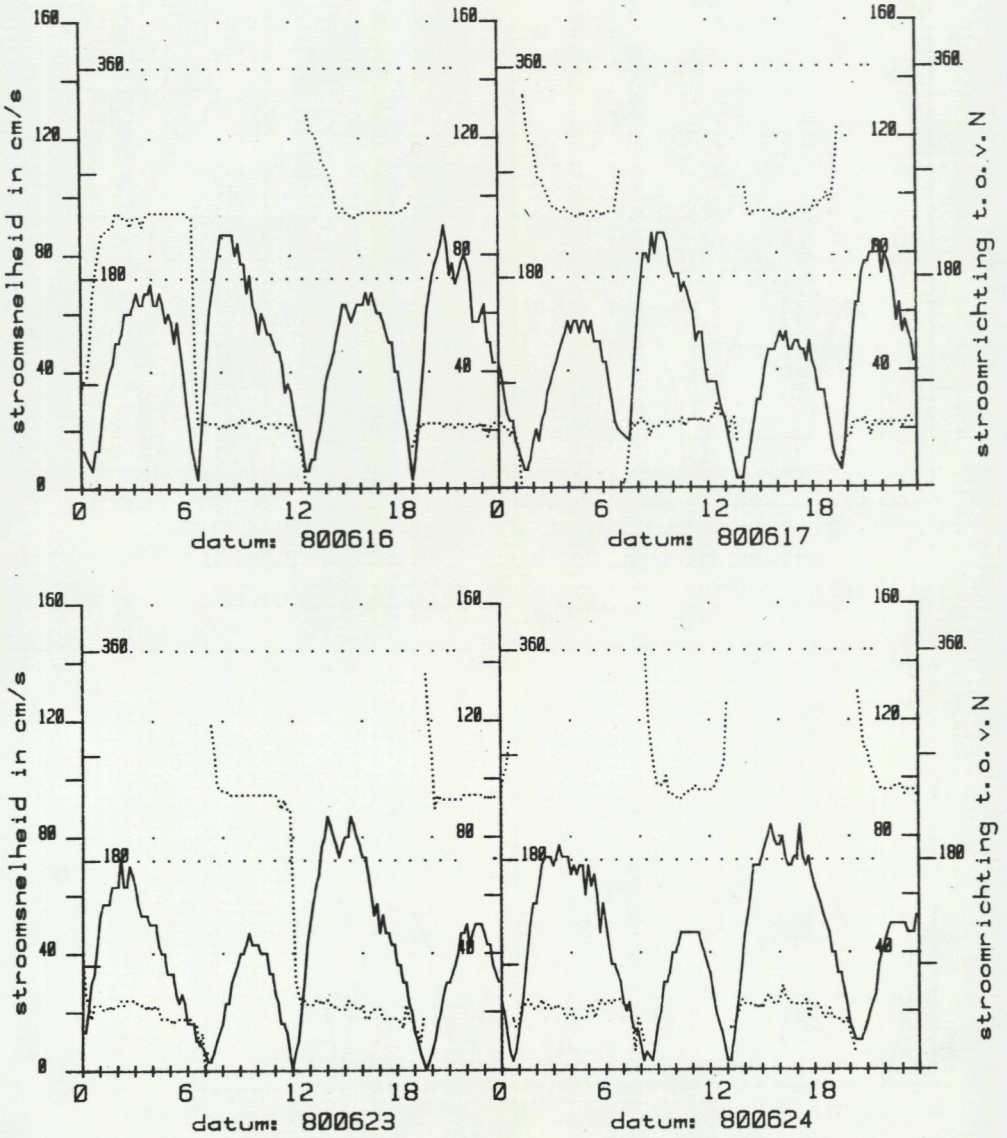


Fig. 87. 16, 17, 23 and 24 june 1980. Current meter 5.  
Current speed (solid curve) and direction (dashed curve).

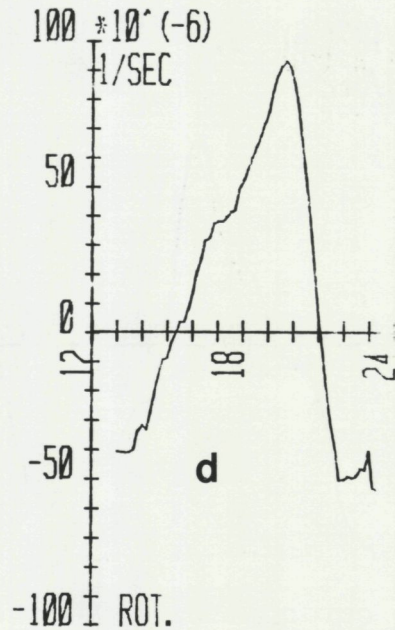
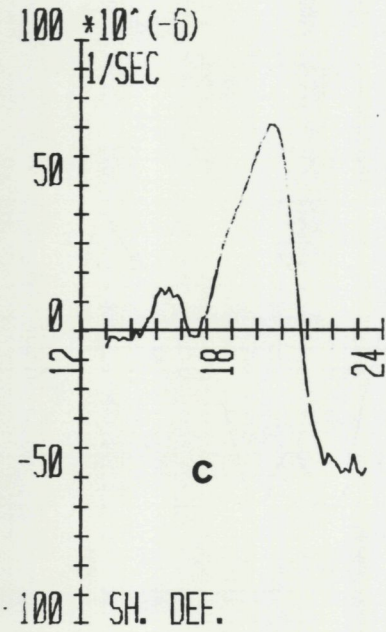
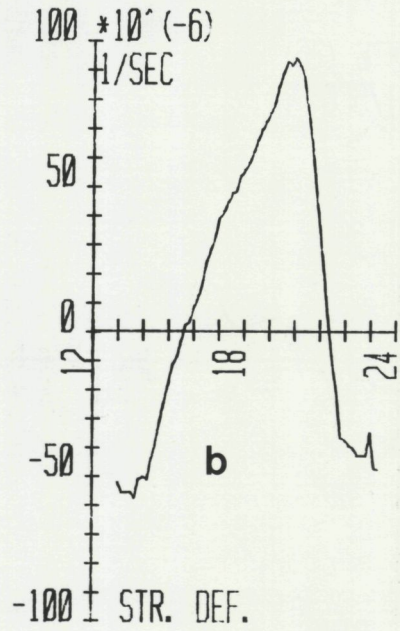
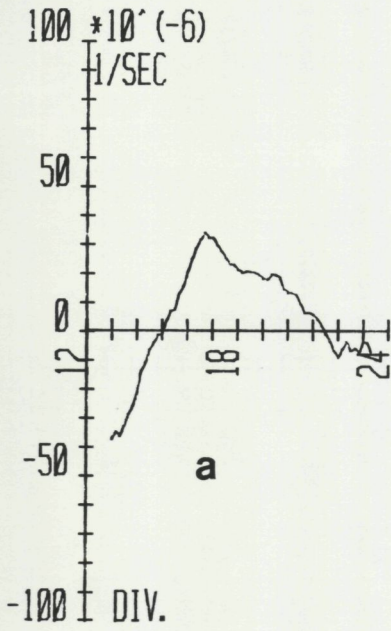


Fig. 88. 19 and 20 may 1980. Current meters 2, 3 and 4.  
 a) Divergence. b) Stretching deformation.  
 c) Shearing deformation. d) Vorticity.

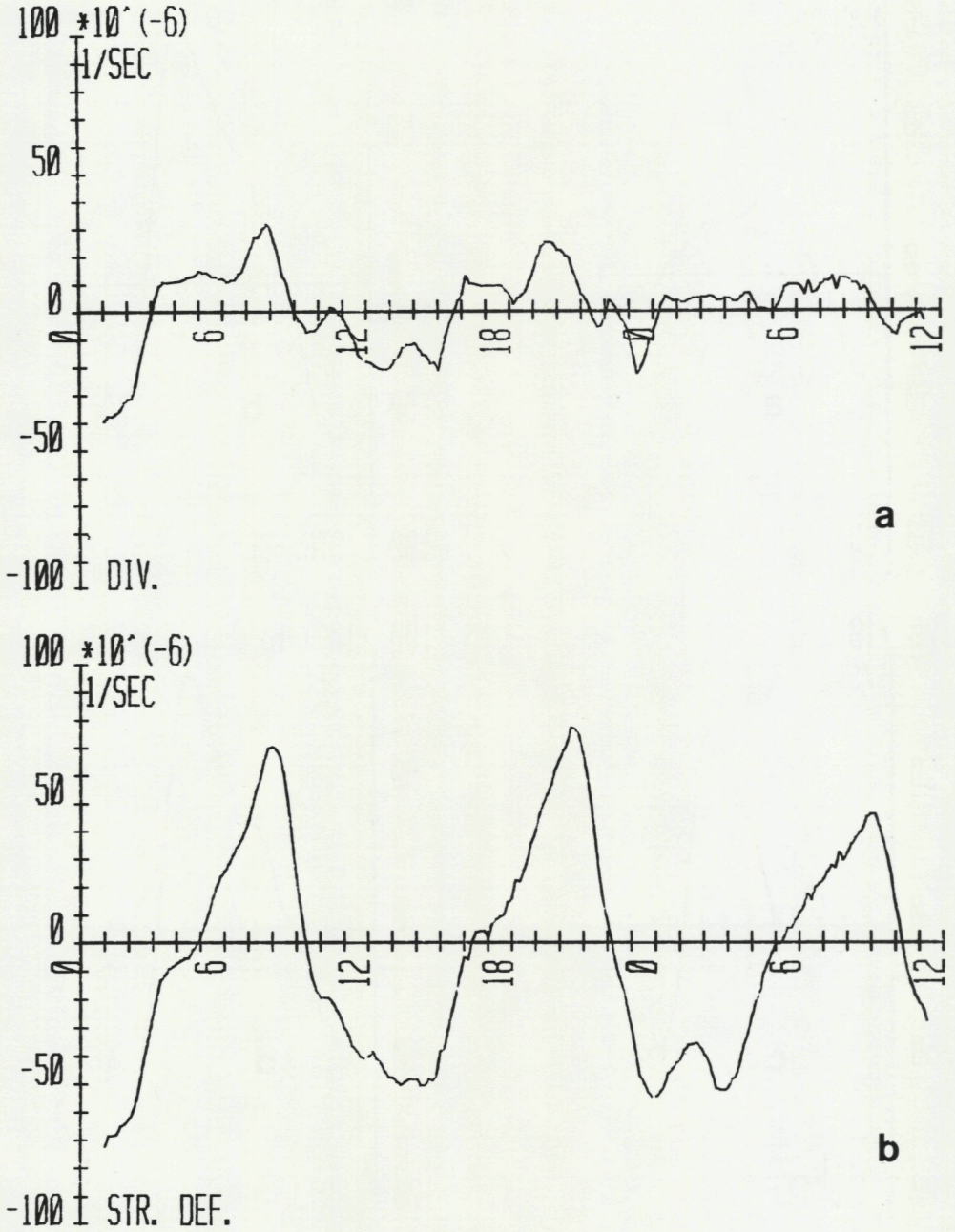


Fig. 89. 20 and 21 may 1980. Current meters 2, 3 and 4.  
 a) Divergence. b) Stretching deformation.

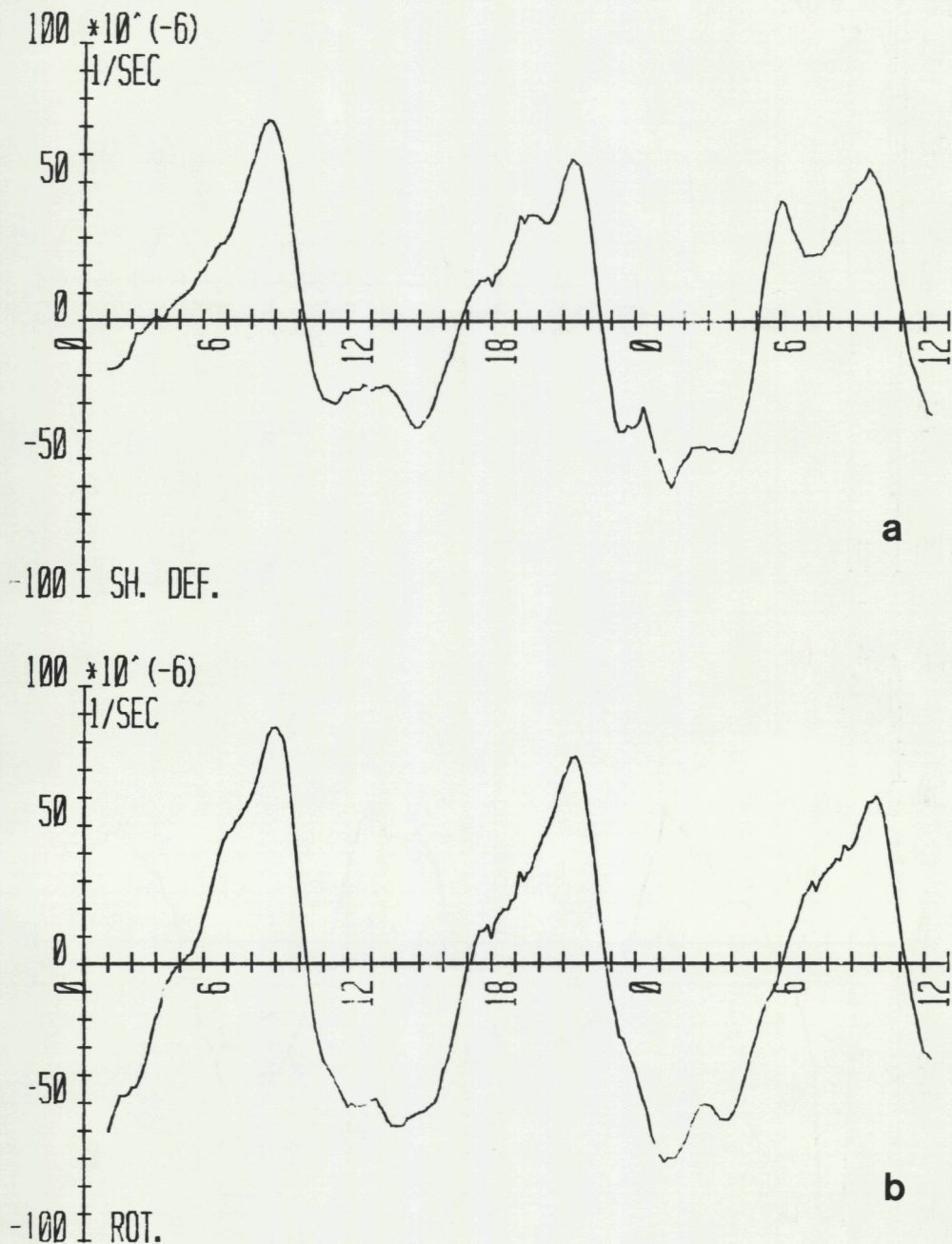
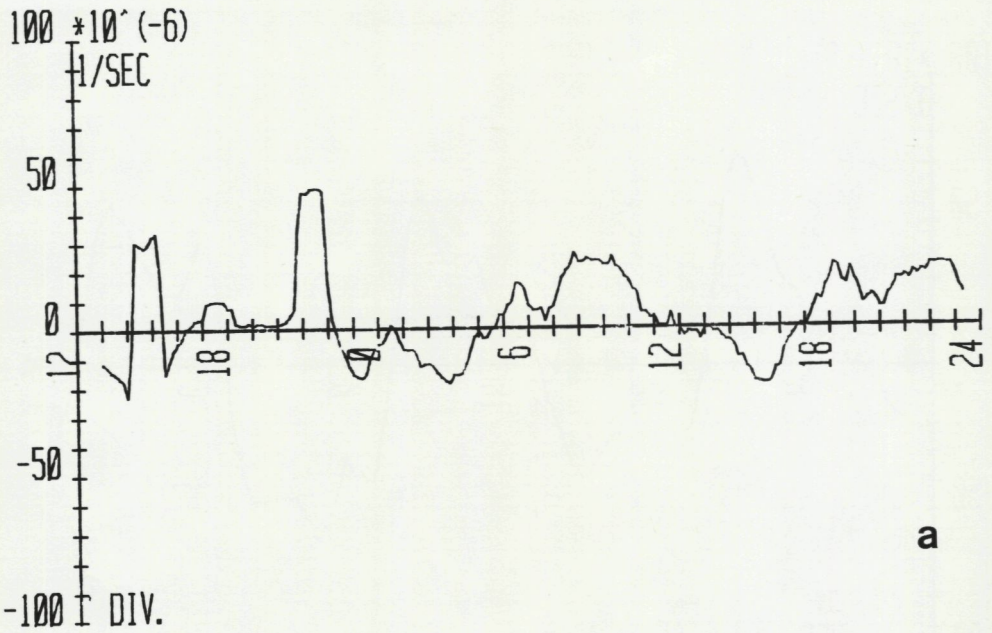
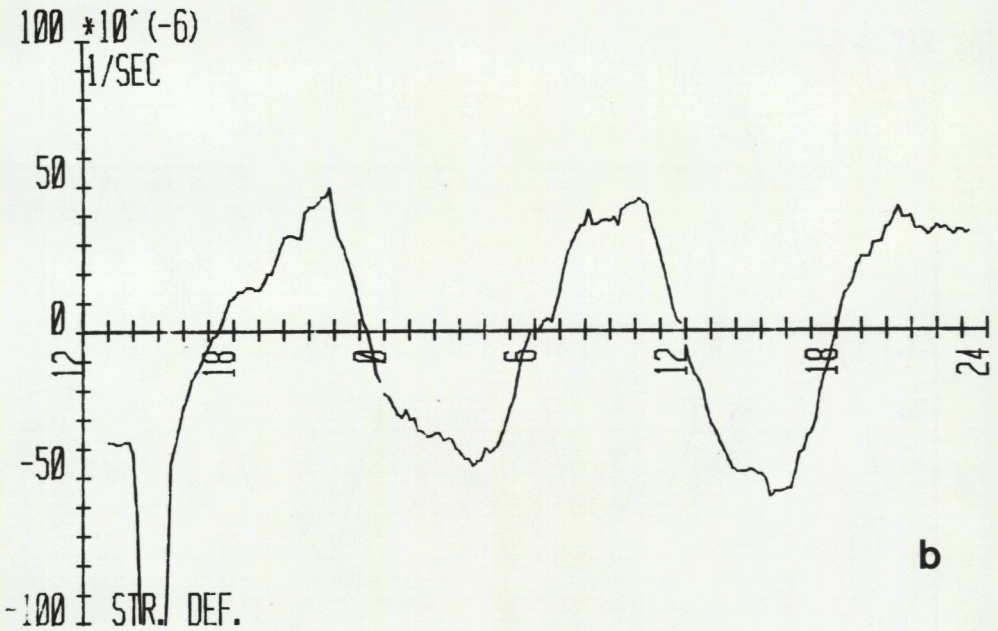


Fig. 90. 20 and 21 may 1980. Current meters 2, 3 and 4.  
 a) Shearing deformation. b) Vorticity.



a



b

Fig. 91. 21 and 22 may 1980. Current meters 2, 3 and 4.  
a) Divergence. b) Stretching deformation.

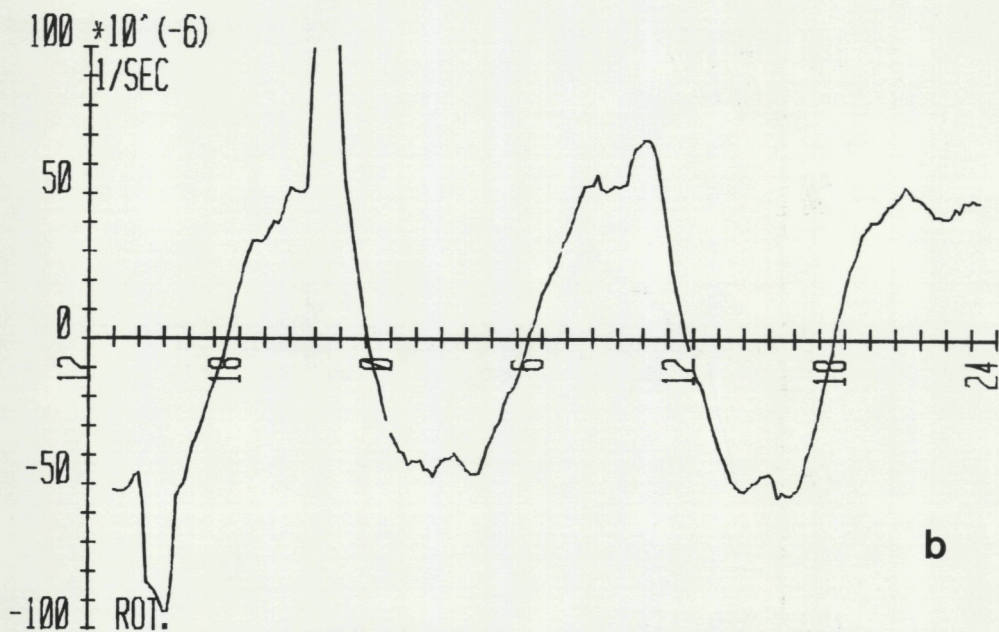
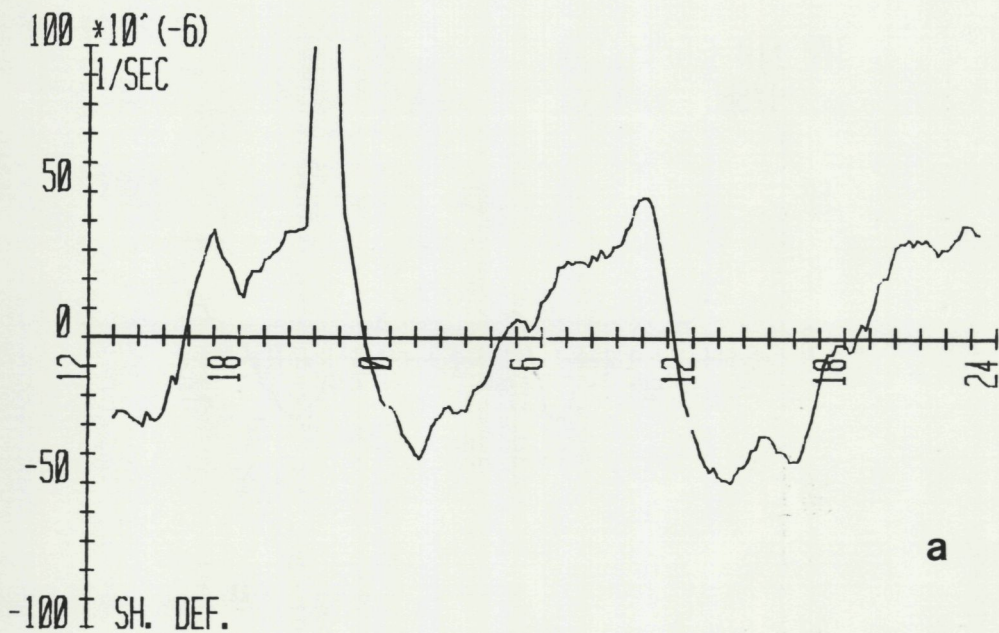


Fig. 92. 21 and 22 may 1980. Current meters 2, 3 and 4.  
 a) Shearing deformation. b) Vorticity.

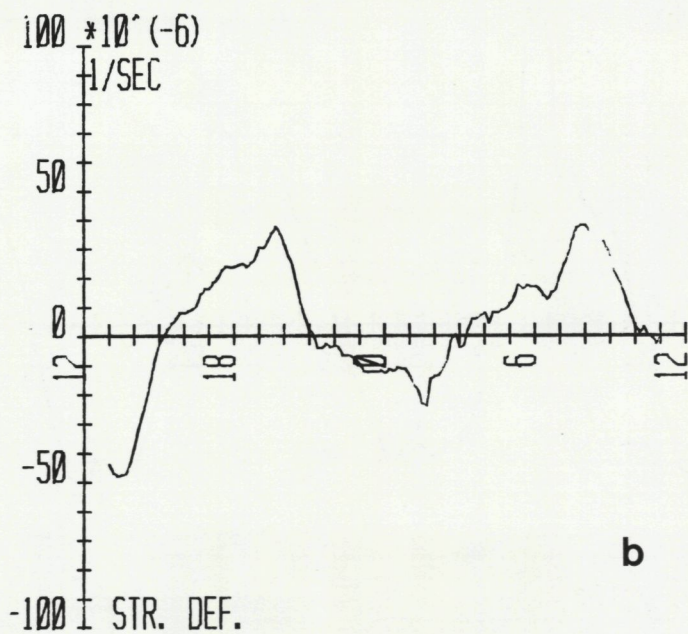
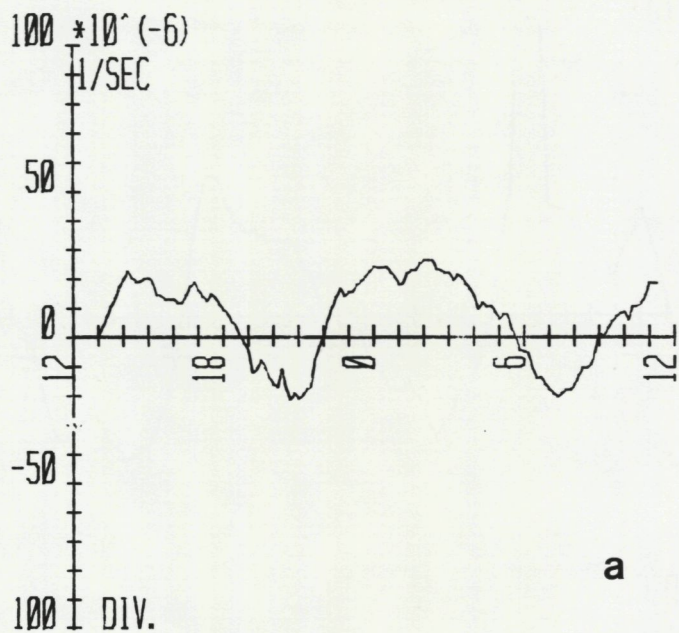


Fig. 93. 16 and 17 June 1980. Current meters 2, 3 and 4.  
a) Divergence. b) Stretching deformation.

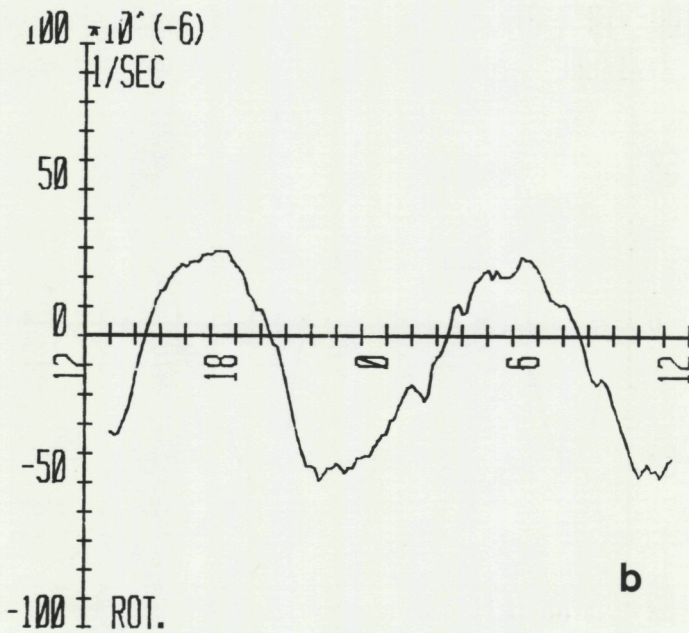
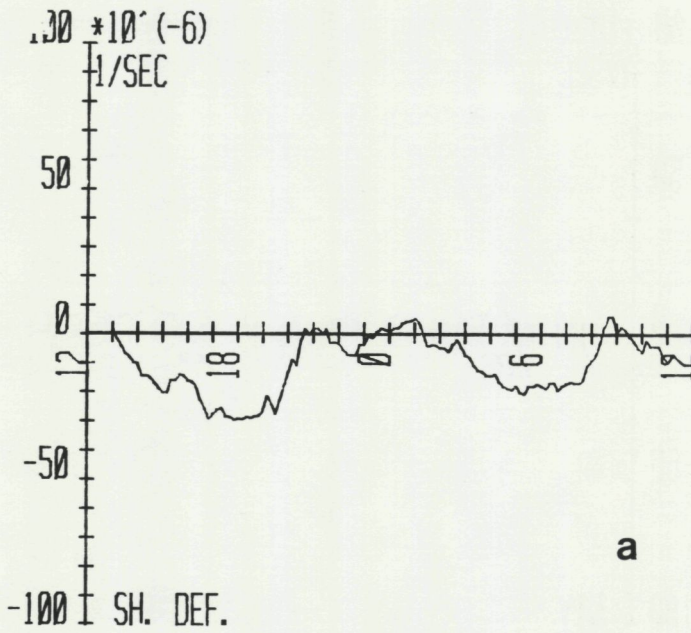


Fig. 94. 16 and 17 June 1980. Current meters 2, 3 and 4.  
a) Shearing deformation. b) Vorticity.

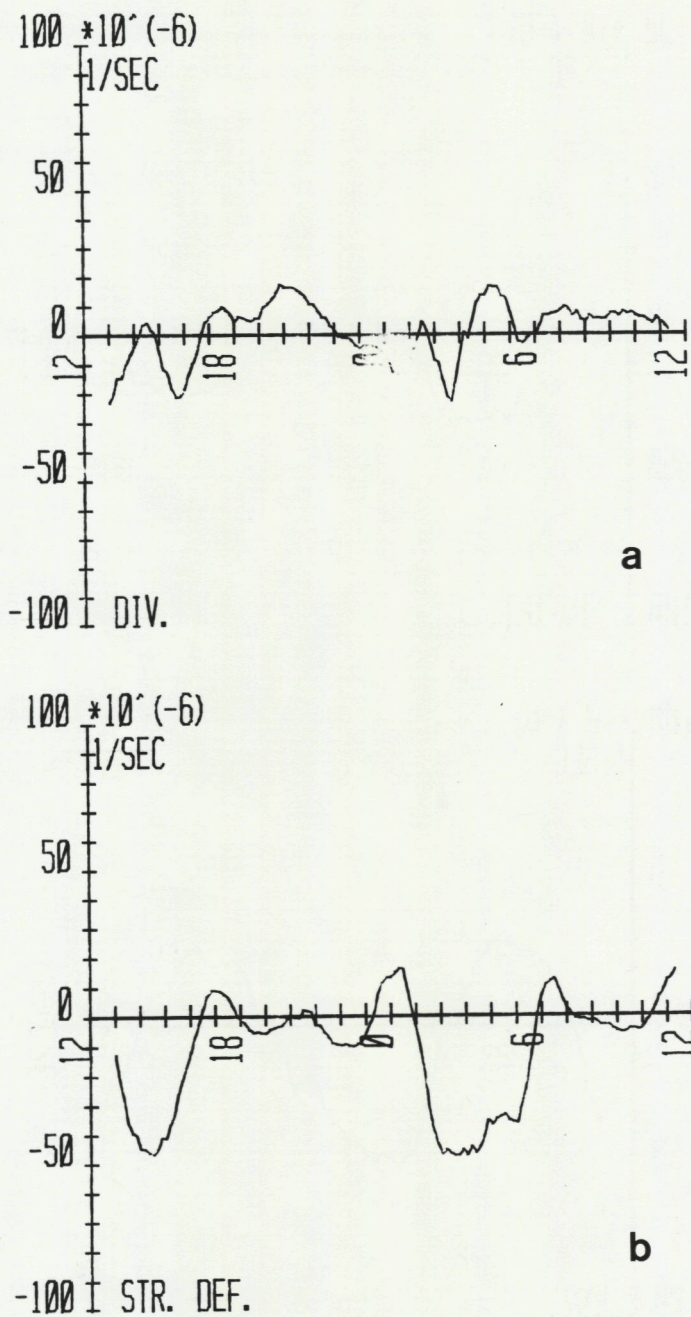


Fig. 95. 23 and 24 June 1980. Current meters 3, 4 and 5.  
a) Divergence. b) Stretching deformation.

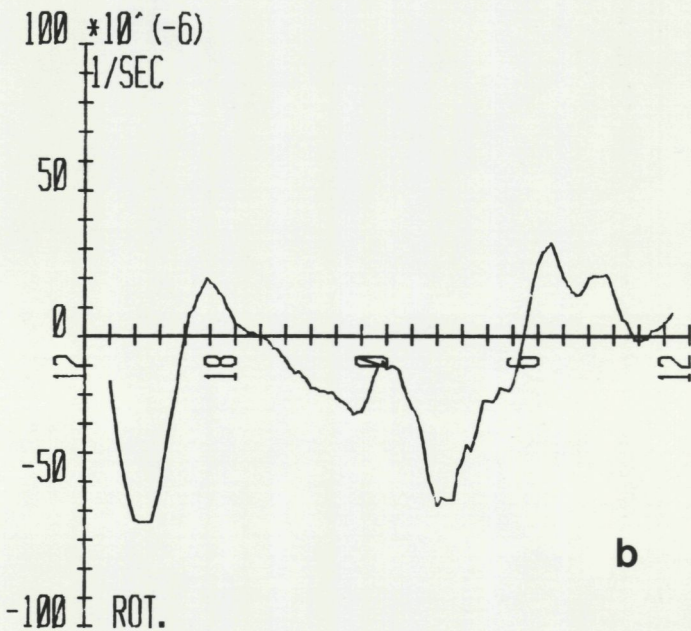
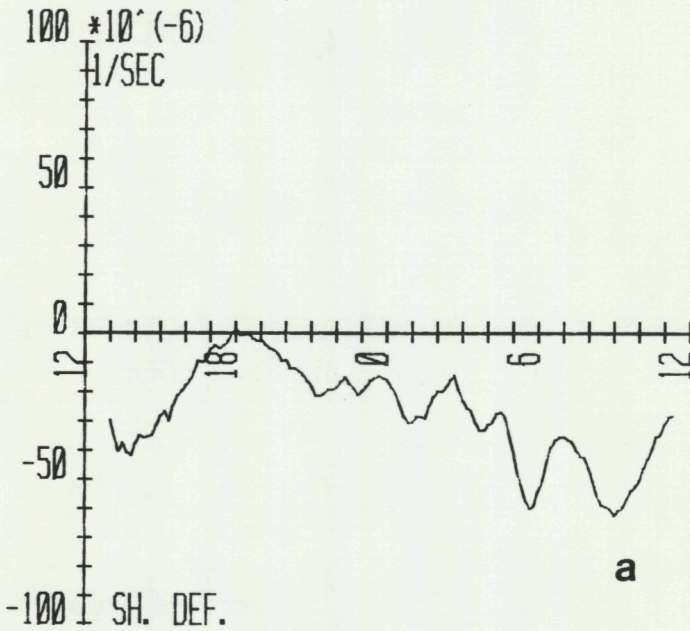


Fig. 96. 23 and 24 June 1980. Current meters 3, 4 and 5.  
a) Shearing deformation. b) Vorticity.

8.7. Other tables and figures

Date	00.00	00.30	01.00	01.30	02.00	02.30	03.00	03.30	04.00	04.30	05.00	05.30
19/5	56	49	35	15	- 9	- 32	- 50	- 64	- 79	- 84	- 96	-104
20/5	41	39	36	29	14	- 7	- 34	- 51	- 66	- 77	- 86	- 95
21/5	33	36	40	36	30	17	1	- 20	- 36	- 55	- 68	- 74
22/5	10	9	9	17	14	1	- 16	- 29	- 59	- 67	- 77	- 82
16/6	- 8	- 32	- 51	- 65	- 78	- 90	-101	-108	-108	-102	- 72	- 17
17/6	34	12	- 8	- 30	- 48	- 57		- 84	- 96	- 94	- 86	- 72
23/6	32	41	46	44	46	46	46	46	46	41	29	16
24/6	15	34	43	39	43	43	48	48	58	67	66	54
	06.00	06.30	07.00	07.30	08.00	08.30	09.00	09.30	10.00	10.30	11.00	11.30
19/5	-105	-100	- 72	- 26	21	49	59	64	68	71	78	82
20/5	- 99	-108	-106	- 86	- 49	- 3	33	52	57	61	65	69
21/5	- 84	- 90	- 95	- 95	- 83	- 58	- 21	15	40	54	60	64
22/5	- 83	- 94	- 96	-100	-104	-104	- 86	- 71	- 39	- 12	17	25
16/6	29	55	60	61	67	74	82	88	91	87	74	55
17/6	- 16	20	49	56	61	58	66	84	92	94	84	79
23/6	- 1	- 19	- 33	- 35	- 40	- 50	- 58	- 51	- 49	- 32	- 2	17
24/6	32	11	- 10	- 30	- 48	- 47	- 48	- 49	- 54	- 56	- 53	- 32
	12.00	12.30	13.00	13.30	14.00	14.30	15.00	15.30	16.00	16.30	17.00	17.30
19/5	78	70	59	38	15	- 8	- 31	- 49	- 65	- 75	- 89	-101
20/5	74	76	70	61	45	25	2	- 19	- 39	- 50	- 64	- 75
21/5	68	69	66	64	56	45	28	8	- 12	- 34	- 49	- 60
22/5	32	38	38	42	42	38	27	12	5	- 18	- 37	- 55
16/6	29	6	- 36	- 51	- 62	- 76	- 85	- 93	- 98	-101	- 93	- 64
17/6	68	41	13	- 10	- 17	- 47	- 55	- 65	- 72	- 88	- 85	- 89
23/6	43	51	56	69	70	69	69	71	69	64	59	41
24/6	- 9	17	49	56	61	61	65	65	77	83	80	69
	18.00	18.30	19.00	19.30	20.00	20.30	21.00	21.30	22.00	22.30	23.00	23.30
19/5	-109	-114	-108	- 86	- 46	- 6	22	30	33	32	33	36
20/5	- 84	- 92	- 98	- 94	- 81	- 53	- 17	8	29	31	31	29
21/5	- 71	- 81	- 86	- 95	- 94	- 92	- 78	- 54	- 30	- 5	8	12
22/5	- 68	- 76	- 84	- 93	- 96	- 98	-106	- 98	- 85	- 70	- 46	- 29
16/6	- 17	23	45	46	46	44	51	54	61	62	63	59
17/6	- 85	- 40	6	31	44	43	40	42	46	50	55	61
23/6	15	6	- 8	- 30	- 34	- 45	- 56	- 58	- 65	- 56	- 46	- 14
24/6	66	35	22	2	- 33	- 33	- 42	- 56	- 64	- 65	- 62	- 62

Table 57. Verticale tide (cm) at point 3.

		$E_2 + S$		$E_3 + S$		$E_4 + S$	
		Length (%)	Direction (degrees)	Length (%)	Direction (degrees)	Length (%)	Direction (degrees)
20 and 21 May 1980 1 <sup>st</sup> period	Drifter 0	44.4	40	75.5	75	46.7	95
	1	-	-	-	-	-	-
	2	71.4	15	117.9	55	71.4	70
	3	44.4	40	73.3	75	44.4	95
	4	50.0	5	82.5	40	50.0	60
	5	51.3	0	82.1	35	51.3	55
	Average	53.3	20	87.3	56	52.8	75
St.dev.	11.3	15	18.4	19	10.8	19	
20 and 21 May 1980 2 <sup>nd</sup> period	Drifter 0	80.0	330	120.4	195	48.0	300
	1	-	-	-	-	-	-
	2	72.4	200	103.4	60	44.8	170
	3	400	135	620	5	240	105
	4	46.5	150	72.1	10	27.9	115
	5	62.5	250	96.9	120	37.5	220
	Average	-	-	-	-	-	-
St.dev.	-	-	-	-	-	-	
21 and 22 May 1980 1 <sup>st</sup> period	Drifter 0	85.1	357	62.7	345	31.3	20
	1	94.3	345	75.5	340	37.7	37
	2	100.0	354	82.1	340	39.3	25
	3	94.2	354	78.9	340	38.5	35
	4	106.9	353	74.1	335	41.4	13
	5	93.7	357	73.0	340	33.3	16
	Average	95.7	352	75.1	340	36.9	24
St.dev.	7.3	6	5.1	3	3.8	9	

Table 58. Comparison between Eulerian + Stokes vectors,  $E + S$ , and Lagrangian vector  $L$ , in length and direction.

		E <sub>2</sub> + S		E <sub>3</sub> + S		E <sub>4</sub> + S	
		Length (%)	Direction (degrees)	Length (%)	Direction (degrees)	Length (%)	Direction (degrees)
21 and 22 May 1980 2 <sup>nd</sup> period	Drifter 0	84.4	305	57.8	340	64.4	350
	1	122.6	310	83.9	340	93.6	353
	2	140.7	300	100.0	335	103.7	350
	3	115.2	290	75.8	330	87.9	340
	4	115.2	305	78.8	335	84.9	350
	5	65.5	285	46.4	320	51.7	330
	Average	107.3	299	73.8	333	81.0	346
St.dev.	27.4	10	19.1	8	19.2	9	
16 and 17 June 1980	Drifter 0	160.3	357	117.8	330	75.3	350
	1	151.2	350	113.4	330	76.8	345
	2	161.0	20	109.8	345	73.2	10
	3	156.5	350	117.7	330	84.7	345
	4	152.3	5	98.9	335	64.8	355
	5	132.3	10	90.6	335	59.4	0
	Average	152.3	2	108.0	334	72.3	354
St.dev.	10.6	12	11.0	6	7.9	10	
		E <sub>3</sub> + S		E <sub>4</sub> + S		E <sub>5</sub> + S	
		Length (%)	Direction (degrees)	Length (%)	Direction (degrees)	Length (%)	Direction (degrees)
23 and 24 June 1980	Drifter 0	115.5	325	55.1	320	73.0	355
	1	76.9	340	38.5	340	57.7	15
	2	74.8	330	35.0	320	48.8	5
	3	86.6	345	49.5	345	57.7	10
	4	96.7	335	44.6	320	65.2	10
	5	65.6	350	37.5	355	43.0	20
	Average	85.4	338	43.4	333	57.5	9
St.dev.	18.4	13	7.8	15	10.8	9	

Table 59. Comparison between Eulerian + Stokes vectors, E + S, and Lagrangian vector L, in length and direction.

		Current meters 2,3 and 4				Current meters 2,3 and 4	
		Length (%)	Direction (degrees)			Length (%)	Direction (degrees)
20 and 21 May 1980							
1 <sup>st</sup> period	Drifter 0	33.3	45	2 <sup>nd</sup> period	Drifter 0	111.5	185
	Drifter 1	-	-		Drifter 1	-	-
	Drifter 2	28.6	350		Drifter 2	10.3	120
	Drifter 3	37.8	50		Drifter 3	72.0	340
	Drifter 4	28.6	10		Drifter 4	31.8	10
	Drifter 5	25.6	325		Drifter 5	25.0	250
	Average	30.8	12		Average	-	-
	St.dev.	4.8	36		St.dev.	-	-
21 and 22 May 1980							
1 <sup>st</sup> period	Drifter 0	26.7	305	2 <sup>nd</sup> period	Drifter 0	70.6	350
	Drifter 1	100	320		Drifter 1	96.3	350
	Drifter 2	81.5	310		Drifter 2	94.5	350
	Drifter 3	81.8	310		Drifter 3	85.7	345
	Drifter 4	84.9	320		Drifter 4	72.9	350
	Drifter 5	155	270		Drifter 5	82.5	350
	Average	65.1	305		Average	83.8	350
	St.dev.	27.8	19		St.dev.	11.4	2
16 and 17 June '80							
	Drifter 0	97.3	325				
	Drifter 1	100	330				
	Drifter 2	100	335				
	Drifter 3	100	330				
	Drifter 4	87.6	325				
	Drifter 5	82.5	330				
	Average	94.6	330				
	St.dev.	7.5	4				

Table 60. Comparison between 3 current meters interpolation vector C and Lagrangian vector D, in length and direction.

	Current meters 3,4 and 5	
	Length (%)	Direction (degrees)
16 and 17 June 1980		
Drifter 0	81.1	350
Drifter 1	-	-
Drifter 2	80.0	350
Drifter 3	-	-
Drifter 4	78.7	355
Drifter 5	81.4	350
Average	80.3	350
St.dev.	0.3	3
23 and 24 June 1980		
Drifter 0	75.0	345
Drifter 1	65.0	345
Drifter 2	64.5	350
Drifter 3	65.0	355
Drifter 4	69.9	350
Drifter 5	52.7	5
Average	65.4	352
St.dev.	7.5	5

Table 61. Comparison between 3 current meters interpolation vector C and Lagrangian vector D, in length and direction.

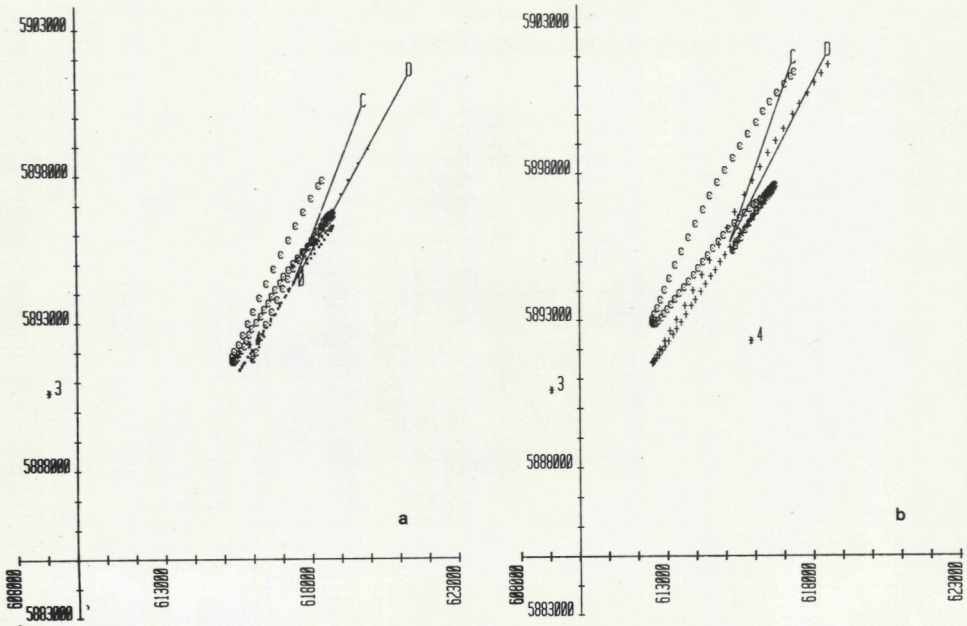


Fig. 97. 16 and 17 June 1980. Drifters 0 and 2. Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D, plotted at the centroid of a part of the drifter trajectory.  
 a) Drifter 0, from 16 June, 20.50 h till 17 June, 09.20 h, 750 minutes.  
 b) Drifter 2, from 16 June, 22.10 h till 17 June, 10.40 h, 750 minutes.

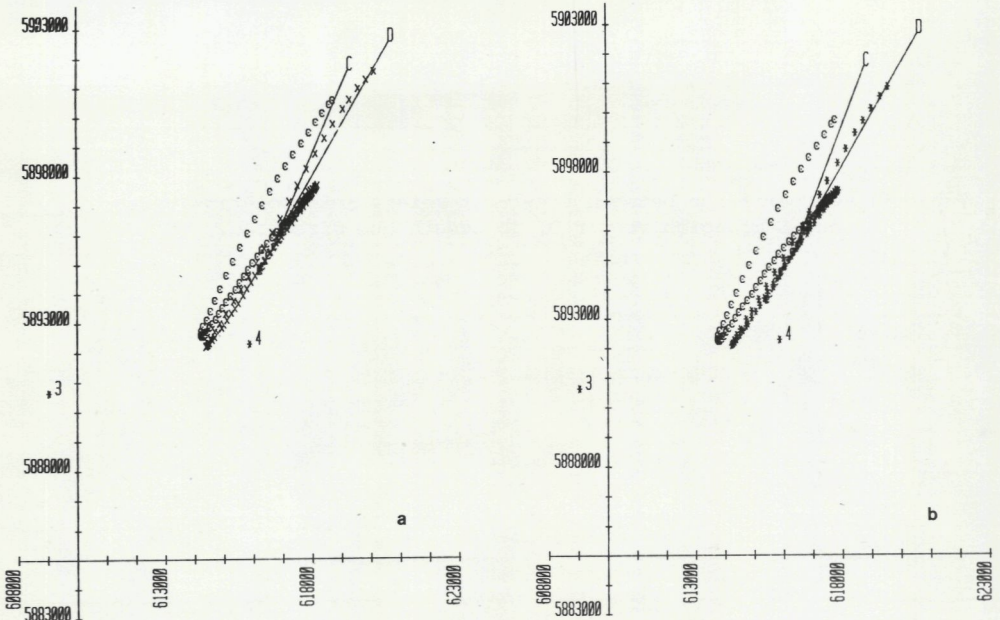


Fig. 98. 16 and 17 June 1980. Drifters 4 and 5. Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D, plotted at the centroid of a part of the drifter trajectory.  
 a) Drifter 4, from 16 June, 21.50 h till 17 June, 10.20 h, 750 minutes.  
 b) Drifter 5, from 16 June, 21.30 h till 17 June, 10.00 h, 750 minutes.

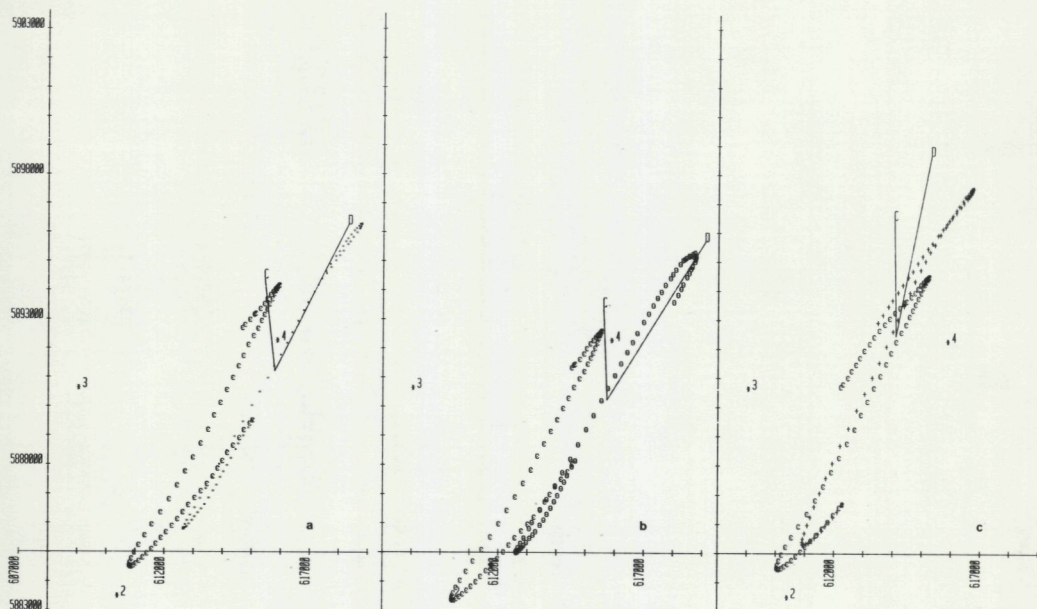


Fig. 99. 16 and 17 june 1980. Drifters 0, 1 and 2.

Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D, plotted at the centroid of a part of the drifter trajectory.

a) Drifter 0, from 16 june, 14.20 h till 17 june, 02.50 h, 750 minutes.

b) Drifter 1, from 16 june, 14.30 h till 17 june, 02.30 h, 720 minutes.

c) Drifter 2, from 16 june, 16.10 h till 17 june, 04.40 h, 750 minutes.

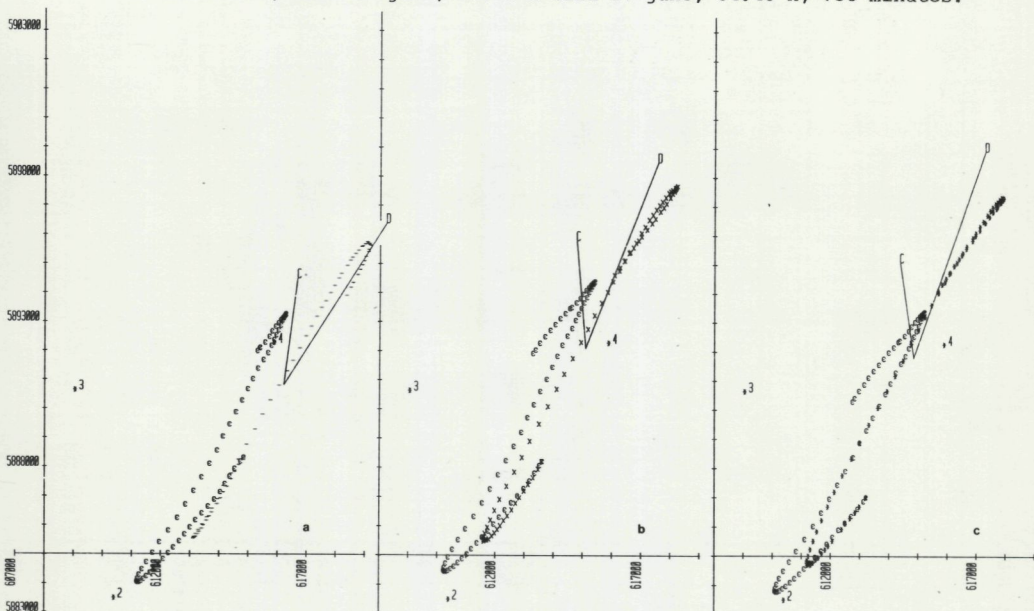


Fig. 100. 16 and 17 june 1980. Drifters 3, 4 and 5.

Current meters 3, 4 and 5 interpolation vector C and Lagrangian vector D, plotted at the centroid of a part of the drifter trajectory.

a) Drifter 3, from 16 june, 14.50 h till 17 june, 02.30 h, 700 minutes.

b) Drifter 4, from 16 june, 15.10 h till 17 june, 03.40 h, 750 minutes.

c) Drifter 5, from 16 june, 15.30 h till 17 june, 04.00 h, 750 minutes.

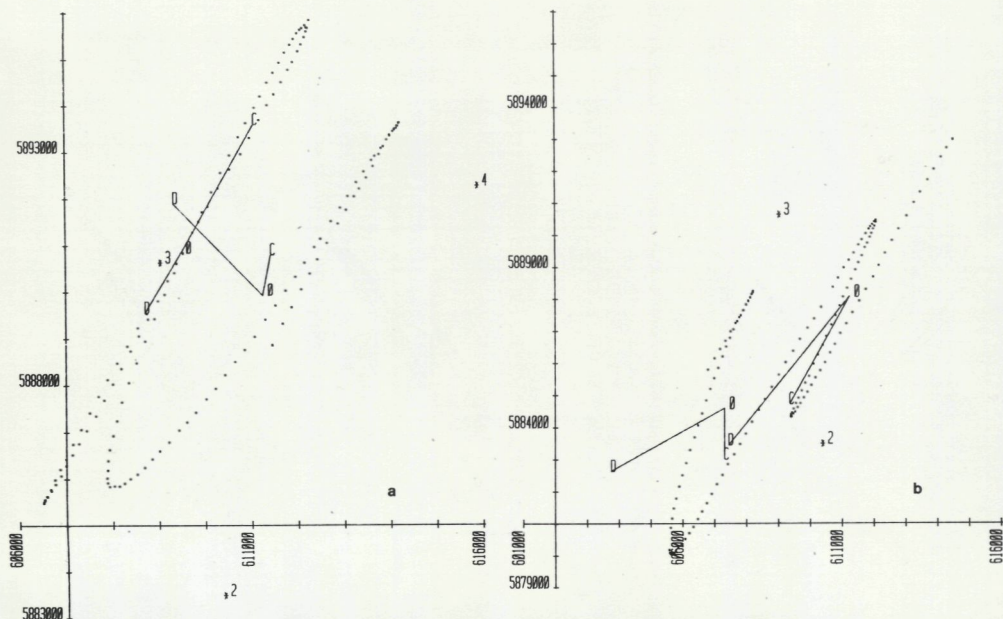


Fig. 101. Current meters interpolation vector C, calculated at the real drifter path, and Lagrangian vector D, plotted at the centroids of two parts of the drifter trajectory.

a) 20 and 21 may 1980. Current meters 2, 3 and 4. Drifter 0.

First part, 20 may, from 10.10 h till 22.40 h. Second part, from 20 may, 22.40 h till 21 may, 11.10 h. Both parts 750 minutes.

b) 21 and 22 may 1980. Current meters 2, 3 and 4. Drifter 0.

First part, from 21 may, 16.00 h till 22 may, 04.30 h. Second part, part, 22 may, from 04.50 h till 17.20 h. Both parts 750 minutes.

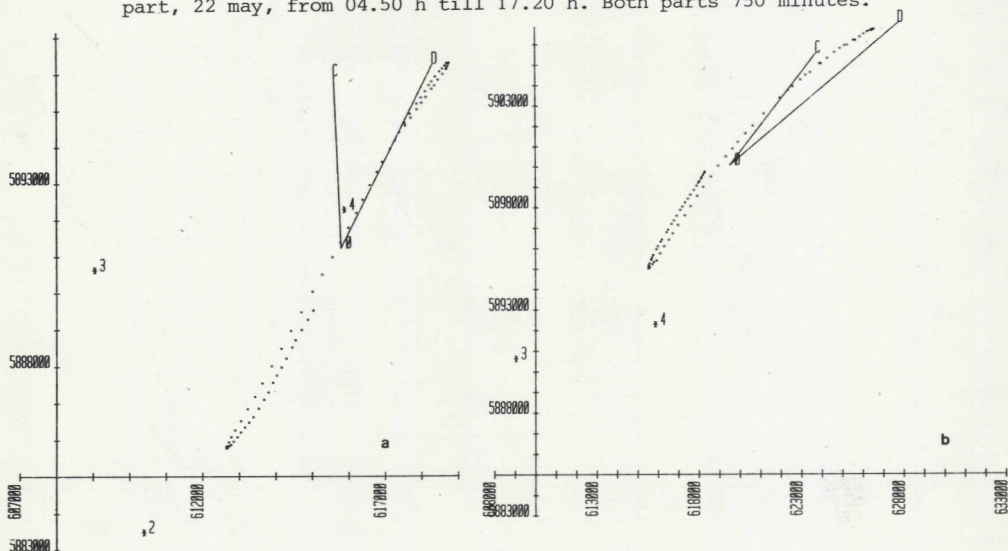


Fig. 102. Current meters interpolation vector C, calculated at the real drifter path, and Lagrangian vector D, plotted at the centroid of a part of the drifter trajectory.

a) 16 and 17 june 1980. Current meters 2, 3 and 4. Drifter 0.

From 16 june, 14.20 h till 17 june, 02.50 h, 750 minutes.

b) 23 and 24 june 1980. Current meters 3, 4 and 5. Drifter 0.

From 23 june, 18.50 h till 24 june, 07.20 h, 750 minutes.

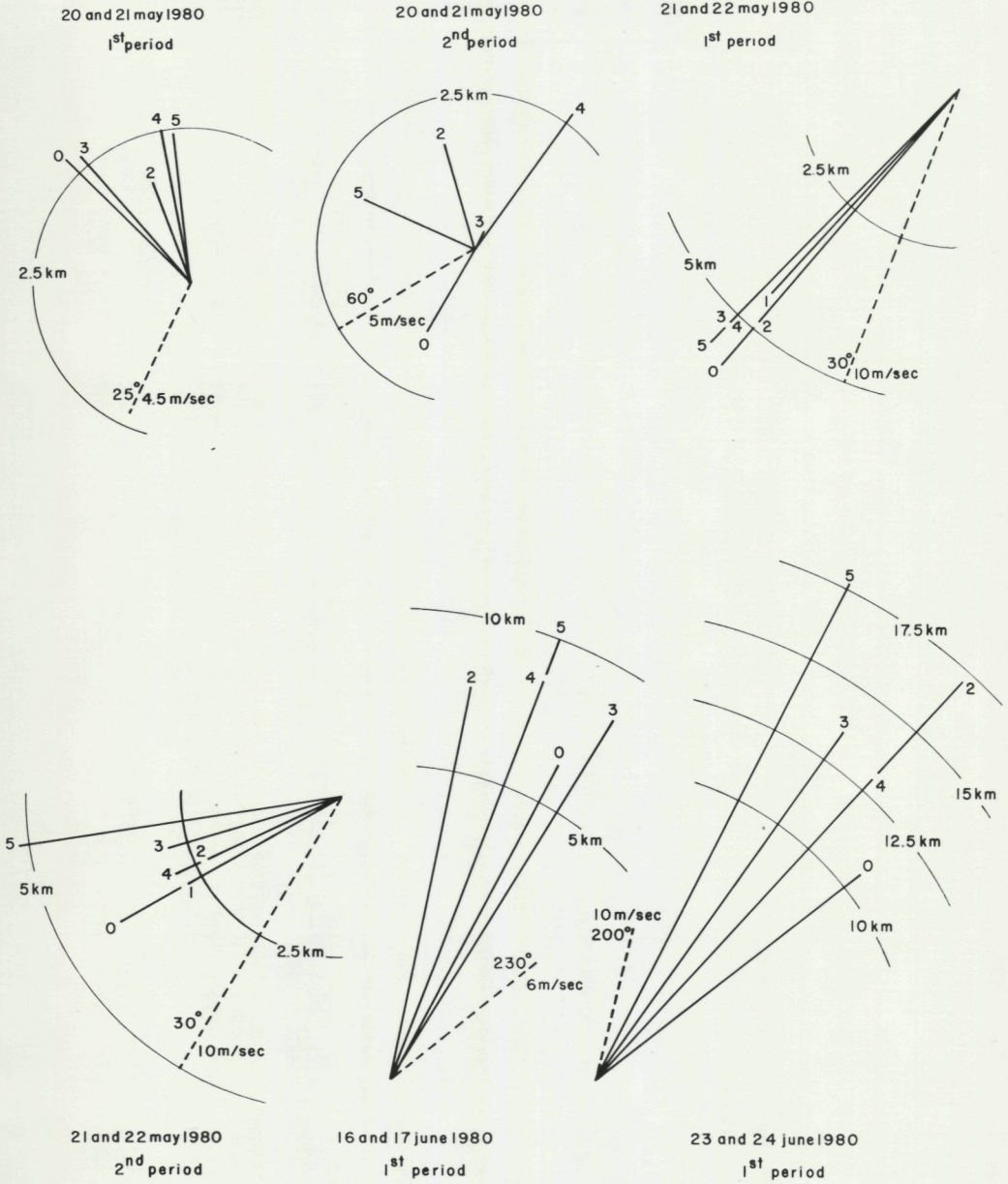


Fig. 103. Residual velocity and wind characteristics.