Sediment discharge in the Scheldt estuary

ECSA meeting 07/10/2002
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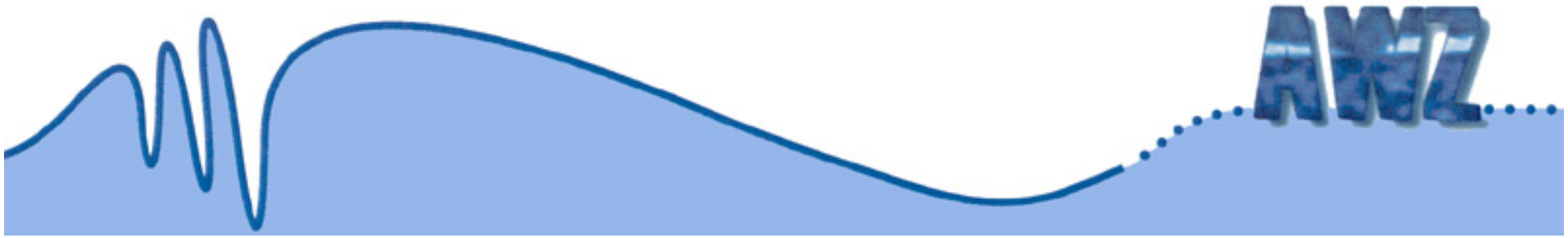
AWZ



Content

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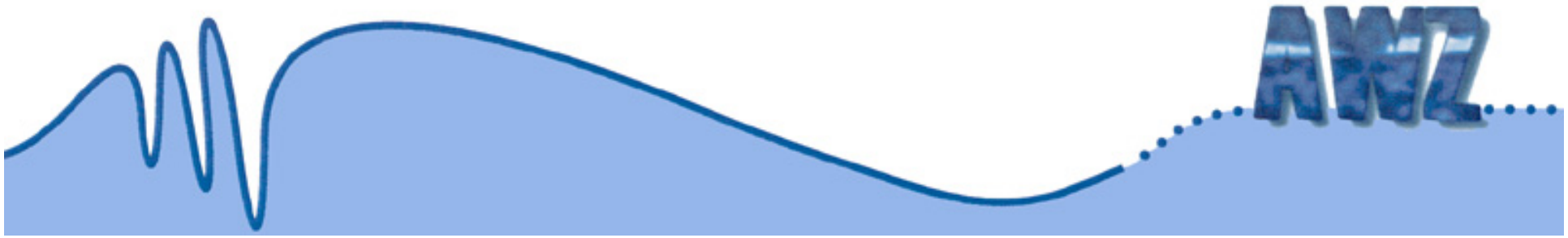
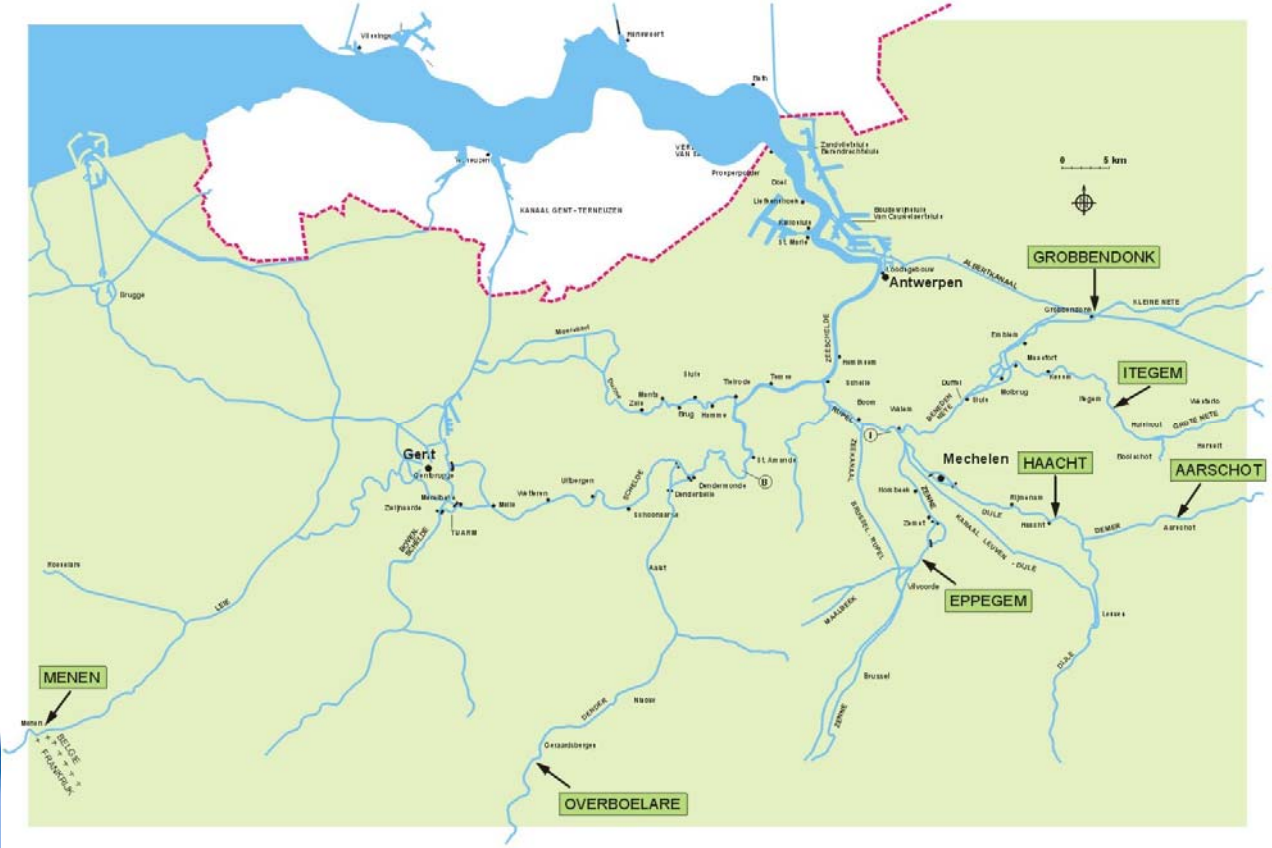
1. Goals

1. Evaluate effects of landmanagement practices
2. Determine the morphological effects of river enlargments measures
3. Estimate the quantities to be dredged
4. Fulfill the monitoring aspects of EU Water Framework Directive
5. Enlarge the knowledge of the watersystem
6. Provide basic information for treatment of dredged material



2. Approach

Network : 8 monitoring stations for continuous hourly monitoring



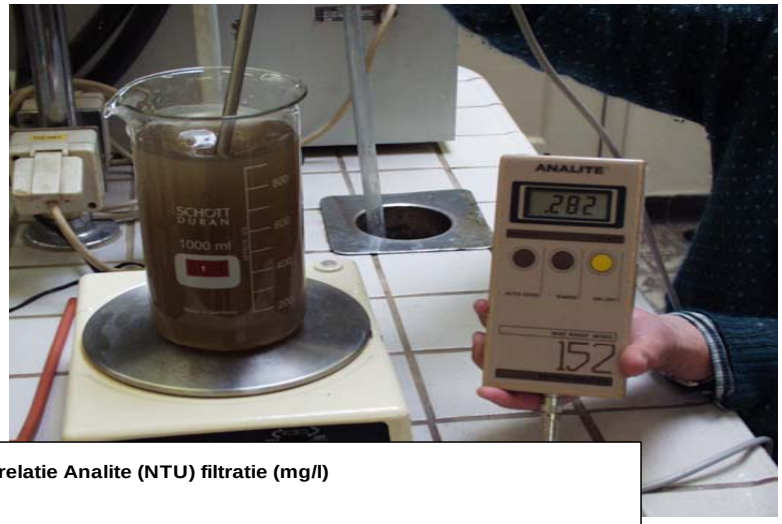
2. Approach

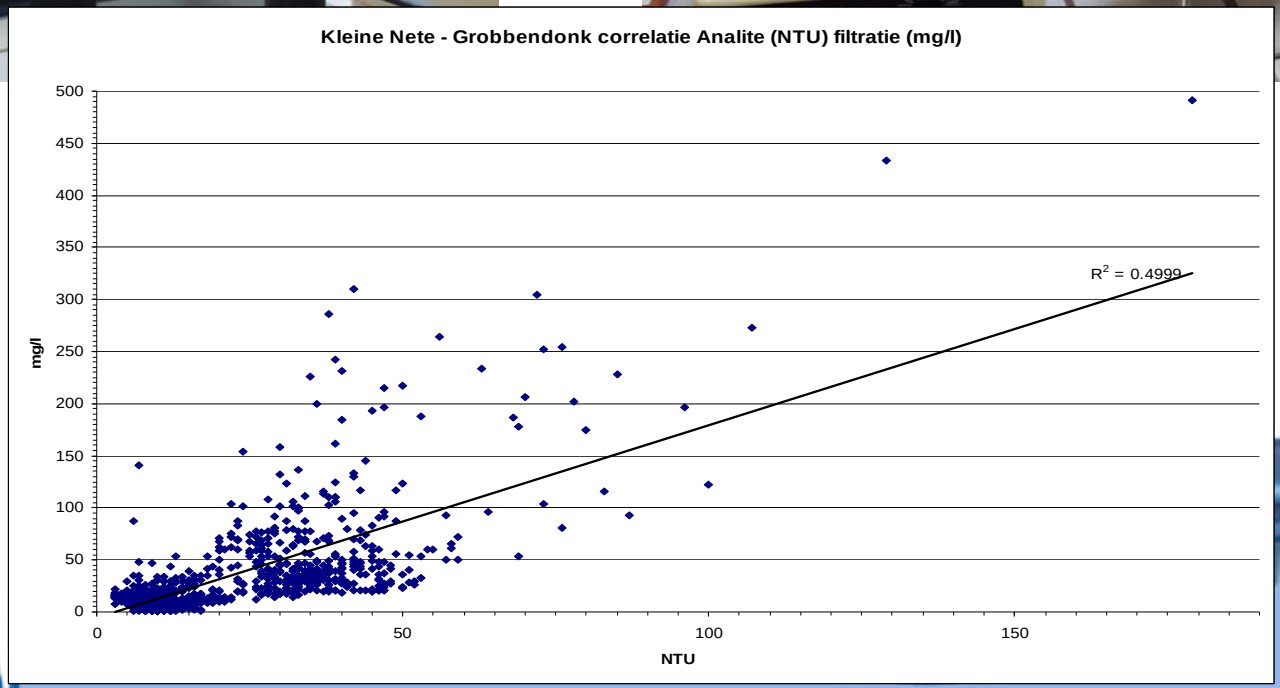
Each station consists of

- (sampler)
- turbidity probe
- datalogger with monitor

2. Approach

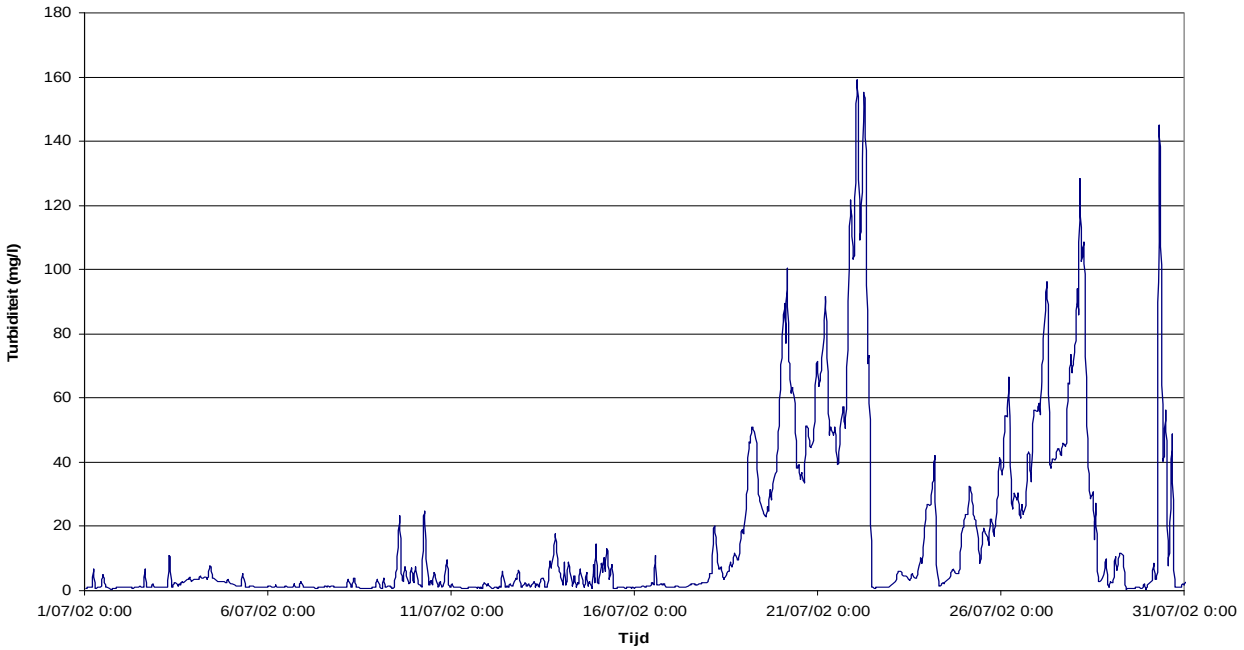
Calibration of the turbidity probe : correlation NTU - mg/l





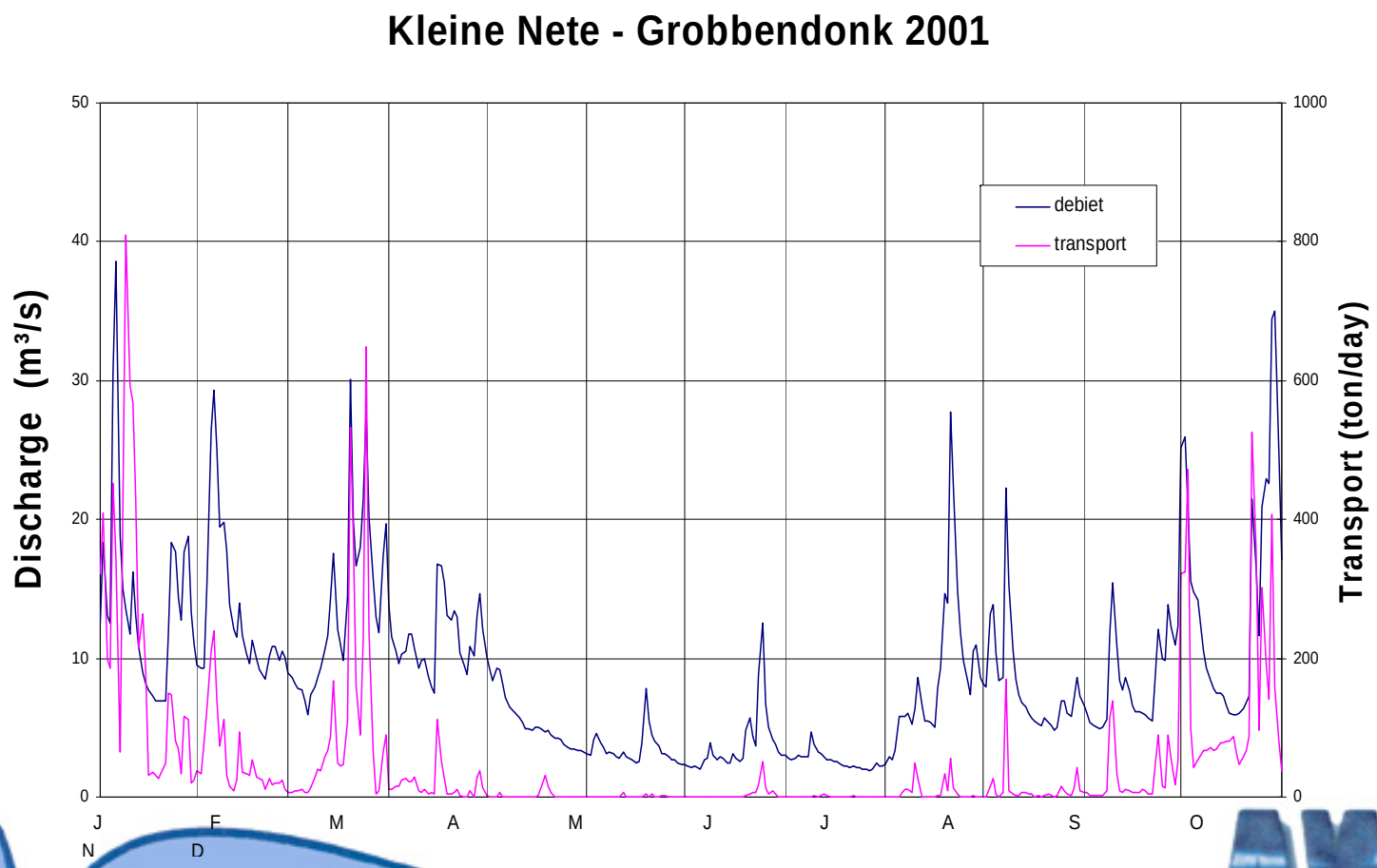
2. Approach

- Correlation local turbidity and cross section turbidity

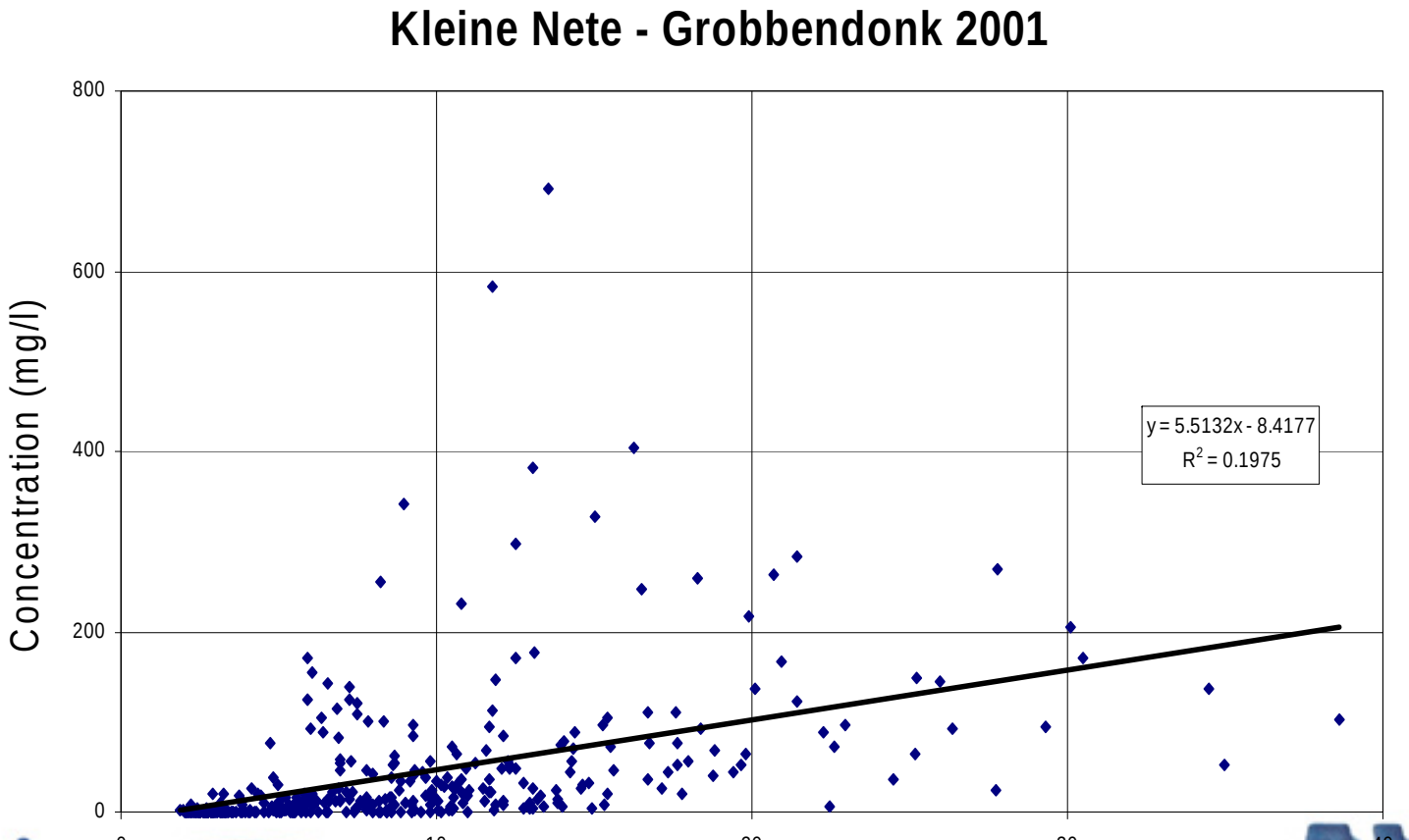


- Mass transport (mg/s) = discharge * turbidity

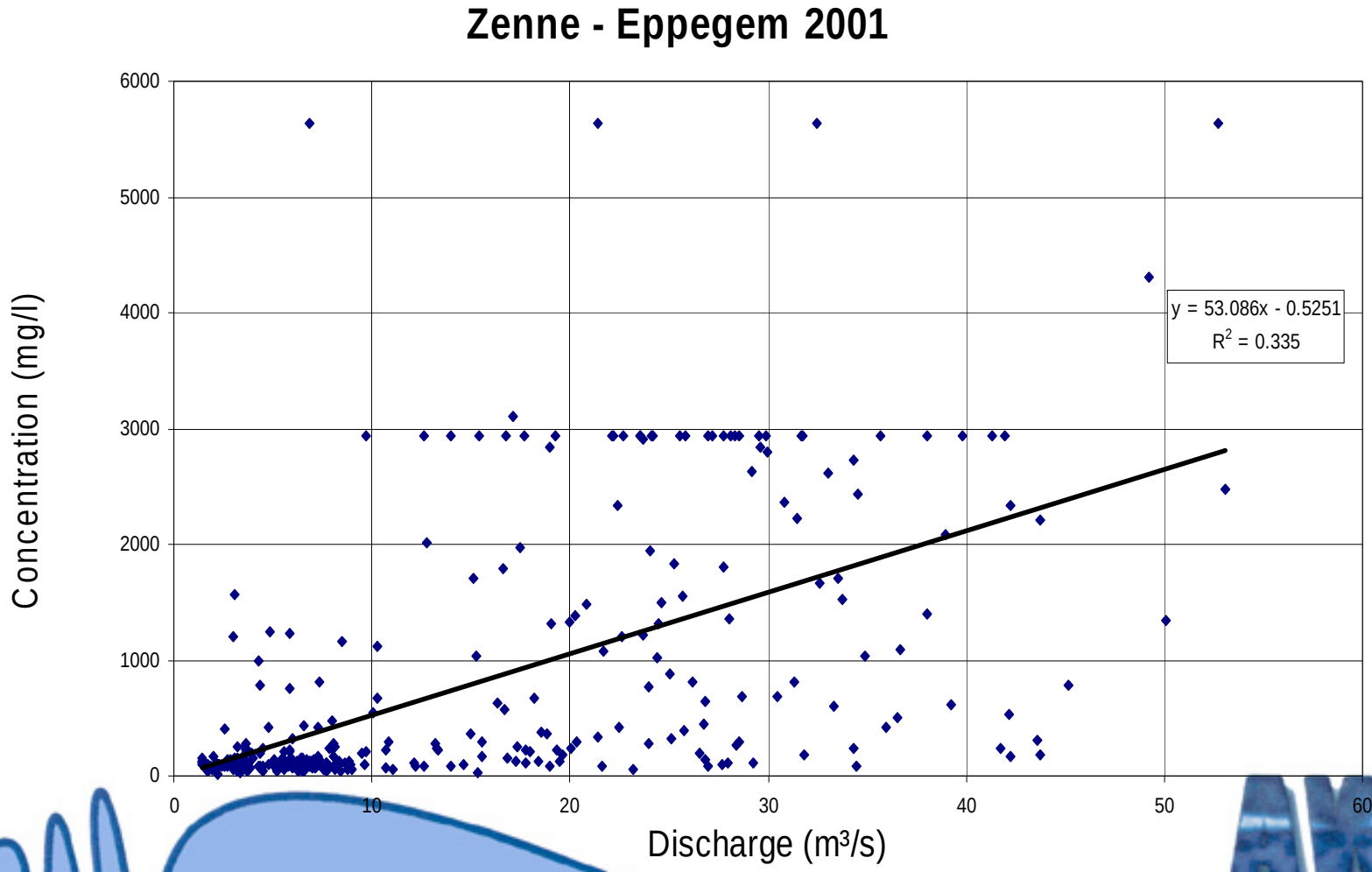
3. Data


Kleine Nete - Grobbendonk 2001
Discharge (m³/s)
Transport (ton/day)
debiet
transport
50
40
30
20
10
0
1000
800
600
400
200
0
J
F
M
A
M
J
J
A
S
O
N
D

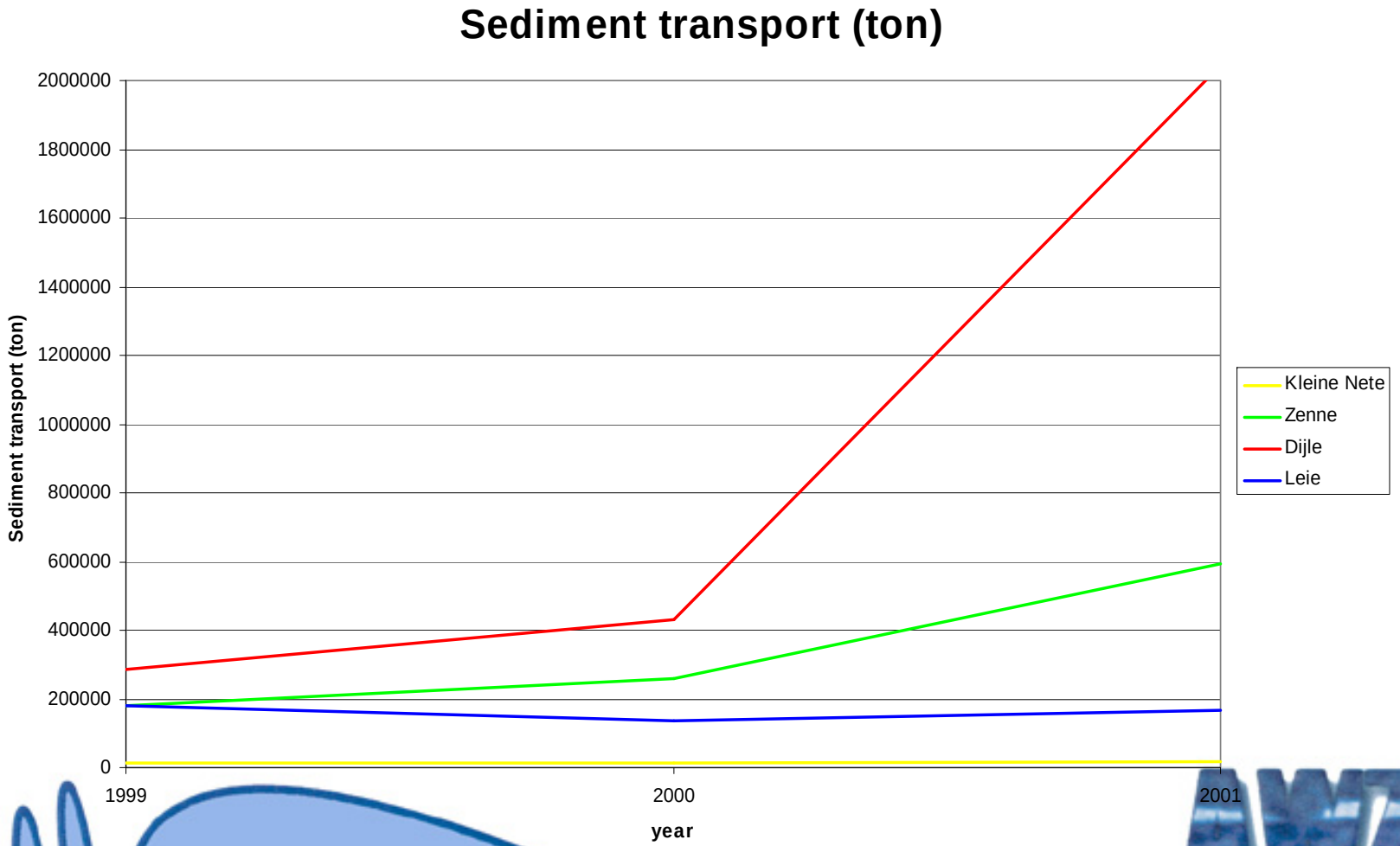
3. Data


Kleine Nete - Grobbendonk 2001
Concentration (mg/l)
800
600
400
200
0
0
10
20
30
40
Discharge (m3/s)
y = 5.5132x - 8.4177
R2 = 0.1975

3. Data


Zenne - Eppegem 2001
Concentration (mg/l)
Discharge (m³/s)
y = 53.086x - 0.5251
R² = 0.335
0
1000
2000
3000
4000
5000
6000
0
10
20
30
40
50
60

3. Data


Sediment transport (ton)
2000000
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
Sediment transport (ton)
1999
2000
2001
year
Kleine Nete
Zenne
Dijle
Leie

4. Conclusions

- Data since 1999 : short time series
- Correlation discharge - concentration ?
- Continuous monitoring
- Sediment transport = f (basin characteristics)
- Zenne : sediment transport - urban waste water ?