

Data management course

Part II CTD data



CTD

- Most use oceanographic instrument
- Conductivity (>salinity)
- Temperature
- Depth (<pressure)
- Data logger
- Extra inputs



CTD profiles

- Vertical profile
- Oceanographic cable & winch
- Computer, GPS,...
- Power on
- **Soak for 1 min**
- Sampling rate 2-24Hz
- Winch speed $> 1\text{m/s}$
- Rosette



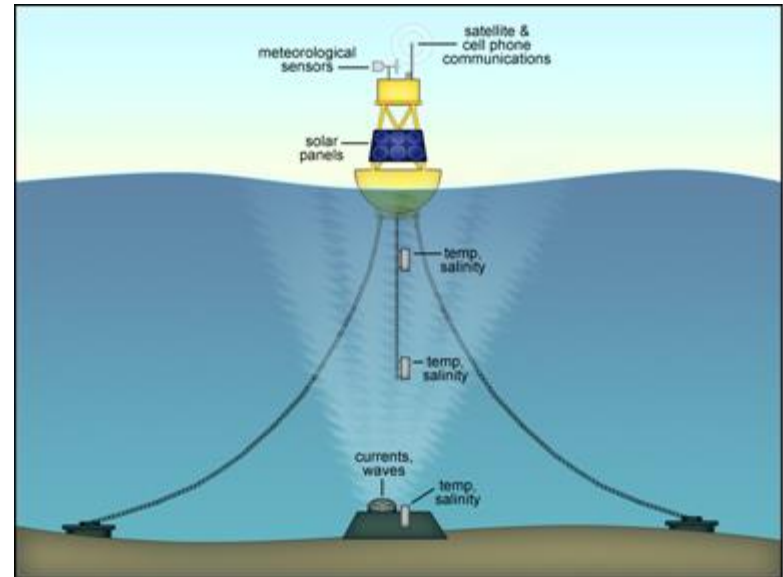
CTD Parameters

- Conductivity
- Temperature
- Depth
- Derived:
 - Salinity
 - Speed of sound
 - Density
- Additional:
 - PAR
 - OBS
 - Altitude
 - O2
 - Ph
 - CHla



CTD moorings

- Fixed location & depth
- Function of time
- Pressure =
 - Water level
 - Wave height
- With telemetry
- Or datalogger




```
07D87516C0EF0806954D4C0878CD74
07D8D716C08308064F4D4C0861C61E
07D97116BD720805A64D4D0837A43F
07D90716BD6E0805084D4B0802A502
07D8B516BD420805244D4E082DB134
07D87516BCAE0805D24D4D0835CA9D
07D85A16C0680806894D4B084ECE0E
07D93D16C2A90806CA4D4B084BCD1F
```

```

4930
0.0 0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000 -9.57000000e-008
2000.0000 0.0000 1.00000000 0.00000 1

0.000 0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000 1.00000000 0.0000 1

0.0 0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000 0.00000000e+000
2000.0000 0.0000 1.00000000 0.00000 1

0.000 0.00000000e+000 0.00000000e+000 0.0000 * Sea-Bird SBE 19plus Data File:
0.0000000e+000 0.000000e+000 0.000000e+000 0 * FileName = C:\SeaBird\Casts\061219_120.hex
0.000000e+000 0.000000e+000 0.000000e+000 0 * Software Version Seave win32 V 5.37c
0.000000e+000 0.000000e+000 0.000000e+000 0 * Temperature SN = 4126
0.000000e+000 0.000000e+000 1.00000000 0.00 * Conductivity SN = 4126

```

```
* Sea-Bird SBE 19plus Data File:
* FileName = C:\SeaBird\Casts\061219_120.hex
* Software Version Seasave Win32 V 5.37c
* Temperature SN = 4126
* Conductivity SN = 4126
* System UpLoad Time = Dec 19 2006 08:50:26
** Ship: zeeleeuw
** Cruise:
** Station: 120
** Latitude:
** Longitude:
# nquan = 9
# nvalues = 19
# units = specified
# name 0 = prdM: Pressure, Strain Gauge [db]
# name 1 = tv290C: Temperature [ITS-90, deg C]
# name 2 = c0mS/cm: Conductivity [mS/cm]
# name 3 = obs: OBS, Backscatterance (D & A) [NTU]
# name 4 = depSM: Depth [salt water, m]
# name 5 = nbin: number of scans per bin
# name 6 = density00: Density [density, Kg/m^3]
# name 7 = sal00: Salinity [psu]
```

Raw ctd data

- Hexadecimal values stored in data logger memory
 - Organised per cast
 - Not readable
 - Downloaded over RS332
- Configuration file describes sensors & calibration parameters
 - Instrument type, sensors installed
 - Changes per calibration
 - Pre- post cruise calibration



Seabird ctd profile data processing

- Steps required
 - Convert raw values to scientific values
 - Filter
 - Align sensors
 - Loop edit
 - Bin average
 - Derive
 - Ascii output



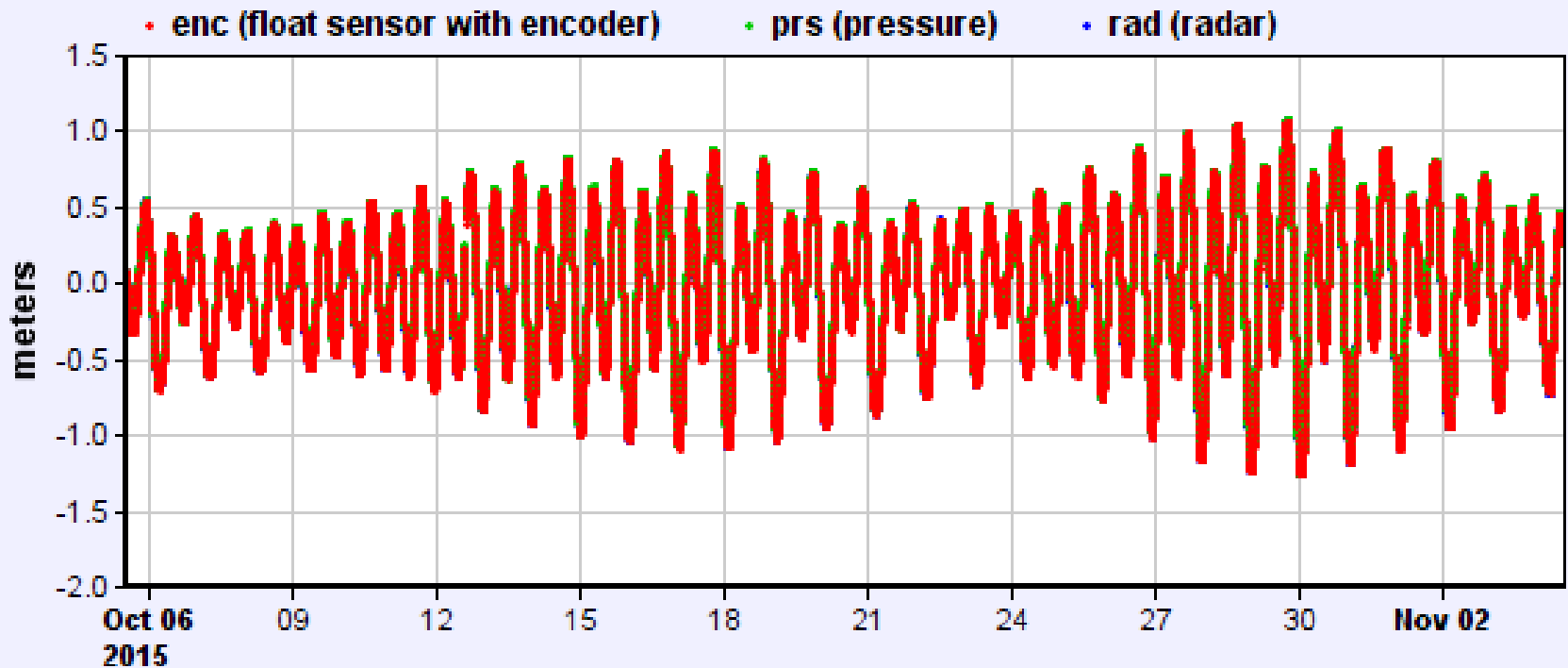
Procedure at vliz

- Hex & con file stored together
- Filename HEX file : 20060103_ZG02.hex
- Filename CON file : 4126_0611.con
- Processed file names:
4126_070122_ZG02_CFALBD.cnv
- Linked to MIDAS



CTD data

Sealevel at Ambon station (offset: 4.444 m)



From 2015-10-05 12:49+00:00 to 2015-11-04 12:49+00:00

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CTD data examples

- <http://www.vliz.be/vmdcdata/midas>
- <http://www.ioc-sealevelmonitoring.org>

