UNIVERSITY OF GOTHENBURG

MAV104 – CTD exercise

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- Today’s exercise
- CTD-data
- Manage CTD data with Python
- Visualize CTD data

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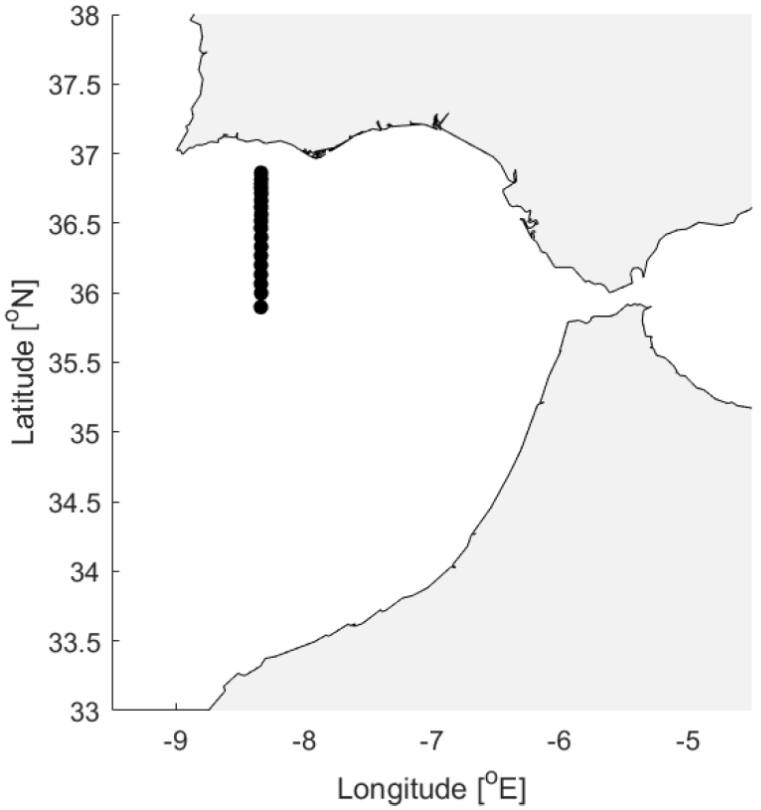
Today's exercise

- Purposes:
  - Get used to CTD data
  - Prepare for fieldwork and associated data management
  - Practice managing data with Python
- Three exercises where you load CTD data from files and visualize them!
- Data comes from an NS transect just west of Gibraltar
- https://www.nodc.noaa.gov/OC5/WOD/pr_wod.html

Today's exercise



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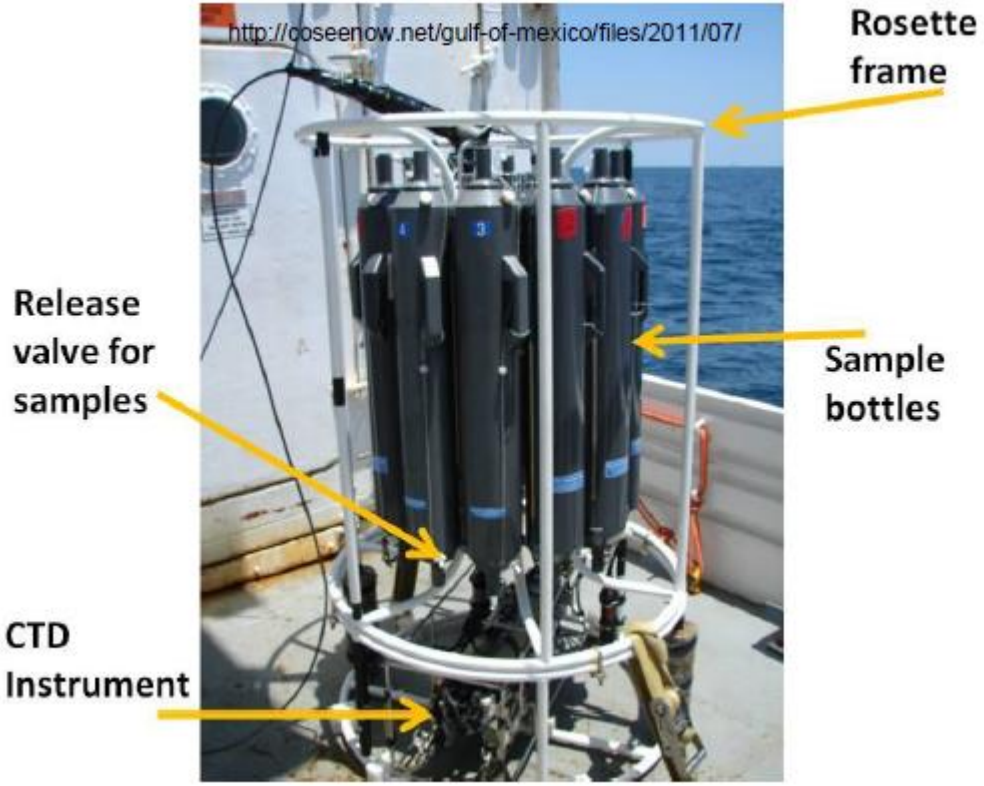
CTD data

- **CTD** = **C** onductivity, **T** emperature, **D** epth
- Measures conductivity, temperature and pressure
- Salinity is calculated from conductivity and pressure
- Other parameters are often measured, such as oxygen content
- Often vertical profiles through the water column

CTD data

- Collection:
  - With CTD only
  - With CTD + additional sensors
  - In a so-called CTD rosette
- Usually requires some processing before use
- Output:
  - Often in the form of some type of text file
  - Data in columns with one column per parameter
  - Information / metadata in the so-called header
  - Comma or space separated



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- **Manage CTD data with Python**
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Manage CTD data

- CTD data often comes in the form of large tables
- Each column contains data for a specific parameter
- Each row contains data from a measurement, or rather average value for a number of measurements
- Handling of CTD data means handling of large matrices / tables
- Python provides access to good tools to handle and visualize the data

Manage CTD data

Python is a programming language used within a variety of areas. The programming language is suitable for working with large amounts of data, which is very common in most areas of marine science.

- Python is open-source and thus free
- You will work with Jupyter Notebook which is one web application where you can create and share documents which contains programming code, equations, figures and descriptive text.

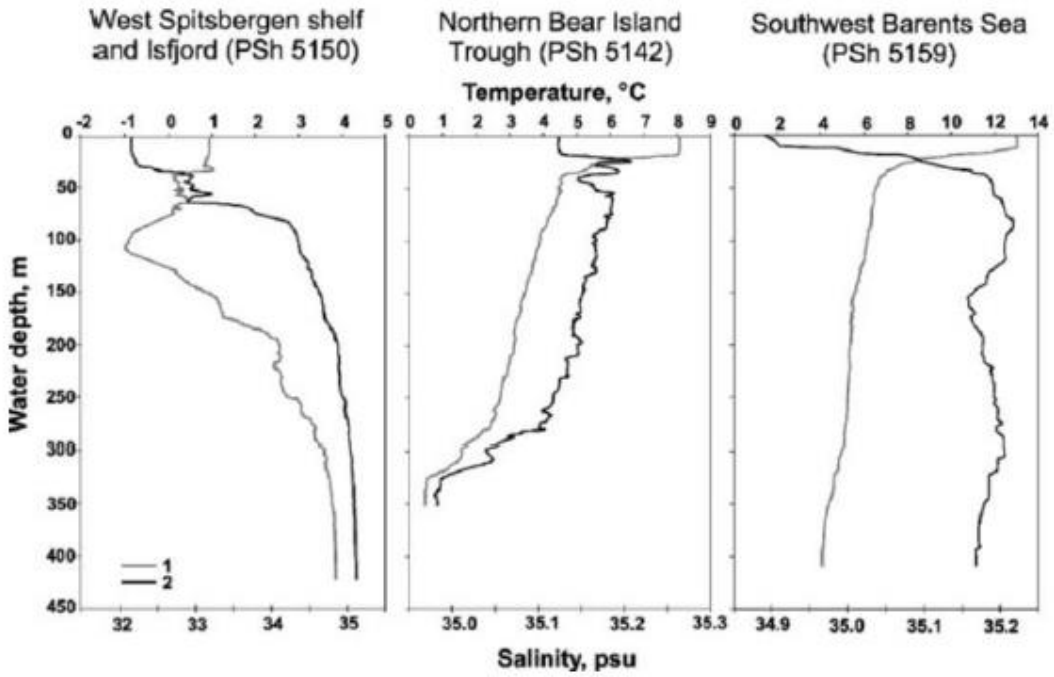
Manage CTD data

If you get stuck, what to do?

- Read any error messages
- help (name of function / toolbox etc. + ? in Jupyter Notebook)
- Search online
- During today's exercises, ask me ☺

Visualize CTD data

- During today's exercise you will visualize data on three different ways:
  - Profiles
  - 2D surface / sections
  - TS diagram



Från: Ivanova et al., 2008

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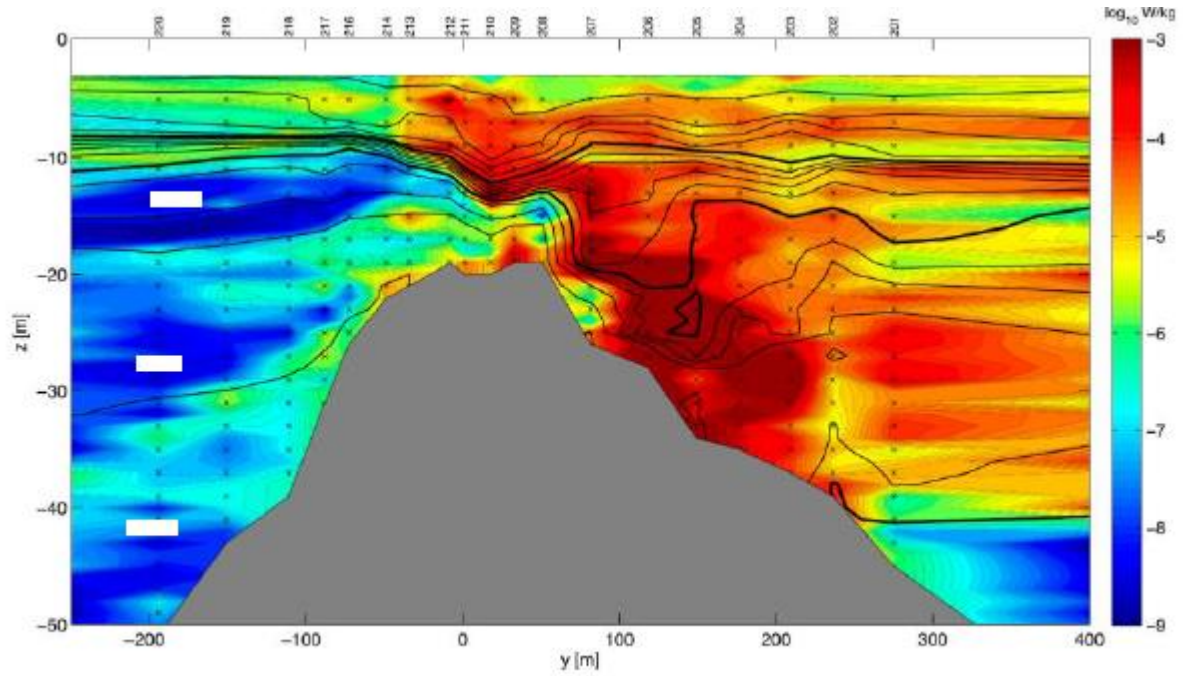

Från: Staalstrøm et al., 2015

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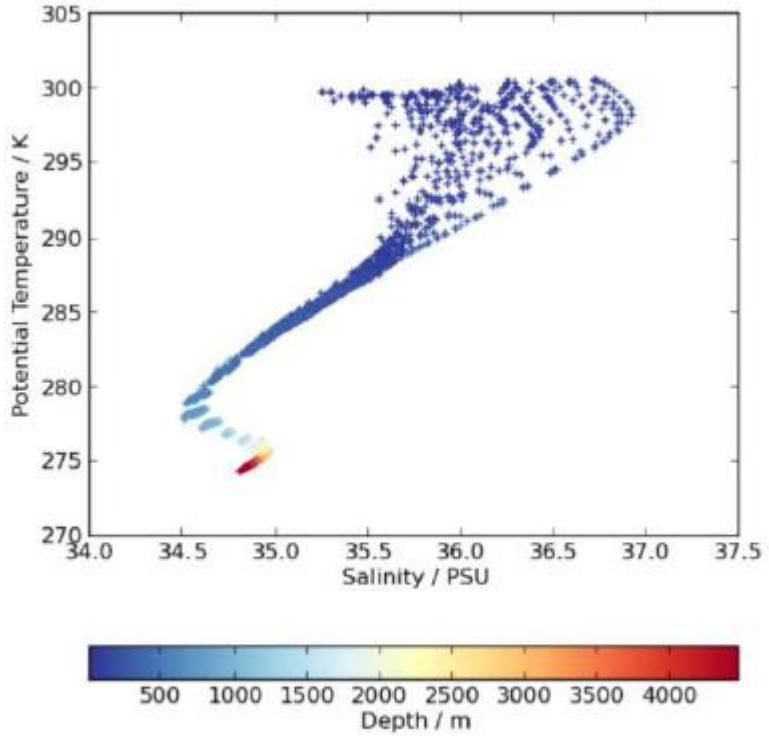

https://scitools.org.uk/iris/docs/v1.5/examples/graphics/atlantic_profiles.html

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Lycka till!