**Copernicus CTD matcher**

This repository contains a Python script that reads CTD ODV .text files and Copernicus model NetCDF outputs. It interpolates temperature and salinity at each CTD station's location, date, and depths, and writes a single combined ODV-compatible output file.

**Repository Structure**

* copernicus\_ctd\_matcher5.py  
  Main script that:
  1. Parses an existing CTD ODV file
  2. Loads Copernicus NetCDF model data (temperature and salinity)
  3. Bilinearly interpolates model values at each CTD location & depth
  4. Optionally processes manual station definitions
  5. Writes a combined ODV-compatible text file containing model-only data
* README.md  
  This file includes: overview, requirements, configuration, and usage instructions.

**Requirements**

* Python 3.8 or higher
* Packages:
  + numpy
  + pandas
  + xarray

**Configuration**

1. **User Options** (at top of generate\_model\_only\_fullODV.py):
   * use\_ctd (bool): include stations from the CTD file
   * use\_manual (bool): include stations defined manually
   * manual\_stations (list of dicts): each dict with keys:
     + Station, Cruise, LOCAL\_CDI\_ID
     + datetime (string, e.g. 2013-10-23T07:00:00.000)
     + Latitude [degrees\_north], Longitude [degrees\_east]
     + PRESSURES (list of dbar levels)
2. **File Paths**:
   * ctd\_file: path to the input CTD ODV text file
   * temp\_nc: path to Copernicus temperature NetCDF
   * sal\_nc: path to Copernicus salinity NetCDF
   * output\_file: desired path for the combined output

**Usage**

1. Modify the **USER OPTIONS** section in generate\_model\_only\_fullODV.py to suit your needs.
2. Adjust the **FILE PATHS** to point at your CTD file and NetCDF files.
3. Run the script:
4. python generate\_model\_only\_fullODV.py
5. The script writes the combined ODV text file to output\_file, ready to load into ODV.

**Output**

* A single tab-delimited file (all\_model\_only\_fullODV.txt by default) containing the original CTD column structure and header metadata, but with **PSAL** and **TEMP** replaced by interpolated model values at each station and depth.