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OPB 305 – Marine Optics & Biogeochemistry TD 3 IOPs and Reflectances

Instructions for Report 3 of TD OPB 305

Send in pdf format before 9 November 2020 to my email (anne.petrenko@mio.osupytheas.fr) using this format: `Rapport_OPB305_TD3_2020_Familyname.pdf`. Maximum 1 page (single-sided); Method: no more than 3 lines (no need to cite the site); explain the main result(s) using supporting figure(s); don't forget the figure legends and captions need to be cited in the text. Also send me you Matlab script as: `Script_OPB305_TD3_2020_Familyname.m`

Before starting with Matlab

1. From the TD_OPB305 directory:

http://www.com.univ-mrs.fr/~petrenko/TEACHING/OPB305/TD_OPB305/

download the following files:

- The **optical data** are in the file called `sarrefl.xls`, with the different parameter names used as column headings. These are data measured by MIO scientists during the SARHYGOL campaigns (Suivi Automatique Régulier de l'HYdrologie dans le GOLfe du Lion) in 2000 and 2001.

There are 32 measurements taken at different times and locations in the Gulf of Lion. Caution: all reflectances (columns 16 to 30) have been multiplied by 1000 to simplify notation in the table.

- The **bathymetry** (in folder BATHY) of the Gulf of Lion comes in files labelled `lineX.txt` (where X = the depth of the respective isobath). Each file contains three columns: latitude, longitude, and X. Otherwise you can use the Matlab toolbox `M_Map` (<http://www2.ocgy.ubc.ca/~rich/map.html>).

EXERCISES

1. a) Plot the reflectance spectra for series 6 and 23 in a single figure and explain the difference between the two spectra
b) Using a new figure, plot all spectra.
c) Which spectra stand out? How do you explain it?
2. a) Write a small program to plots the bathymetry of the Gulf of Lion using bathymetric lines.
b) Add some markers to identify the locations of the different sampling stations.
c) Determine where the stations with different spectra (see 1c above) are located; what do you conclude? Make some assumptions about the missing measurements including what order of magnitude you would expect them to have.
3. a) Compare the chl measurements with the modelled chl concentrations (models OC2, OC4V4, Bricaud 2002, and Volpel 2007; see Chapter 8 of this course)
b) is there an algorithm that systematically approaches the field measurements?

Note: The word **seston** designates all particles, i.e., of all kinds, whether organic or inorganic suspended in the water column (unit mg/l).