Marine Geodesy – Lab 2 – May 5th 2021

Please put you name and student ID on the paper or in the mail you send me (bruce.thomas@gis.uni-stuttgart.de). ***Submission is for next Thursday, May the 13th (even if it's a holiday so you can have a full week off after).*** *I want commented codes easy to run and a PDF text describing your work with figures (maximum 4 pages). Do your best!* 😊 *Good luck!*

Task 1 /30

On ILIAS, download DATA-MARMARA-NATCOM.tar.7z dataset. In this archive, you will find the data in an easy accessible format, for example:

2304-BAT.dat. — Battery
2304-BSL.dat. — Baseline lengths to the other transponders (time, transponder ID, length(m), delay time)
2304-HRT.dat. — Temperature High Resolution
2304-INC.dat. — Inclination (in degree) and two (unknown) directions
2304-PAG.dat. — Data written on flash card
2304-PRS.dat. — Pressure
2304-SSP.dat. — Sound speed of local sound speed sensor (good sensor, but not good enough for the direct path method, we calculate sound speed from T,P and Salinity (constant = 38,6 Psu))

Pick one dataset different from the other students. Then, on Matlab or Python, realize time series of temperature and pressure, interpret. Present you work in front of the class.

Task 2 /30

On ILIAS, download the Python script seawater.py. Install seawater package as proposed. Explain what are the functions sw.svel() and T90conv().

Have a look at the code, test it and discuss what is the goal. At the end, you are in the situation when you look at the data collected during the mission. Change the parameters. Discuss the changes using some plots.

Task 3 /30

Now, you need to design the deployment before the cruise takes place. You need to answer the question: what are the parameter changes for 1 cm baseline change (1 km long baseline)? 1cm baseline change on 1km baseline length is the accuracy we hope to get. Code it, explain and discuss.

Task 4 /10

Have a look at the pressure changes (Pascal), convert them into water column (meters).