

Title	Working with Ocean and Atmospheric Data in Matlab
Organizer	Irene Laiz, WACOMA Academic Coordinator
Lecturer	Miguel Borja Aguiar González
Number of Hours	35 (20 H. Theory, 15 H. Practice)
Dates	20 th -24 th January 2020, 15:30-19:30 (on-site) 27 th -31 st January 2020 (online)
Place	Facultad de Ciencias del Mar y Ambientales (CASEM) Room B.01.27 (PALA B, 1 st floor)
Objective	The objective of the course is to introduce the basic concepts of Matlab programming and teach the students to visualize and analyze data from a variety of sources using techniques such as statistics, signal processing and mapping.
Contents	<ol style="list-style-type: none"> 1) The Matlab Environment: The Workspace and the Editor/Command Windows 2) Matlab Programming <ol style="list-style-type: none"> 3.1) Data Types: Integers, Strings, Cells, Structures, ... 3.2) Creating Scripts / Saving and Loading Data 3.3) Scripts vs Functions 3.4) Loops, Conditional Statements, ... 3) Reading and Visualizing Data <ol style="list-style-type: none"> 4.1) Data Formats: ASCII, NetCDF, etc 4.2) Displaying Results and Preparing Figures 4.3) Saving Figures: png, jpeg, eps, ... 4) Analyzing Data <ol style="list-style-type: none"> 5.1) Toolboxes and Open Data for Marine Scientists 5.2) Computing and Analyzing Oceanographic Variables: Vertical Profiles and Vertical Sections of Ocean Properties, TS Diagrams, ... 5.3) Time-Series Analyses: Tidal Analyses, PSD, Wavelet, Serial Correlation, Filtering, Basic Statistics, ... 5.4) Mapping techniques for Ocean Properties 5) Student Project. Every student will develop scripts to visualize and analyze their own data. Upon request, in lack of own data, students may work alternatively on data provided by the lecturer. <p>The course hours are distributed such that everyday there will be time dedicated to theory and exercises; the students will put in practice the theory with study cases.</p>