

Training Course on Practical Applications on Climate Variability Studies

The course is organized in the framework of CLARIS EU Project (A Europe-South America Network for Climate Change Assessment and Impact Studies; GOCE-CT-2003-01454). A strategic goal of CLARIS is to set up and favor the technical transfer and expertise in climate issues among European and South American partners.

Objective

Main objective of the course is the transference of know-how in practical applications and management of statistical tools commonly used to explore meteorological time series, focusing on applications to study issues related with the climate variability and climate change.

Course Description

In every three-hour session, students will be introduced to practical applications for the study of the climate system. Those applications will be based on Matlab. For those students that are not familiar on using the Matlab, in every three-hour sessions there will be an introduction to the working environment, dealing with matrices, useful functions, logical conditions, saving and loading, data management, functions & scripts, loops and vectorization, etc.

Practical applications for the study of the climate variability will be discussed. Starting point will be some basic statistic for time series analysis as estimation of means, anomalies, standard deviation, correlations, arriving the estimation of particular climate indexes (SOI, NAO, Niño 3.4), detrending single time series and time series from an ensemble experiment, filtering, interpolation of atmospheric fields, interpolation of fields as the SST from oceanic non parametric grids to atmospheric parametric grids, leading modes of climate variability (by EOF, Rotated and Complex EOF), signal processing in the climate system (spectral and wavelet analysis).

It is assumed that students have basic knowledge and understanding of statistics. The course is intended primarily for graduate students in Atmospheric Sciences. Anyway, experienced researchers in the field are very welcome.

Date, Time & Venue

20-24 February 2006, 10.00-13.00

Centro de Investigaciones del Mar y la Atmosfera (CIMA, CONICET-UBA),
Ciudad Universitaria, Pabellon 2, floor 2.

Course Leader and Assistant

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Training Course Schedule

Monday 20, 10.00-13.00

Basic concepts
Working environment
Dealing with matrices
Useful functions
Logical operators
Saving and loading
Data management
Exercises

Tuesday 21, 10.00-13.00

Basics graphics settings
Functions and scripts
Vectorization
Exercises

Wednesday 22, 10.00-13.00

Presentation of generic scripts
Means
Standard deviation
Linear detrend
Anomalies
Correlations
Filtering
Hovmoeller plots
Interpolation from/to regular/irregular grids

Thursday 23, 10.00-13.00

Presentation of generic scripts (cont.)
Empirical orthogonal functions (EOF)
Varimax rotation
Complex EOF
Spectral analysis
Wavelet analysis
Probability density functions

Friday 24, 10.00-13.00

Exercises