Physics 6316

<u>Time Series Analysis of Ocean Data</u>

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This course will cover data analysis techniques in oceanography. We will cover some basic time-series analysis techniques, some of which may be review and will also look into the frequency domain. We will use Matlab as the primary numerical engine since it is easy to use, includes lots of graphic commands and has many scripts that we can use to carry out more sophisticated analysis. The techniques that will be explored will include spatial and temporal analysis of ocean data, EOF analysis, normal mode analysis, inverse methods, Fourier analysis, harmonic analysis, spectral analysis and cross-spectral analysis.

Activities:

Assignments (4-5)	50%
Presentation of a topic in data analysis	20 %
Term Analysis Paper	30%

Course outline:
1) Introduction to differing characteristics of oceanographic data – Lagrangian versus Eulerian. Measurement techniques and theory.
2) Dimensional analysis and scaling
3) Techniques in statistical analysis
4) Spatial Analysis
    a. EOF Analysis
    b. Normal Mode analysis
    c. Inverse Methods
5) Time Series Analysis
    a. Fourier analysis
    b. Harmonic analysis
    c. Spectral analysis
    d. Cross-spectral analysis

Text :

Data Methods in Physical Oceanography - Emery and Thomson 2nd Edition 638 pp.