



Comparisons between transect and fixed point in a oceanic turbulent flow: statistical analyses

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Oceanological processes possess important fluctuations over large ranges of spatial and temporal scales. These fluctuations are related with the turbulence of the ocean.

Usually, in turbulence, one considers fixed point Eulerian measurements, or Lagrangian measurements following an elements of fluid. On the other hand, in oceanography, measurements are often done from a boat operating over a transect, where the boat is moving in the medium at a fixed speed (relative to the flow). Here the aim of our study is to consider if such moving reference frame is modifying the statistics of the measurements. For this we compare two type of measurements at high frequency: fixed point measurements, and transect measurements, where the boat is moving at a fixed speed relative to the flow. 1 Hz fluorometer measurements are considered in both cases. Measurements have been done the same day, under similar conditions.

Power spectra of time series are considered, as well as local mean and variance measurements along each transect. It is found that the spectral scaling slope of the measurement is not modified, but the variance is very different, being much larger for the moving frame. Such result needs theoretical understanding and has potential important consequence regarding the measurement that are done at high frequency on moving frames in oceanography.