

Satellite Altimetry and Data Assimilation for Ocean Circulation Studies

Research on the dynamics and energetics of ocean currents is conducted by satellite altimetry. Satellite data are objectively assimilated into numerical analysis schemes and circulation models to allow for the construction of both synthetic data sets (i.e., conversion of surface altimetry into subsurface density information) and synoptic time series from inherently asynoptic altimetry sampling (using numerical dynamic models of ocean circulation to interpolate data synoptically through time). Additionally, studies which employ altimetric and model results focus on understanding the dynamics of major ocean currents. Recent experience indicates the remarkable ability of this approach in many ocean regimes, including western boundary currents, equatorial currents, and large-scale global and basin phenomena. Links between regional and global oceanography are now being established through the synoptic view provided by both the altimetry and model simulations.