Geophysical Research Abstracts, Vol. 9, 03881, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-03881

Characteristics of planetary waves in the North Atlantic from altimetry and the Clipper 1/6° model

A. Lecointre (1), T. Penduff (1), P. Cipollini (2)
(1) LEGI (Grenoble, France), (2) NOCS (Southampton, UK)

Satellite altimetry has been recording the surface signature of planetary waves in the world's oceans since 1992. These observations have highlighted the limits of standard theories about planetary waves, and stimulated the development of new ones, both of which emphasize the importance of subsurface features, i.e. the impact of baroclinic shears and bottom topography. However, the subsurface structure of these waves is still poorly known, and realistic numerical simulations have a clear potential for such a 3D investigation. The present study focuses on the North Atlantic subtropics, and makes use of altimeter (Topex/Poseidon + ERS) sea-level anomalies (SLA) and of a 1/6° realistic Atlantic simulation performed during the French Clipper project. Westward-propagating surface structures are tracked over the period 1993-2000 from both observed and simulated SLAs. Our method, based on the Radon Transform (Hill et al., 2000), has been improved to extract the first baroclinic mode of the planetary waves. This surface validation of observed and simulated waves is done in terms of zonal phase speeds and amplitudes, and reveals the realism of modelled waves. The same analysis is thus extended below the surface. Our analysis highlights the complex structure of simulated waves in the vertical, the impact of the Mid-Atlantic Ridge, and might help support theoretical investigations.