MARIE-THARP LECTURE SERIES FOR OCEAN RESEARCH | **NO.13**

GEOMAR

Prof. Dr. Anne Marie Treguier

Senior scientist, CNRS, Laboratoire d'Océanographie Physique et Spatiale (LOPS), IUEM, Brest, France

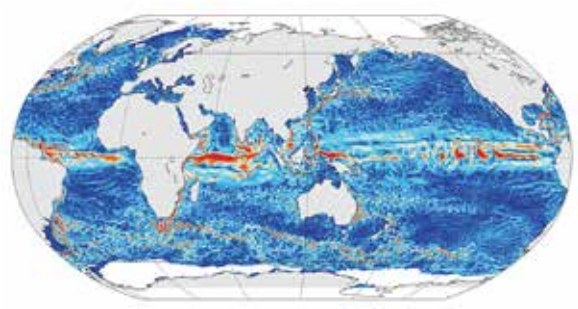
"IT WAS VERY EXCITING IN THOSE DAYS. WE WERE EXPLORERS."

Marie-Tharp (1920-2006), Oceanographer

Wednesday, 13th April, 2016, 12:00 p.m. (12:00h)

GEOMAR Lecture Hall West (R.54) | Düsternbrooker Weg 20, 24105 Kiel

Ocean Eddies and Climate: a New Challenge for Earth System Models



Ocean mesoscale eddies are the "weather" of the ocean, the analogue of the synoptic disturbances and storms in the atmosphere. Ocean eddies are ubiquitous and energetic. They are characterized by nonlinearity, sensitivity to initial conditions and chaotic behavior.

Like their atmospheric counterparts, ocean eddies transport heat and regulate the climate of our planet, through mixing of properties along isopycnals, releasing available potential energy, preconditioning of deep convection, or controlling subduction and CO_2 sequestration. Yet, until recently, ocean eddies have been ignored in earth system models used for climate scenarios. This lecture reviews various processes by which eddies impact the ocean circulation and seawater properties. Global numerical simulations performed by the Drakkar modelling group are used to illustrate these processes. High resolution models not only represent eddies, but also thin jets, exchanges at narrow sills, and energetic boundary currents. All these are key elements of the ocean circulation and likely have profound effects on the behavior of coupled ocean-ice-atmosphere and biosphere systems, at times scales of a few decades and longer. Recent coupled simulations have been performed by a few climate centers in Europe and in the USA. They give us a taste of the challenges that lay ahead, for building and understanding scenarios of future climate using the new eddying ocean components.

WEB GEOMAR WOMEN'S EXECUTIVE BOARD

Organizer: Women's Executive Board (WEB)
GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel
Düsternbrooker Weg 20 | 24105 Kiel | Germany
womensexecutiveboard@geomar.de | www.geomar.de/go/web

HELMHOLTZ | ASSOCIATION