



**HAL**  
open science

## Comparing sea-surface topography modes of variability from altimetry and global models

Bernard Barnier, Thierry Penduff, Mélanie Juza

### ► To cite this version:

Bernard Barnier, Thierry Penduff, Mélanie Juza. Comparing sea-surface topography modes of variability from altimetry and global models. Ocean Surface Topography Science Team (OST/ST) Meeting, Mar 2007, Hobart, Australia. 2007. hal-00267048

**HAL Id: hal-00267048**

**<https://hal.science/hal-00267048>**

Submitted on 25 Mar 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

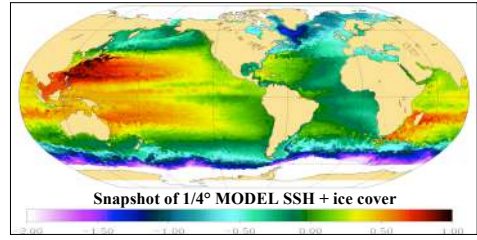


Distributed under a Creative Commons Attribution 4.0 International License

# COMPARING SEA-SURFACE TOPOGRAPHY MODES OF VARIABILITY FROM ALTIMETRY AND GLOBAL MODELS

## DRAKKAR

The international DRAKKAR program is building a hierarchy of ocean/sea-ice/passive tracer models to simulate and study the dynamical processes involved in the oceanic variability and scale interactions. This ensemble includes 1/2° and 1/4° configurations of the Global Ocean, 1/4° and (soon) 1/12° models of the Atlantic Ocean (30°S-80°N), all forced over the period 1950's-present by various reanalysed and observed atmospheric fields through bulk formulae. Reanalyses since 1950 will be conducted at Mercator with the 1/4° global model.



## GLOBAL MODEL SETUPS

- NEMO code (OPA9 ocean + LIM sea-ice)
- Partial steps+BBL, TKE mixed layer (waves+Langmuir cells)
- Advection: enstr/energy conserv. (momentum). FCT (tracers)
- Isopycnal laplacian tracer mixing.

## 2° MODEL

Laplacian momentum Mixing, GM90

## 1/4° MODEL

Biharmonic momentum Mixing + CFC/4C tracers

## 1958-2004 FORCING (Brodeau, Barnier et al)

- CORE bulk formulae. Dai & Trenberth monthly runoff.
- 6-hourly ERA40 (T,q,wind) + CORE LW/SW radiative fluxes
- No SST restoring. But SSS restoring ( $\tau=36$  days on 1<sup>st</sup> level)

SAME FORCING FOR THE 2° AND THE 1/4° SIMULATIONS

## ABSTRACT

The quasi-global sea-level anomaly AVISO altimetric database (weekly SLA, 1993-present) is compared with its **collocated counterparts** simulated by the models in various wavenumber-frequency bands. This assessment concerns the structure&intensity of the leading modes of variability at global and basin scale, the part of the observed SLA variance simulated by the model (and their mutual correlation), and local investigations of the simulated and observed variabilities in selected regions. We discuss realism of the variability simulated by the 2° and the 1/4° global models with the same forcing, and the sensitivity to resolution is commented. More generally, this validation procedure is applied to all DRAKKAR simulations to guide physical investigations, characterize the structure of model biases, and assess the impact of numerical and physical choices.

See the Poster by Penduff, Juza, Barnier concerning validation against hydrography

