Enhancing Prediction of Tropical Atlantic Climate & its impact (PREFACE)

To improve climate prediction in the Tropical Atlantic to a level where socio-economic benefit can be realised, with focus on sustainable management of marine ecosystems and fisheries.

EU FP7, 2014-2017
28 partners, 18 countries

www.preface-project.eu
PREFACE team interests in joint analysis of CORE-II runs for the Tropical Atlantic

- Interest in contributing to a coordinated analysis
- Partners have contributed to the CORE-II project (e.g., CNRM, MICOM, CERFACS)
- No centralised data makes access difficult
- Data useful for master thesis
- Topics of special interest:
  - New observations from the Tropical Atlantic
  - Errors in seasonal cycle and Benguela-Angola Front
  - Studies of Atlantic Niño, Meridional Mode, thermodynamic and dynamical O-A interaction, and mechanisms for decadal modulation of variability
PREFACE has a new mixed-layer heat and freshwater budget climatology, improved using ARGO and coastal data

Download: http://herakles.geomar.de:8000/MLETA

Peter Brandt
EUC seasonal transport variability from observations and GCM

GCM simulations (TRATL01) are obtained using a global NEMO model with a high-resolution (1/10°) tropical Atlantic nest (30°S-30°N). EUC transport in general too large, with some agreement in the EUC seasonal cycle in the central tropical Atlantic with respect to observations.
Tropical Eastern Boundary Upwelling

Off Angola, 11°S

- Hydrographic data from the Nansen program (semiannual cruises executed by FAO) and PREFACE/SACUS cruises and gliders
- Near-surface layers are dominated by superposition of semi-annual and annual components

from Kopte et al. (2016) to be submitted to JGR
Western Boundary Circulation

from Hummels et al. (2015) GRL
NorESM SST bias in Angola-Benguela Front Zone: 50% in CORE-II runs + 25% from CAM4 wind errors

Annual mean SST bias averaged between 17-22S NorESM and uncoupled sensitivity experiments

NorESM = Heat flux discrepancies + Local atmospheric model error + CORE-II MICOM,

Probably a large part of the CORE-II biases arises from wind forcing errors. How is the intermodel spread?

Koseki et al. to be submitted
Thermodynamic Ocean-Atmosphere interactions are able to explain key Atlantic Nino features

GFDL – CM2.0 AGCM-slab coupled model

Lag-regression:

Thermodynamic process appear to dominate variability in climate models, but is this realistic?

Nnamchi et al. 2015, 2016, Trzaska et al. 2007
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