

# WCRP

World Climate Research Programme

To facilitate the analysis and prediction of Earth System variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society



# CLIVAR SSG

J. Hurrell (co-chair)	NCAR, USA
M. Visbeck (co-chair)	IFM-GEOMAR, Germany
W. Dong	Beijing Normal University, China
K. Drinkwater	Institute of Marine Research, Norway
L. Goddard	Earth Institute at Columbia, USA
S. Gulev	Russian Academy of Sciences, Russia
C. R. Mechoso	University of California, USA
S. Schubert	NASA Goddard Space Flight Center, USA
D. Wang	Chinese Academy of Sciences, China

## Ex Officio Members:

CLIVAR Panel and Working Group Chairs

K. Trenberth (chair GEWEX SSG)

## International CLIVAR Project Office:

H. Cattle --> Bob Molinari (Director)

A. Pirani, N. Caltabiano, C. Ereno, Xiaohui Tang

S. Grapes

# CLIVAR

WG Ocean Model Development  
WG Coupled Modeling  
WG Seasonal to Interannual Prediction

PAGES-CLIVAR  
Intersection

ETCCDI

Global Synthesis  
and Observations  
Panel

Atlantic Implementation Panel  
Indian Ocean Panel  
Pacific Implementation Panel  
Southern Ocean Panel  
Arctic Climate Panel

Variability American  
Monsoon System

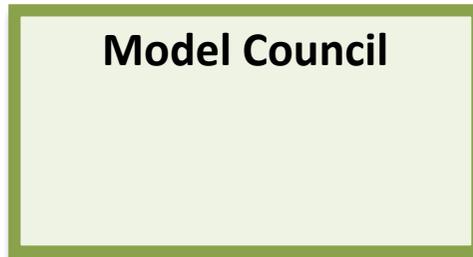
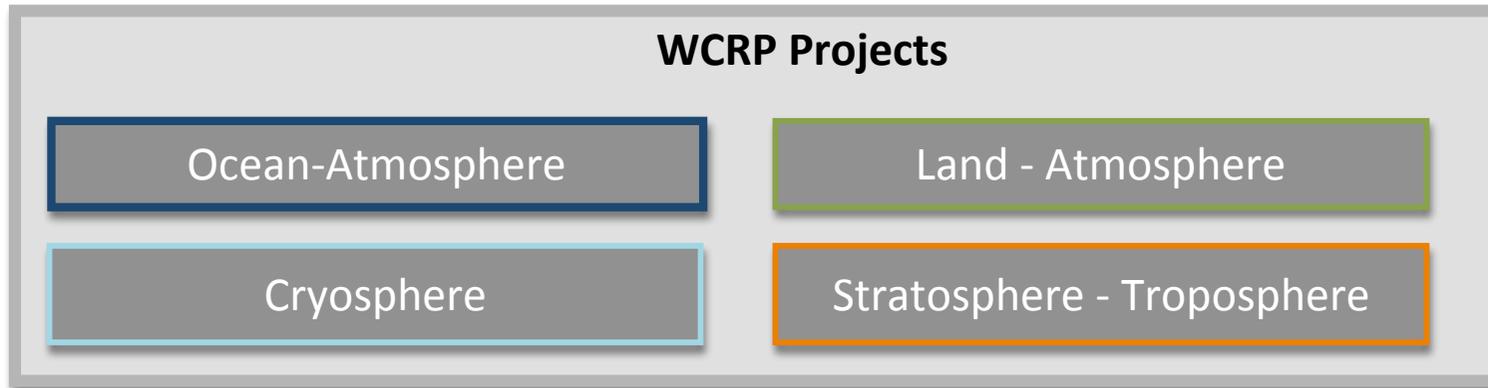
Variability African  
Climate System

Asian-Austral  
Monsoon

# **CLIVAR SSG17, Boulder May 2010**

- Long term changes in the overall structure of WCRP
- CLIVAR imperatives and implementation
- Key progress by CLIVAR Panels and Working Groups

# Future WCRP Structure



## Future of CLIVAR - WCRP Ocean-Atmosphere:

- Scope
- Structure (including SSG)
- Partnerships (WCRP, Global Change Programs)
- Interfaces (Regions, Applications)
- Deliverables (Data, Models, Information-Services)

# WCRP Modeling

- Promoting the confrontation of models with observations and results of process studies;
- Promoting collaboration amongst various climate science communities (includes numerical weather prediction (NWP), seasonal to interannual prediction and climate projection communities as well as those dealing with biogeochemistry, air quality, terrestrial ecology, etc.);
- Promoting application of models to problems of societal relevance, quantifying uncertainties and making sure they are well communicated and understood;
- Promoting the development of model improvements.

# WCRP Modeling

- Well established panels and working groups should be maintained.
- A need for a coordinating group was identified, which could be described as a “Modelling Council”, to engage JSC members and Chairs of existing/future modelling groups to identify the common integrating themes and define the best approach to achieve them.
- The “Council” could have a one-day session at JSC meetings and could be responsible for organizing semi-regular WCRP- wide modelling conferences and cross-cutting targeted activities, similar to the World Modelling Summit and US Climate Process Teams.

# WCRP Modeling

- Modelling Council concept would allow the Projects to be better connected to the WCRP modelling efforts.
- WCRP modelling infrastructure should be flexible to allow focusing efforts where they were most needed.
- Need to include a means to exchange learning across scales for mode development.
- Model evaluation and quality assessment important roles for WCRP
- *Ocean modelling was not discussed in the white paper and that this needed to be taken into account in the future.*

# CLIVAR Imperatives



- Anthropogenic Climate Change
- Decadal Variability, Predictability and Prediction (SMG)
- Intraseasonal and Seasonal Predictability and Prediction
- Improved Atmosphere and Ocean Components of Earth System Models (SMG)
- Data Synthesis and Analysis
- Ocean Observing System
- Capacity Building

## ***1. Motivation***

***2. Scientific Background and Major Challenges including Linkages to the WCRP Implementation Plan 2010-2015***

***3. Strategic Plan including Linkages to other CLIVAR/WCRP panels/working groups and International Programs***

***4. Time Line***

# SSG Action Items for WGOMD

1. Basin panels encouraged to make use of available CORE-II runs providing feedback to WGOMD (Basin Panel co-chairs)
2. SSG agrees to extend membership of WGOMD to cover biogeochemistry, the coastal (regional) modelling community and land-ice connection in relation to sea level. Consider WGOMD membership overall (WGOMD co-chairs with ICPO)
3. Consider the relevance of links to the operational ocean modelling community taking advantage of existing member contacts in this area (WGOMD co-chairs)
4. WGOMD is encouraged to continue to provide recommendations for evaluating ocean simulations, especially eddy resolving models (WGOMD).

# WCRP Open Science Conference

24-28 October 2011

Denver, Colorado, USA

[www.wcrp-climate.org/conference2011](http://www.wcrp-climate.org/conference2011)

Promoting, Facilitating and Coordinating  
Climate Research in Service to Society

- The Climate system components and their interactions
- Observation and analysis of the climate system
- Improving predictive capabilities
- Environmental assessments
- Regional climate
- Challenges and the future

# Linkages to Operational Ocean Modeling

Evaluating Ocean Analyses  
(F. Hernandez, MERCATOR)

The idea was to monitor regularly on operational ocean forecasting systems the type of diagnostics you are implementing in your present reanalysis work. In practice, if we take the example of Mercator, where Nicolas and I are working, we are interested in:- Looking at ocean synthesis indices on our long reanalysis (this is what Nicolas have done with you): We have the coarse (2-) long reanalysis, but we have also a 1/4- ocean reanalysis for the past 8 years, that will be extended to the 1992-2010 period next year.- Looking at similar indices on our high resolution ocean forecasting systems (1/4- and 1/12-), that are running operationnaly (off course, periods are shorter)Note that routine intercomparisons of high resolution systems, with comparison to common dataset are under preparation, and results are planned to be hosted by the USGODAE ftp site. Up to know the FOAM (UKMO), Mercator (Mercator/France), BlueLink (Aus.) and HYCOM (NRL/USA) are involved in this activity. So, if you are interested to share your approach with us, and if you plan to keep performing ocean analysis routinely:--> we could imagine that on a 1-3 months basis, the different diagnostics are computed routinely from operational system --> results could be shared. the GODAE website could be used to share and store the results. --> intercomparison could be computed, merging "reanalysis coarse resolution" system, and "GODAE high resolution systems"?To give you an idea, I was recently working on the Atlantic warm pool near Brazil, and computing heat content merging reanalysis (blue) and operational system (red) results, on monthly averages....

WGSIP interested in developing a strategy to assess real-time ocean analyses  
GSOP GODAE intercomparison framework

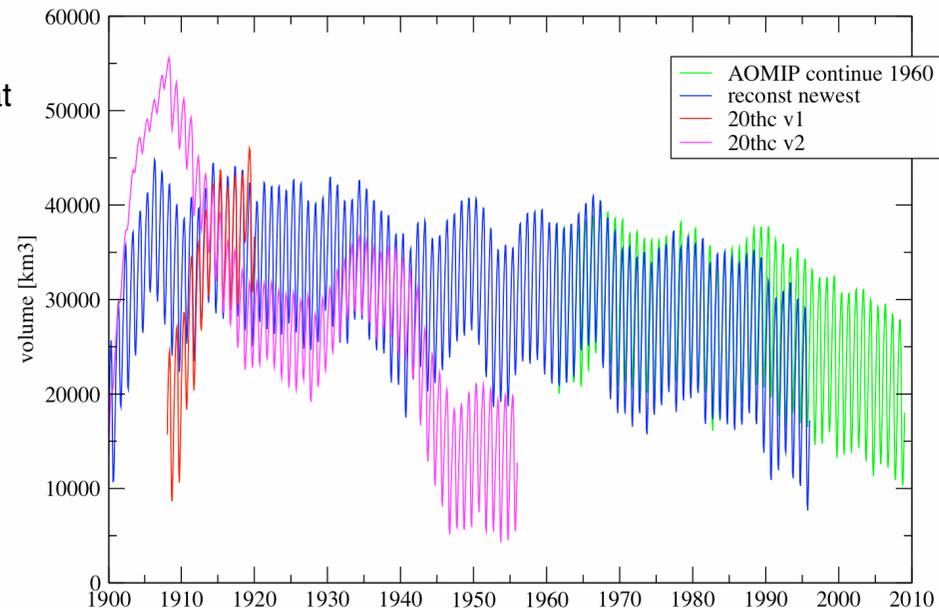
## From Ruediger Gerdes..

- Explore the possibility of forcing ocean models with the Compo et al. (2009) 20th century reanalyses project (Helge, Rudiger)

We have done experiments with the two versions of the reanalysis. The figure shows Arctic ice volume for four experiments: AOMIP (more or less NCEP forcing), reconstruction (our own reconstruction of the surface atmosphere over the 20th century), 20thc v1 (the first version of the Compo et al. reanalysis), 20thc v2 (their newest version of the reanalysis). With v1, our model produced a rapidly growing sea ice volume in the Arctic. Actually, the model crashed when sea ice became extremely thick at some locations. With v2, we get the opposite result. The sea ice volume is almost gone by 1950. Both results hint at difficulties with the reconstruction of the surface air temperature in the Arctic

A student of Thierry Fichefet and Hugues Goosse at Louvain has applied the Compo et al. reanalysis using a global model. He gets similar results with sea ice disappearing from the Arctic in summer by 1950. In the Southern Ocean, the sea ice cover breaks down around 1970 but recovers afterward.

In summary, at this point there seem to be several issues with the Compo et al. reanalysis at high latitudes that prevent its use as forcing for ocean-sea ice models.



## From Ruediger Gerdes..

- Develop a way forward to explore partial coupling of ocean-ice models (Rudiger, Helge, Gurvan)

Regarding the second point: At AWI, we have not done anything concrete yet. But we expect to get funding for a project exploring different approaches to partially coupled integrations. This is a project that I lead together with Richard Greatbatch. He can provide the panel with more details. I also believe that Steve has already conducted experiments. There are several efforts already running to fulfill the requirements of the new IPCC round. I know that Juliette Mignot follows an approach that is very similar to ours. Apparently, she encountered problems with tropical winds.