WGSIP and VAMOS

Material taken from: WGSIP Meeting Report (Miami 2009)

VPM12- San Juan de Puerto Rico, June 2009
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WGSIP (*Working Group on Seasonal to Interannual Prediction*)

Main recommendations from the last WGSIP meeting (January 2009)

- The meeting focused on the major projects that are underway for which the panel is responsible:
  - The Climate-system Historical Forecast Project (CHFP)
  - The decadal prediction component of CMIP5.

What is the Climate-system Historical Forecast Project?

- The experiment is to perform seven-month lead ensemble (10-members) predictions of the total climate system between 1979 and present.

- Participating Groups: EU ENSEMBLES, Project, APCC, CliPas, NOAA-NCEP, NOAA-GFDL, NASA-GMAO, COLA-NCAR, BMRC, JMA, CCCma, CPTEC, IRI.

- WCRP/WGSIP will make the CHFP dataset of multi-model multi-member retrospective seasonal forecasts available in 2009 through three data servers: ECMWF, CIMA (Argentina), APCC (Korea).

- In order to maximize collaboration, the CHFP will include a diagnostic sub-project approval process. Examples of Potential sub-project themes are:
    - Limit of Predictability Estimates
    - ENSO mechanism diagnostics
    - Regional predictability (Local land surface predictability, Extreme events, Monsoon predictability, Diurnal cycle in ocean, Diurnal cycle in the atmosphere).

WGSIP interactions

- WGSIP-GEWEX: The seasonal prediction problem extends further than the ocean-atmosphere, as primarily addressed by CLIVAR, with potential predictability sources from other components of the physical system, namely land surface forcing.
  - GLACE-2 is the main activity on seasonal prediction within GEWEX
- WGSIP-SPARC (Stratospheric Processes And their Role in Climate): The area most relevant for WGSIP is stratospheric-tropospheric coupling. They could both interact in experiments looking at improved seasonal prediction skill resulting from a resolved stratosphere.
- WGSIP-CliC (Climate and Cryosphere):An area of potential collaboration would be in sea ice prediction and intialization, where various approaches are currently in use, with no knowledge of how this influences predictability. Another area is spring snow melt into soil moisture and how this influences spring temperature anomalies.

WGSIP and applications

- WGSIP links to the impacts and applications community by making state-of-the-art data available, now through the CHFP, *and by working with the CLIVAR regional panels with the premise that they will lead at a regional level the use of data in impacts and applications projects…*

¿Should we discuss which is the definition of "users" in the current state of the art of modeling and model issues?
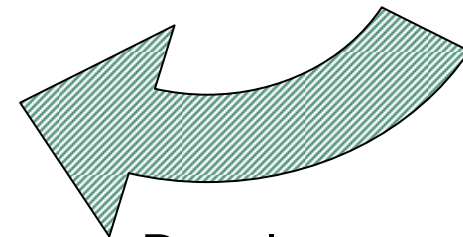
WGSIP and applications (cont.)

- better use needs to be made of current products and data and to understand the associated limitations

- impacts should be considered an integral part of the development of ensemble prediction systems as they define forecast skill and potential user/societal value

- a seamless approach needs to be developed with and for impacts especially since *Impacts* allow for linkage across different modelling streams.

Needs
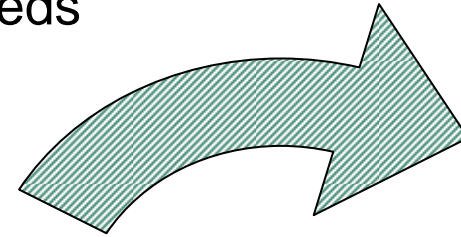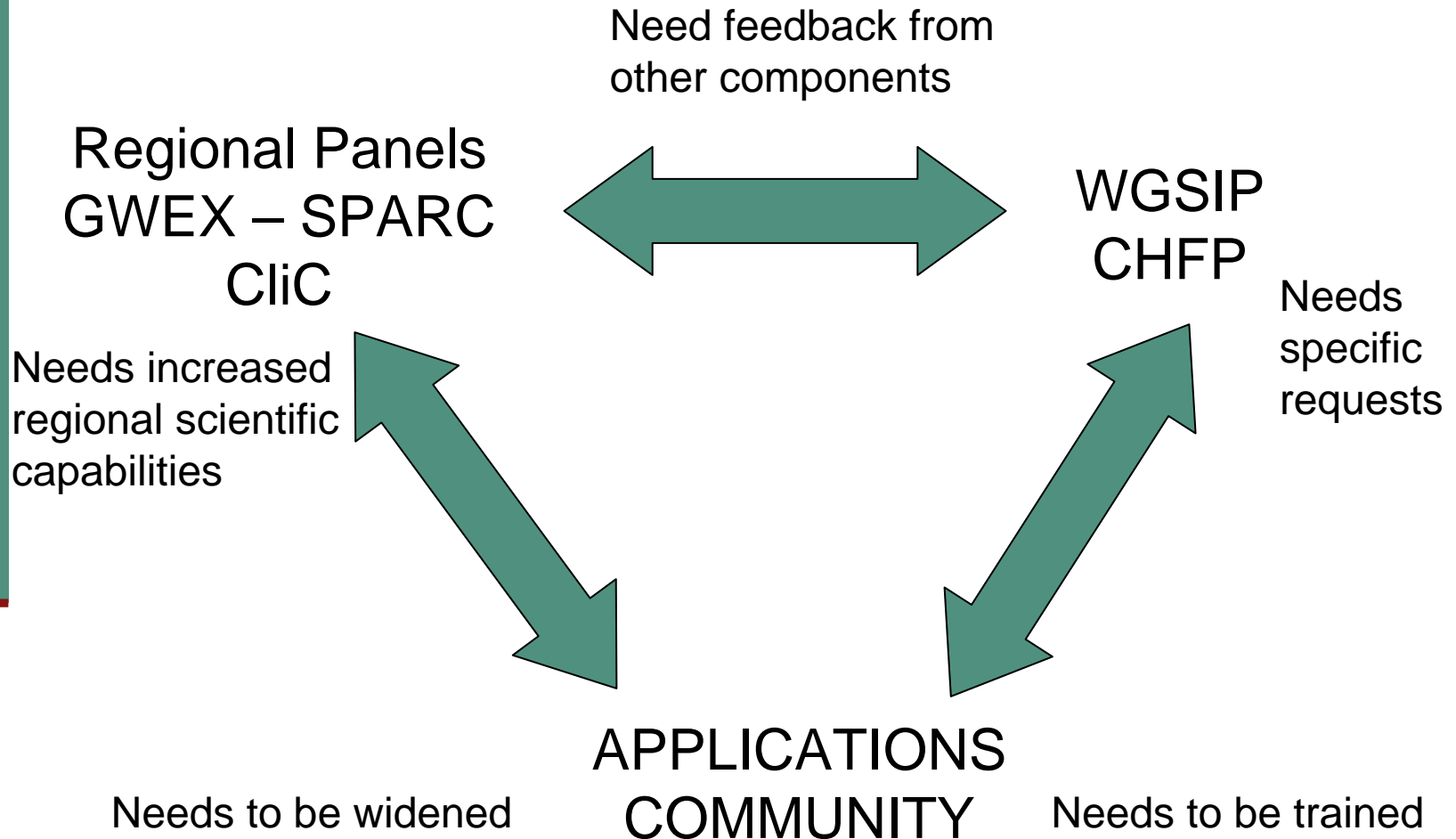
Impact community

Climate Science community

Development of ensemble prediction systems

How can this gap be filled?

Need feedback from other components

Regional Panels
GWEX – SPARC
CliC

WGSIP
CHFP

Needs increased regional scientific capabilities

Needs specific requests

APPLICATIONS COMMUNITY

Needs to be widened

Needs to be trained

Example: Training Course on the use of seasonal predictions for applications in Latin America

- The uptake of ensemble prediction system output is not trivial for users with different regions having different support needs.
- It is evident that in Latin America, although there is a strong need of seasonal prediction products at regional level for different applications, the current regional capacity on developing and/or seasonal predictions is still very limited.

Therefore, a training course (tentatively scheduled for July 2010) has been proposed in order to:

- contribute to increase the regional capacity on the use of seasonal prediction for applications
- Make visible the CHFP effort within the Latin American scientific community, promoting the development of regional CHFP diagnostic sub-projects.

Vera, WGSIP meeting, 2009
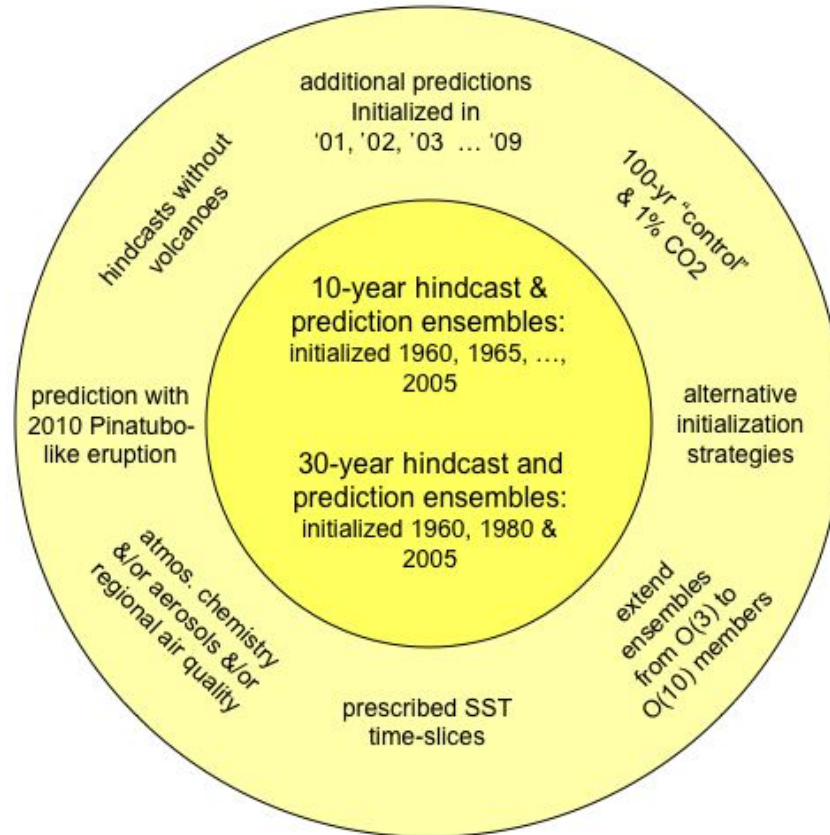
About decadal prediction

- The challenge of prediction/predictability studies is to identify the mechanisms associated with regions/modes of predictability, to better understand the connection between oceanic modes and terrestrial climate variability, and to investigate predictive skill by means of prognostic (including multi-model) decadal predictions.

The decadal prediction component of CMIP5

There are reasonable prospects for producing decadal forecasts, and these are of great interest to planners and decision makers as well as being of considerable scientific interest. The level of skill which might be obtained, especially at the present stage of development of forecating systems, is not yet clear. The CMIP5 experimental design provides an opportunity for international coordinated research and experimentation in this area.

CMIP5 experiment design: near term component

CMIP5 Decadal Predictability/Prediction Experiments
Draft from WGCM meeting, September, 2008

additional predictions
Initialized in
'01, '02, '03 ... '09

hindcasts without volcanoes

100-yr "control" & 1% CO2

10-year hindcast & prediction ensembles:
initialized 1960, 1965, ...,
2005

30-year hindcast and prediction ensembles:
initialized 1960, 1980 &
2005

prediction with 2010 Pinatubo-like eruption

alternative initialization strategies

atmos. chemistry &/or aerosols &/or regional air quality

extend ensembles from O(3) to O(10) members

prescribed SST time-slices

Taylor *et al.* (2008).

CMIP5 experiment design

- WGSIP is a co-sponsor of the CMIP5 near term experimental protocol

- a CMIP-WGCM-WGSIP subgroup has been formed to oversee this framework

- WGSIP will be active in addressing the science questions that present themselves.

- The protocol has been designed to extend beyond the requirements for AR5 and to serve the future science development needs in the area.

- It has also been designed to mesh with decadal predictability studies already underway in Europe.

C. Saulo, VPM12, San Juan de Puerto Rico
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