

# WCRP update

WDAC2  
27 May, Brasilia

M. Rixen, JPS

# Mission & Objectives



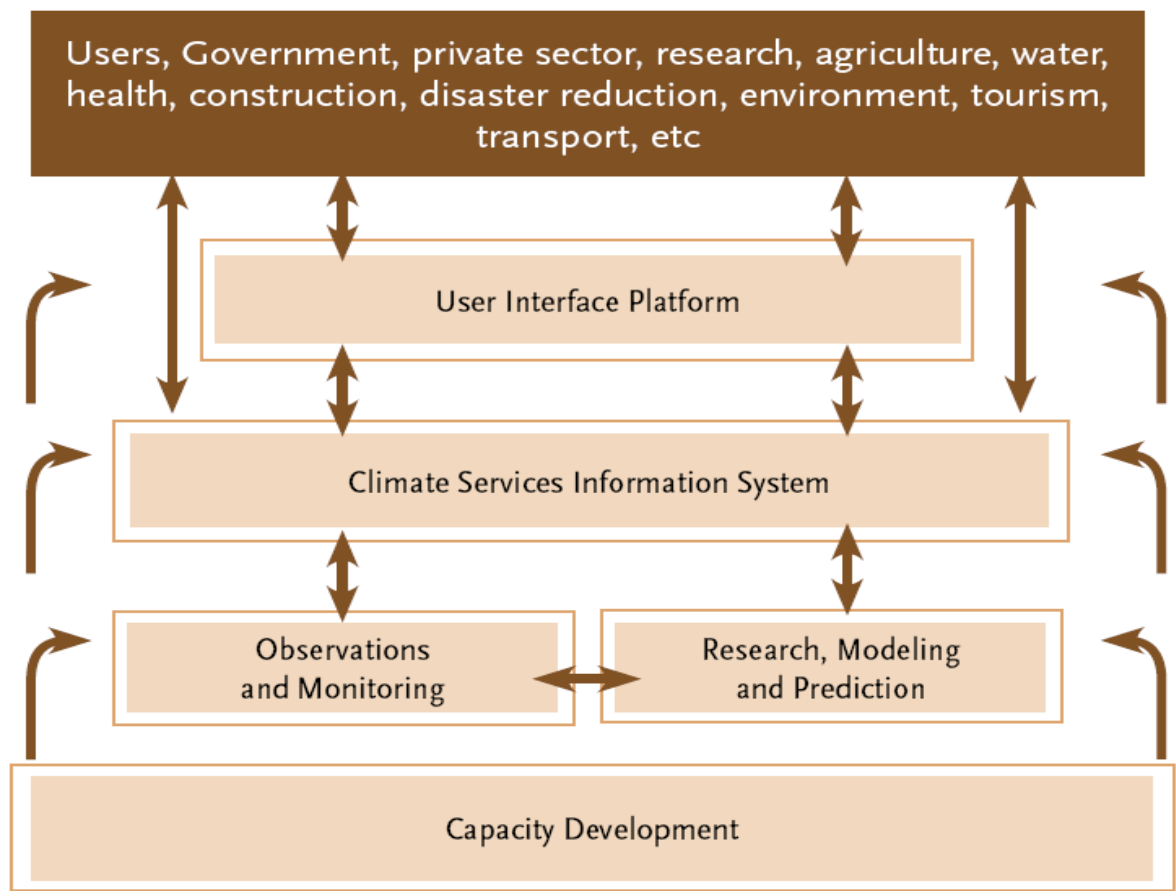
**World Climate Research Programme** supports **climate-related decision making** and **adaptation planning** by coordinating research required to improve

- (1) climate predictions and
- (2) understanding of human influence on climate

*“for use in an increasing range of practical applications of direct relevance, benefit and value to society”*

*(WCRP Strategic Framework 2005-2015).*

## Global Framework for Climate Services (GFCS)



# WCRP Organization

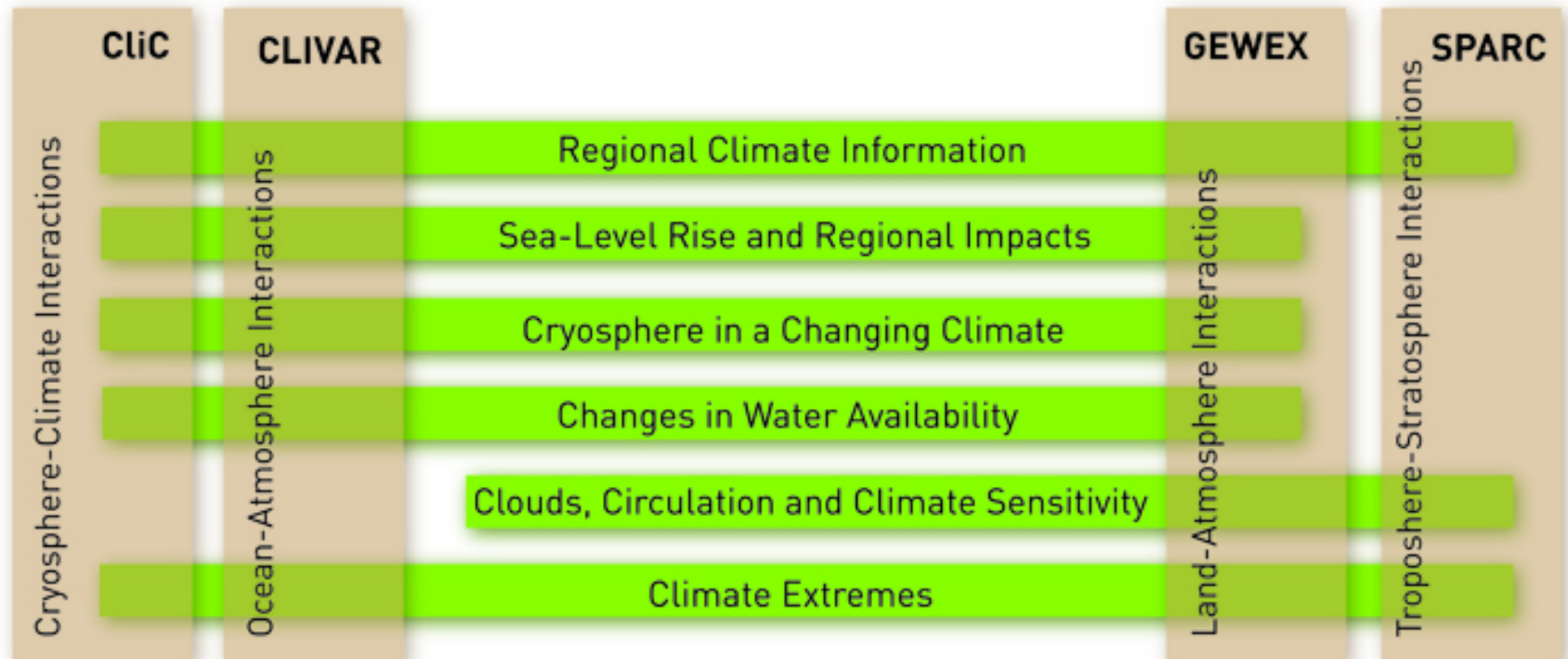
Joint Scientific Committee

Joint Planning Staff

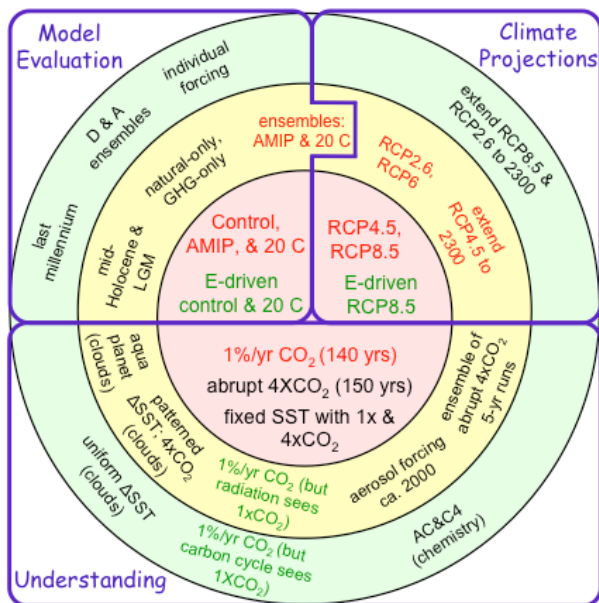
Modeling Advisory Council

Data Advisory Council

**Working Groups on:** Coupled Modelling (WGCM), Regional Climate (WGRC), Seasonal to Interannual Prediction (WGSIP), Numerical Experimentation (WGNE)



**A rich set of modeling experiments, drawn from several predecessor MIPs, focuses on model evaluation, projections, and understanding**

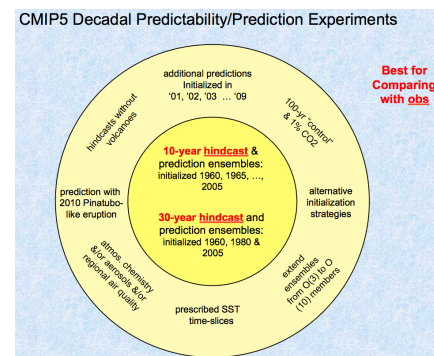


Red matches CMIP3

experimental suite

Green coupled carbon-cycle climate models

- 2+ Petabyte on Earth System Grid Federation
- 59 models, 24 groups
- Many studies contributing to the IPCC AR5 report
- Already 250+ papers
- Other modeling efforts within WCRP (Seasonal-to-interannual, Decadal, Regional-CORDEX) could likely follow similar schemes in the future

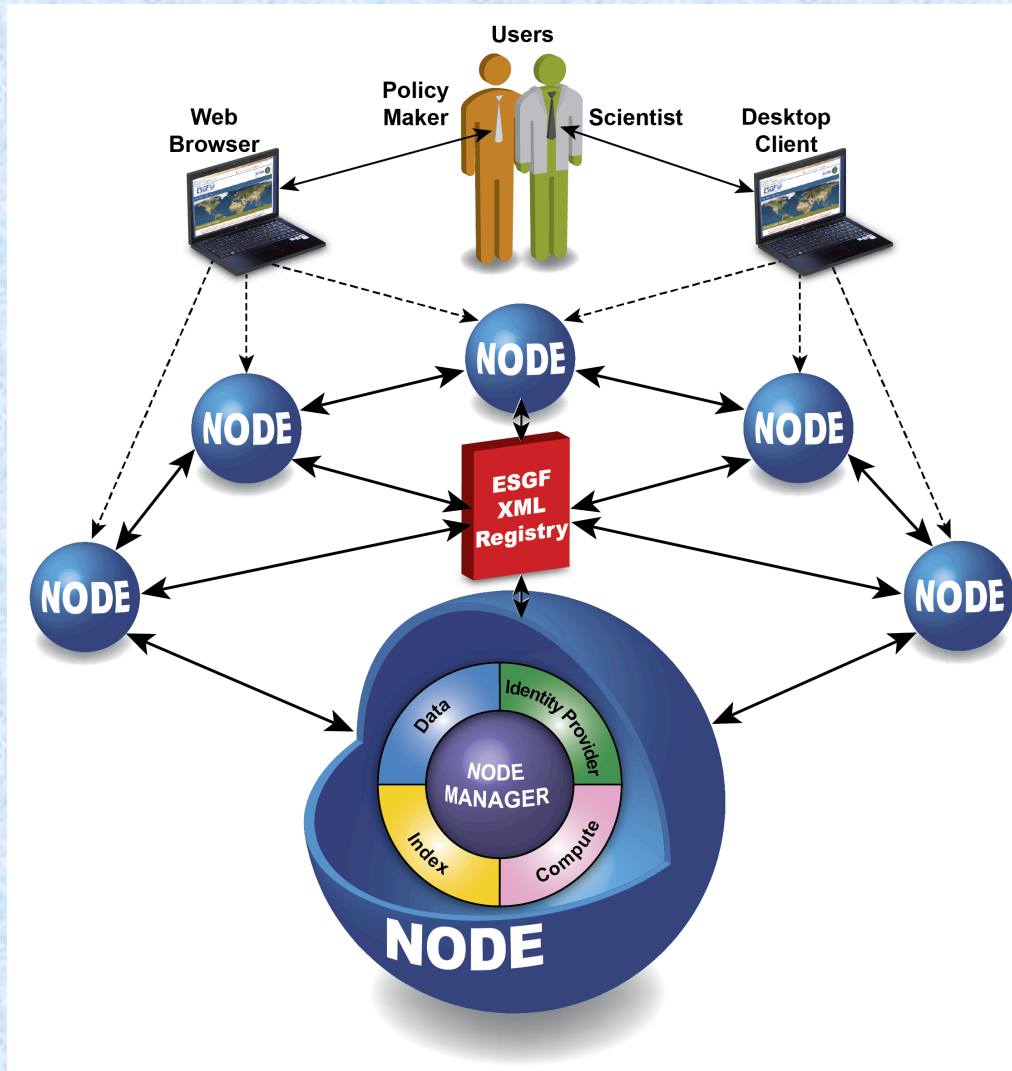




# Key to the success of CMIP3-5

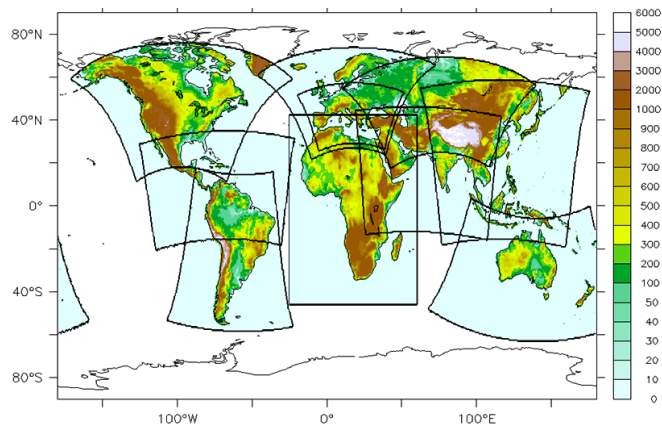
- **Sustained support for critical infrastructure**
  - **Community-developed metadata conventions**
    - “Climate-Forecast” metadata convention (CF)  
<http://cf-pcmdi.llnl.gov/>
  - **Software to ensure data complies to conventions**
    - Climate Model Output Writer (CMOR)  
<http://www2-pcmdi.llnl.gov/cmor>
  - **Advancing state-of-the-art data delivery methods**
    - Earth System Grid Federation (ESGF)  
<http://esgf.org/>
- **A highly collaborative spirit within WCRP**

**Federation connectedness means the user does not have to know where the data resides and critical data is replicated**



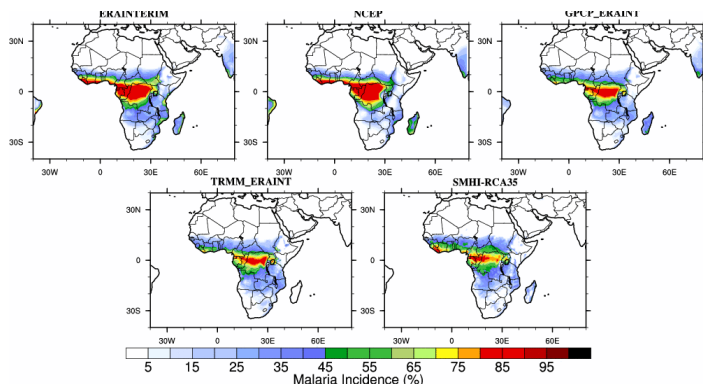
- Quantifying observational and model uncertainty
- Data for model evaluation: obs4MIPs, ana4MIPs
- Traceability of model and data products
- ESGF governance now defined: formal role of WCRP?
- Long-term funding support for ESGF?
- Alignment with IPCC AR6 timetable
- Experimental framework, coordination and prioritization (CMIP but also decadal, seasonal, regional)
- CMIP6 preparation workshop, Aspen, 5-9 Aug: inputs/ recommendations from WMAC?





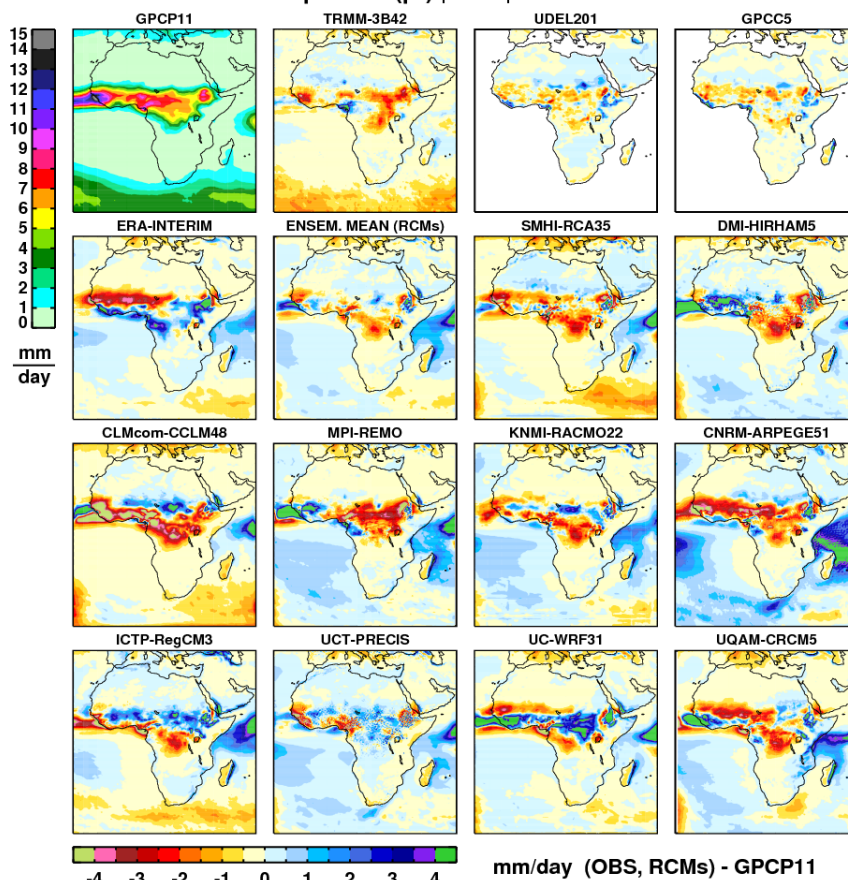
- 12 domains with a resolution of 0.44° (approx. 50x50km²), focus on Africa
- High res ~0.11°x0.11° for Europe (by some institutions)

Dynamic Malaria Model driven by climate observations & CORDEX simulations (mean annual prevalence (%))



SMHI (50km²) reproduces well the mean annual malaria incidence pattern with respect to TRMM-ERAINT & GPCP-ERAINT control experiment

Precipitation (pr) | JAS | 1998-2008



Example of CORDEX multi-model data available for Africa. From Top to bottom and left to right: GPCP mean July-August-September precipitation for 1998-2008 and differences compared to GPCP in the other gridded observations, and the individual RCMs with their ensemble average.

- 4-7 November 2013, Brussels, Belgium
- Partnership between WCRP, IPCC and EC
- Timed between IPCC WGI and WGII releases
- 1st day: High Level Session, Stakeholder dialogue
- 2-4<sup>th</sup> days: Scientific Conference
- <http://cordex2013.wcrp-climate.org/>
- 500+ registered, 450+ abstracts



- Contributions to IPCC AR5, many peer-reviewed papers
- Simulation matrices growing in all domains
- Need to compare regional with global simulations and observations: which framework?
- Need for higher resolution data
- Update/upgrade experimental design (e.g. coupling, BC, etc)
- (Too?) High expectations for downstream applications (vulnerability, impact, adaptation)
- Developments and capacities vary across domains
- Engagement of core projects regional panels/activities
- Diversity of stakeholders, players, end-users
- Long-term funding and sponsors' commitment?



May 7-11, 2012

Silver Spring, Maryland USA

270+ participants (including  
GCOS participation)

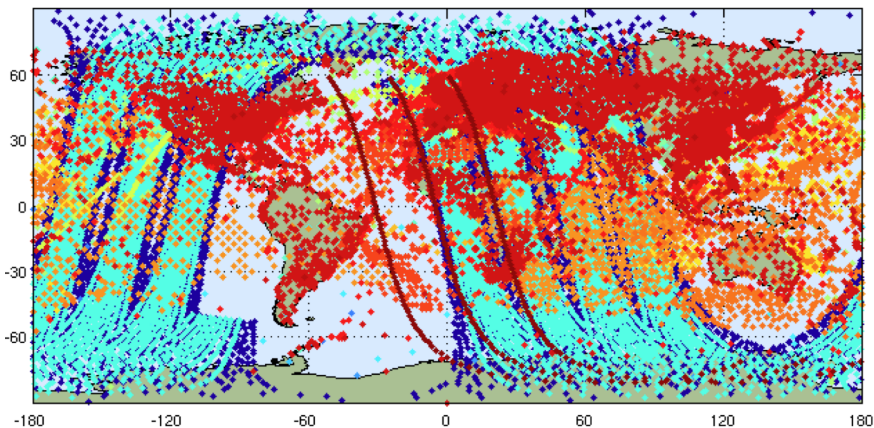
[42 countries]



## Agency Priorities: An Open Panel Discussion with Conference Participants

- **Quantitative Uncertainty Estimation:**  
*families of reanalyses*
- **Qualitative Uncertainty Estimation:**  
*reanalysis.org,*  
*climatedataguide.ucar.edu*
- **Earth System Coupling:**  
*interdisciplinarity, synergies between communities*
- **Reanalyses, Observations and Stewardship:** *seamlessness of data discovery and access, ESG*

Observation Locations



# Reanalyses: achievements and challenges ahead

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- Contributions to IPCC AR5 Chap2, Climate reports
- Importance of conveying information about products and uncertainties: [reanalysis.org](http://reanalysis.org)
- ESGF: ana4MIPs platform
- ECMWF/GMAO: access tool to forecast and analysis error, and assimilated obs
- Improve coupled and regional reanalyses
- How to organize coordinated assessments?
- Formal reanalysis panel within WDAC?



# Seamless predictions

- WGNE (MJO TF, YOTC, Transpose-AMIP, Grey zone, etc)
- Polar Prediction Project – Polar Climate Prediction Initiative
- Subseasonal to Seasonal Project
- (Seamless?) Metrics, verification (! own (re)analysis)
- Coupling, interfaces, important role of core projects

# Practical

- Dense agenda, 1 remote brief
- Presentations will be published on the Council web pages – unless we are told otherwise
- Report: JPS takes notes on discussions, we need your inputs and help
- Reporting to the JSC on 28 May
- You are welcome to attend the JSC

Thank you for your attention!