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**The Third Annual Meeting of**

**the Coordinated Energy and Water Cycle  
Observations Project (CEOP)**

**Melbourne, Australia 19–21 August 2009**



# GEWEX SSG Rapporteur's Comments on CEOP

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## 1. Introduction

Kevin expressed concern about the diversity of projects and the coordination of observing and modelling activities. CEOP addressed these issues by putting more emphasis on the cross cutting activities.

## 2. General comments

2.1. Coordination of RHPs by defining a few key priorities, for example, MAC.

2.2. CEOP unique contribution to GEWEX

a defined set of specific tasks, or unique technological elements : effective data management and archiving, model inter-comparison with satellite measurements and in-situ data, development of high resolution data sets.

2.3 Through well coordination of RHPs, to obtain a deeper understanding of the key processes of the water cycle in collaboration with GMPP and GRP.

2.4. Global/regional water and energy budgets based on NWP analyses and satellite data and its validation and process studies coupled with the in-situ data in cooperation with RHPs.

2.5. Reporting skill.



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## 3. Specific comments on outstanding issues

3.1. What is the focus of the satellite data?

3.2. AMMA's position in CEOP

3.3. CEOP land surface data assimilation – Landflux, GLASS

3.4. HAP's linkage with the RHPs, GRP, GWSP.

3.5. HAP targets: seasonal forecasting + Extremes or a separate Extremes initiative

3.6. Global water and energy budgets based on regional detail.

3.7. Ocean-atmosphere data.

3.8 Climate prediction of specific hydroclimate phenomena in a synergetic manner by CEOP.

3.9. The transferability modelling project in collaboration with RHPs.

3.10. Aerosols - Monsoonal circulations in collaboration among some

RHPs3.11. CEOP-GMPP collaboration for the validation of extremes in models.

3.12. Creation and archiving of high resolution gridded precipitation products.



## SSG'S Recommendations to GEWEX Panels:

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It is recommended that **the leaders of monsoon studies** develop common themes to be studied and that the Coordinated Energy and Water Cycle Observations Project (CEOP) **organize a meeting** concerning this.

It was agreed that the current focus of Hydrologic Applications Project (**HAP**) primarily addresses **seasonal forecasting**. There are a number of other priority areas for linking meteorological and hydrological science under the GEWEX remit to facilitate hydrological applications. In particular the user community urgently requires scientific guidance to support the management of **hydrological extremes (floods and droughts)** under scenarios of climate change. Extremes of precipitation and drought persistence are two relatively undeveloped areas. It is recommended that HAP broadens its focus to include the aforementioned issues.



## ACTION ITEMS Defined by SSG:

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1. Clarify the relationship between CEOP activities and African and Asian water
2. NOAA/CPPA financial support for CEOP data collection
3. CEOP to prioritize its objectives to ensure that the needs of the hydrological community are met by CEOP
4. HAP: more accessible to the hydrologic communities, GRP, WMO hydrology department, Thorpex, UNESCO/IHP, G-WADI
5. CEOP- AMMA collaboration
6. GEWEX – GWSP collaborative data collection and
7. CEOP- CliC collaboration



# CEOP Third Annual Meeting

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PART 1: Opening of Meeting and Introduction:

PART 2: Metrics for Success including Scientific Achievements and Data; Activities; Contributions to WCRP/GEWEX; and Requirements for Success

Special Sessions Review/Assessment: Guided Discussions will be undertaken for each major Component of CEOP; Regional Hydroclimate Projects, Regional Climate Foci, and Crosscutting Science foci, Model and Data.

10 min Introduction ... objectives of this aspect, strategy: Topic Area Lead

15 min Review of CEOP 2008 meeting status, actions, plans: Topic Area Lead

15 min short talks by each Reps/Leads (objective, recent updates, plans...)

Open discussion (summary, key issues, plans, ideas leading to a Synthesis Article/Special Journal Issue/Joint Activities/Actions): Led by Topic Area Lead

5 min overall summary: Topic Area Lead

PART 3 - Integration of Work in CEOP Synthesis Article and through other Joint Activities/Actions

# CEOP Objective #1:

## GEWEX Objective #1

Produce consistent research quality data sets complete with error descriptions of the Earth's energy budget and water cycle and their variability and trends on interannual to decadal time scales, for use in climate system analysis and model development and evaluation.

### *Specific Technical Issues*

1. Developing an integrated hydroclimate data set that can be used to answer the CEOP main scientific questions.
2. Developing the capability to handle and disseminate a large amount of data from diverse sources
3. Analyzing and comparing with model simulations this diverse data to understand the underlying mechanisms and model deficiencies.



2011-2012: DELIVERABLE: A "state-of-the-art" suite of global energy and water cycle products complete with error bars for closing the global water and energy budgets for the period 1980 to 2010.

# CEOP Objective #2:

## GEWEX Objective #2

Enhance the understanding of and quantify how energy and water cycle processes contribute to climate feedbacks.

### Associated Science Questions

- i. What are the average hydroclimate conditions over various regions and seasons?
- ii. How does water and energy flow into and through individual regions as well as being redistributed within these regions by local mechanisms?
- iii. How do extremes occur and what is their role in the hydroclimate?
- iv. How do aerosols affect the hydroclimate?
- v. Does knowledge of water isotopes help us to understand the water cycle?



Understanding the contributions of water and their highly coupled non-linear interactions in regulating feedbacks to the climate system.



# CEOP Objective #3:

## GEWEX Objective #3


Improve the predictive capability for key water and energy cycle variables and feedbacks through improved parameterizations to better represent hydrometeorological processes, and determine the geographical and seasonal characteristics of their predictability over land areas.

### Associated Science Questions

- vi. Can we simulate and predict the hydroclimate cycle?

### Specific Technical Issues

4. Assimilating and integrating the data with newly developed models.



Provide a final review of the success of GEWEX in improving parameterization at operational Numerical Weather Prediction (NWP) and climate modeling centers and its impact on the predictive capabilities for key energy and water cycle variables, including hydrological prediction

# CEOP Objective #4:

## GEWEX Objective #4:

Undertake joint activities with operational hydrometeorological services, related Earth System Science Partnership Program (ESSP) projects like the Global Water System Project (GWSP), and hydrological research programs to demonstrate the value of GEWEX research, data sets and tools for assessing the consequences of climate predictions and global change for water resources.

### Associated Science Questions

- vii. What is the benefit of this increased knowledge about the hydroclimate for society?

### Specific Technical Issues

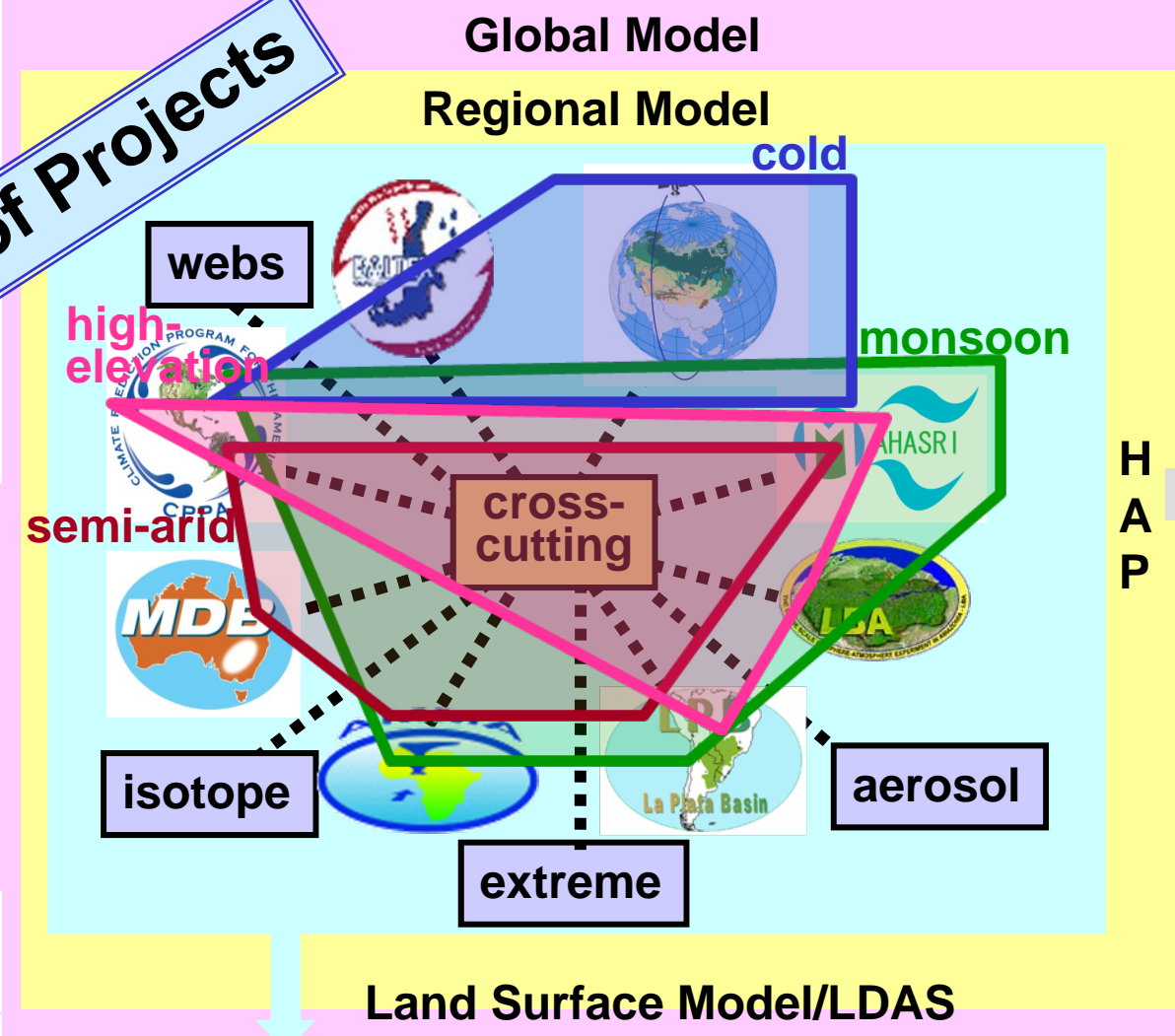
5. Transferring CEOP methodologies to other regions, sectors, and applications .



Demonstrate benefits of improved hydrometeorological predictions for water resources.

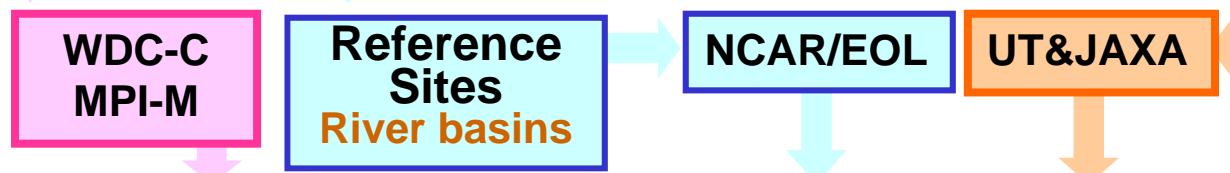
# A Project of Projects

- NWPCs/ACs**  
 NCEP, JMA  
 ECPC, BoM  
 UKMO, CMC  
 ECMWF  
 CPTEC  
 NCMWF  
 EPSON MET  
 GMAO GLDAS



H  
A  
P → **Societal Benefits**

**Global Dataset Projects**



- Satellite data**  
**CEOS**  
 JAXA  
 NASA  
 ESA  
 NOAA  
 EUMETSAT  
 WGISS  
 WGCV

