

CEOP'S PLACE IN THE GEWEX ROADMAP

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March 12, 2007

GEWEX IS DEVELOPING A ROADMAP TO:

1. PROVIDE A VISION AND FOCUS FOR GEWEX PHASE II RESEARCH FOR 2007 - 2012.
2. COMMUNICATE THE PRIORITY ACTIVITIES OF GEWEX TO FUNDING AGENCIES, WCRP, ESSP AND THE CLIMATE COMMUNITY.
3. STIMULATE CROSS-PANEL COLLABORATION THROUGH JOINT EFFORTS.

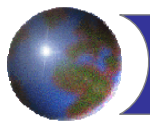
THE PLAN IS A LIVING DOCUMENT THAT WILL BE ROUTINELY UPDATED.

POSSIBLE UPDATES NEEDED:

- HIGHER VISIBILITY FOR WCRP CROSS-CUTS
- STRONGER CONTRIBUTIONS FROM CEOP FOR OBJ. 1, 2 AND 3.

THE ROADMAP SHOULD:

- 1) IDENTIFY THE OVERALL GOALS AND CRITICAL SCIENCE QUESTIONS THAT GEWEX SHOULD ADDRESS.
- 2) DISPLAY GEWEX CONTRIBUTIONS TO WCRP CROSS-CUTS.
- 3) BUILD ON THE HERITAGE THAT WE HAVE DEVELOPED IN PHASE I.
- 4) BUILD ON OUR STRENGTHS AND THE CAPABILITIES OF THE SYSTEMS WE RELY ON.
- 5) PROVIDE A SEQUENCE OF RESEARCH AND DEVELOPMENT ACTIVITIES THAT WILL ALLOW US TO ANSWER THE CRITICAL CLIMATE QUESTIONS OR PROVIDE THE TOOLS TO ALLOW OTHERS TO ANSWER THOSE QUESTIONS IN THE FUTURE.



GEWEX
WCRP

WCRP ORGANIZATION

GRP CONTRIBUTES PRIMARILY TO OBJECTIVES #1 AND #2

GMPP CONTRIBUTES PRIMARILY TO OBJECTIVES #2 AND 3

RADIATION
(GEWEX Radiation Panel)

MODELLING
(GMPP - WGNE)

COORDINATED ENERGY AND WATER CYCLE OBSERVATION PROJECT (CEOP)

CEOP* CONTRIBUTES PRIMARILY TO OBJECTIVES #1, 2, 3, AND 4.

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.

Timeline:



How will CEOP help us reach this goal?

2012: Complete 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.

GEWEX Objective 1

Timeline:

2007:

Complete first global analysis of the energy and water cycle with existing products (All Panels will contribute to this analysis). (GRP, CEOP, GMPP)

Complete the quality control, production and distribution of the CEOP Phase I data sets. (CEOP)

2008:

Complete observations and diagnosis of causes of variations of global energy and water cycle from weather to decadal scales (GRP, CEOP)

GEWEX Objective 1 – Milestones:

2009

Within the scope of their mandates, all GEWEX Panels will work to complete the set of products needed to describe the global energy and water cycle. (GRP, GMPP, CEOP)

Develop a synthesis of the climatology and diurnal to interannual variations based on observations and models of water and energy budgets with improved observations and models (GRP/CEOP).

Through continued involvement in WOAP, GCOS, IGOS-P and GEO, GEWEX will help to assess and, where appropriate, promote observations for the global energy and water cycle (on-going). (GRP, CEOP, IGPO)

2010:

Implement the CEOP data system as a prototype GEOSS data handling system. (CEOP)

2012:

Complete 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.

GEWEX Objective #2:

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

Timeline:

How will CEOP help us meet this goal?

2012: Clarify the role of clouds and land atmosphere interactions in climate feedbacks.

GEWEX Objective 2 – Milestones:

2007

Conduct field experiments to understand regional hydrometeorological processes. (CEOP)

2010

Develop advanced analysis techniques to investigate causes of variability, to separate forced and unforced responses, and to estimate feedbacks and predictability. (GRP, CEOP)

Through CEOP, GCSS field studies, and GRP analysis projects provide new insights on the role of aerosols in cloud and precipitation production. (GRP, GMPP, CEOP)

Provide an assessment of the role of land-atmosphere interactions during extremely wet and extremely dry (drought) periods. (CEOP)

GEWEX Objective 2 – Milestones:

2011

Use SMOS and other satellite data to study the role of soil moisture in land-atmosphere interactions. (GMPP, CEOP, GRP).

Clarify the role of clouds and land atmosphere interactions in climate feedbacks clarified.

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.

Timeline:



How will CEOP help us meet this goal?

2012: 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.

GEWEX Objective 3 – Milestones:

2009

Carry out an enhanced observing period to obtain data for process understanding and model validation in areas of complex terrain. (CEOP)

2010

Develop the understanding and parameterizations required to reproduce the diurnal cycle for monsoon regions in a GCM. (CEOP)

Complete a study of the effects of aerosols on monsoons using a combination of observations and models. (CEOP)

2012

Demonstrate the contribution of improved prediction systems for forecasting the onset and intensity of droughts and the recovery from drought. (CEOP)

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. (GMPP, CEOP)

GEWEX Objective 4:

Undertake joint activities with operational hydrometeorological services, related ESSP projects like the 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.

Timeline:



How does CEOP help us meet this goal?

2012: Demonstrate benefits of improved hydrometeorological predictions for water resources (CEOP).

GEWEX Objective 4 – Milestones:

2007

Launch the Hydrologic Applications Project (CEOP).

Launch at least two pilot projects in GEWEX CSEs that will utilize hydrological ensemble prediction techniques as a HAP and HEPEX initiative. (CEOP)

Downscale and evaluate seasonal hindcasts over the CSEs using NOAA and DIMETER seasonal forecasts that can be assessed by CSE scientists (CEOP)

2008

Launch several studies with the Project for Ungauged Basins (PUB) to demonstrate the value of using remote sensing data in ungauged (or under-gauged) basins. (CEOP, GMPP)

Evaluate seasonal hydrological forecasts from hindcast studies for the initial two pilot studies; and launch additional HAP and HEPEX pilot studies. (CEOP).

Develop links with THORPEX to undertake predictions on daily to monthly time scales to look at intra-seasonal prediction capabilities. (CEOP)

Assess the ability of models to simulate the impacts of heavy rain events and droughts on water resources. (CEOP)

Evaluate the predictive capability from land initialization conditions to the prediction of terrestrial hydrological variables at different time scales. (GMPP, CEOP)

GEWEX Objective 4 – Milestones:

2009

Contribute appropriate models and methodologies for doing water balance studies to the Global Water System Project (GWSP). (CEOP)

2010

Determine the contribution of remote sensing to hydrologic modeling, with particular focus on ungauged and poorly gauged basins. (CEOP)

Evaluate newly developed procedures for hydrologic ensemble generation and their impact on seasonal hydrologic prediction for the pilot test beds. (CEOP)

2012

Prepare a review article on the hydrological response of basins of different sizes to drought and extreme rainfall events. (CEOP)

Review the outcome of PUB's contributions to GEWEX science and specify future areas of research required of the hydrological science community. (CEOP)

Demonstrate benefits of improved hydrometeorological predictions for water resources (CEOP).

METRICS FOR MEASURING SUCCESS:

- 1) Milestones and commitments met.
- 2) Recognition of GEWEX/WCRP contributions by operational services by national hydrometeorological services.
- 3) Recognition by the research and assessment communities (including IPCC) and GEO of the science, data sets and analysis tools produced by GEWEX.

SUMMARY:

CEOP IS MAKING A MAJOR CONTRIBUTION TO ACHIEVING GEWEX OBJECTIVE #4. IT IS ALSO CONTRIBUTING TO OBJECTIVES #1, 2 AND 3.

1. DO THESE OBJECTIVES ACCURATELY REFLECT THE CONTRIBUTIONS CEOP WILL MAKE TO GEWEX OVER THE NEXT SIX YEARS? (TOO MODEST? TOO EXPANSIVE?)
 2. ARE THE RHPs ADEQUATELY REFLECTED IN THE ROADMAP?
 3. COULD THE CEOP CONTRIBUTIONS FOR OBJECTIVES #1, 2 AND 3 BE STRENGTHENED?
 4. HOW CAN WE LINK CEOP EFFORTS WITH THOSE OF OTHER GEWEX PANELS AND THE WCRP CROSS-CUTS?
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