Preamble

The initial successes of CEOP, up to the end of 2004, have led its Science Steering Committee and Advisory and Oversight Committee to endorse plans for a second phase of CEOP that will extend to the end of 2010. This decision has also been supported by the broader WCRP climate research community. At the March 2005 session, the Joint Scientific Committee (JSC) for the WCRP noted with appreciation the completion of CEOP's main observation period of Phase 1 and the on-going research and data collection activity.

The JSC has taken steps to help in the development of the unique attributes of CEOP’s observation and data component by providing guidance through the WCRP Observations and Assimilation Panel (WOAP). In a similar manner, the JSC plans to ensure that the CEOP science focus remains closely integrated with and complementary to the overall objectives of GEWEX and the other core projects of WCRP. For this reason, the JSC has asked that GEWEX maintain oversight of the research component of CEOP. In this context, CEOP is expected to provide a draft of the Phase 2 Implementation/Science Plan that includes criteria for measuring progress and a statement of resource requirements, to be considered at JSC-XXVII, March 2006. It has been agreed that in this way CEOP would continue to evolve as a leading contributor to water and energy cycle studies in the global climate research community and remain a fully functioning integrative component of the WCRP.

In this context, the main themes of the Fifth CEOP International Implementation Planning Meeting will be assessments and plans.

Two types of assessments are required:
(i) An assessment that deals with the degree to which the commitments made by agencies and organizations to CEOP, such as for the provision of coordinated in-situ, satellite and model data; have been fulfilled, and
(ii) An assessment that focuses on the degree to which CEOP has been able to apply the resources it has been provided to meet its observational and science goals up to the present.

The main elements to the planning theme are:
(i) Plans related to the continuation of work on existing goals and objectives and
(ii) Plans related to the implementation of the next phase of CEOP (Phase 2) leading toward its contribution to COPES and its transition to the first element of the IGWCO, and GEOSS.

The underlying purpose for organizing the meeting in this manner is to end with a set of clearly defined specific implementation steps that can be used in the final refinement of the draft of the CEOP Phase 2 Implementation/Science Plan.

In keeping with the intent of the JSC recommendations, each step identified in the CEOP planning process will include specific implementation strategies that will ensure close and effective connections to other national and international activities concerned with research of the Earth’s water and energy cycle including, especially the core projects of WCRP.
Sunday, 26 February 2006:

Venue: UNESCO Headquarters – Fontenoy Bldg. 2, Room V


This session will be dedicated to the draft of the CEOP Phase 2 Implementation Plan and will focus on the implementation strategy of each working group and element. In the context of the main theme of the meeting, the emphasis will be given on particular areas of cooperation between CEOP and the core projects of WCRP and other international data/science initiatives. Charts describing the ontogenesis of CEOP, its transition into the second phase, and its coordination function within the WCRP framework will be presented (hereinafter Charts).

Each participant will be asked to give a brief presentation (~10 minutes) that would introduce the concept of implementation of the plans identified for his particular element within the context of the framework outlined in the Charts. Strengths and weaknesses of the Phase 2 implementation strategies should be presented and will be discussed in order to reach the consensus on the implementation plans that will be then presented at the WCRP JSC meeting in March 2006.

1700  ADJOURN

Monday, 27 February 2006:

Venue: UNESCO Headquarters – Fontenoy Bldg. 2, Room IX

0800 – 0830  REGISTRATION

0830 - 0920  1. OPENING OF MEETING AND OVERVIEW OF CEOP INTERNATIONAL FRAMEWORK

0830 – 0840  1.1 WELCOMING REMARKS/LOGISTICS: UNESCO, WCRP/COPES Support Unit, CEOP (Ms. Khin-Ni-Ni Thein, Chief of the Section for Sustainable Water Resources Management – UNESCO; Gilles Sommeria; Toshio Koike)

This brief session will introduce the main elements and sponsors of the activities and will allow the organizers to welcome the participants.

0840 – 0855  1.2 WCRP/COPES – Invited talk (Herve Le Treut, Jean Jouzel)

The main strategy of the Coordinated Observation and Prediction of the Earth System (COPES) will be introduced and connections between COPES and CEOP outlined. COPES has been initiated by WCRP with the aim to facilitate 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. COPES targets to provide the unifying context and agenda for the wide range of climate science coordinated by, and performed through, WCRP core projects, and other activities, and for demonstrating their relevance to society. An initial list of topics, which COPES focuses on, includes: seasonal prediction, monsoons, and sea-level rise.

0855 – 0905  1.3 IGWCO – Invited talk (Rick Lawford)

The main elements of the IGWCO Implementation Plan will be reviewed and specific connections between IGWCO and CEOP will be addressed.
Monday, 27 February 2006 – Continue:

0905 – 0920  1.4 CEOP INTRODUCTION/SCIENCE OVERVIEW BY CEOP LEAD SCIENTIST
(Toshio Koike)

The endorsement of the next phase of CEOP resulted in the action to produce the CEOP Phase 2 Implementation/Science Plan that would distinctly delineate CEOP scientific goals and associated data collection and management requirements and their implementation strategy. The review of the preliminary draft of the Plan by the AOC and SSC at March 2005 meeting, Tokyo, initiated an intensive revision process that has been also inspired through assessments by WCRP and GEWEX representatives. The process has led to the substantially revised version of the document that outlines the objectives and key strategies for Phase 2 and includes criteria for measuring progress and a statement of resource requirements.

This presentation will summarize the major achievements of the initial phase of CEOP as a basis of an orderly expansion of its science and data elements and introduce Phase 2 goals and specific implementation strategies that will ensure close and effective connections to other national and international activities concerned with research of the Earth’s water and energy cycle including, especially the core projects of WCRP.

0920 – 1610  2. CEOP WORKING GROUP SESSIONS (Assessment and Plans)

The CEOP Working Group Chairs will organize and moderate these sessions following an overview report by the CEOP Lead Scientist. As indicated in the Preamble, this session will be dedicated to (i) the evaluation of the degree to which the working groups have been able to meet their particular commitments up to the present and (ii) the presentation of the plans for Phase 2 that will provide the group with an understanding of the particular goals aiming by individual working groups and specific steps that the groups will undertake to ensure successful and timely accomplishment of these goals in compliance with the agreed framework of close cooperation with other projects, in particular the WCRP initiatives. The plans for the whole period of Phase 2 will be outlined within the context of the Implementation/Science Plan document, including an approximate schedule. In addition, more detailed work plan will be introduced for the following one-year period.

0920 – 1020  2.1 CEOP DATA MANAGEMENT WORKING GROUP AND REFERENCE SITES CONTRIBUTION
(S. Williams and H-J. Isemer will organize and moderate this session of the Agenda)

This session will introduce the current status of the CEOP in-situ data sets stored at the Central Data Archive (CDA) at NCAR/EOL (former UCAR/JOSS) and their staging for access and application by the user community. Accomplishments as well as remaining issues with respect to the commitments made by CEOP in terms of the in-situ data collection and management will be presented. The presentation will also provide an outline of the Phase 2 plans with emphasis on the new elements and themes and associated increased requirements for in-situ data.

In addition, nominated representatives of the CEOP reference sites will be asked to briefly report on the specific issues associated with their site(s) data provision and to introduce their concrete implementation strategies to ensure that the remaining as well as new commitments will be fulfilled as planned.

Oral presentations:
- Status of CEOP Phase 1 Reference Site archive (Steve Williams, Luiz Horta) - 20 minutes
- BALTEX Reference site activities (Frank Beyrich, Fred Bosveld) - 15 minutes
- CAMP Quality Control Data System (Katsunori Tamagawa) - 10 minutes
- Plans for CEOP Phase 2 Reference Sites (Hans-Joerg Isemer) - 15 minutes

1020 – 1040  BREAK

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Monday, 27 February 2006 – Continue:

1040 – 1130  2.2-I CEOP MODEL OUTPUT DATA DEVELOPMENT, MANAGEMENT, AND APPLICATION (M. Bosilovich and M. Lautenschlager will organize and moderate this section of the Agenda)

Within the context of the Preamble and Item 2 above, specific milestones related to the development, handling and application of CEOP Model Output will be addressed such as the improvements of the MPI archive arrangements, model output format unification efforts, etc. The session will also cover further development of the model output element and associated implementation approach proposed for Phase 2 with respect to the scientific requirements. In addition, key results from the Model Output Development and Management Component of CEOP will be briefly presented by representatives of the contributing Centers.

Oral presentations:
- The CEOP Model Output Archive – Status and Perspective (Hans Luthardt) – 10 minutes
- Discussion on Model Output Data Overview and Update (All participants) – 5 minutes
- Conversion of Model Data to NetCDF CF Convention Standard (Beate Geyer) – 10 minutes
- NCEP Update (Ken Mitchell) – 10 minutes
- Comparison of Japanese 25-year Reanalysis with Observational Data Including CEOP (Tomooaki Ose) – 15 minutes

1130 – 1250  2.2-II CEOP ANALYSES INTERCOMPARISON PROJECT – A NEW, CROSS-CUTTING ELEMENT OF PHASE 2 – (M. Bosilovich and K. Yang will organize and moderate this section of the Agenda)

Spurred by the results of CEOP pilot studies, it was recognized that further exploration of the differences in analysis systems was required to contribute to the scientific goals of CEOP. The CEOP Analyses Intercomparison Project will specifically focus on the ability of current global data assimilation systems, individually and in ensemble, to reproduce all of the components of the water and energy cycles (precipitation, evaporation, transports, water and energy content, and radiation). More details about the specific targets and implementation strategies and the results of pilot studies will be presented.

Oral presentations:
- Global Water and Energy Cycles in MSC's New High-Resolution Medium-Range Weather Forecast Model (Stephane Belair) – 10 minutes
- Evaluation of Surface Water and Energy Cycles in the Met Office Global NWP Model using CEOP data (S. Milton and P. Earnshaw) – 10 minutes
- A New Land Surface Scheme for the JMA Global NWP Model: Validation Study using the CEOP In-situ Observation Data (Hirotto Kitagawa) – 10 minutes
- A preliminary investigation of the behavior of some surface variables in the BMRC MOLTS for EOP3 (Lawrie Rikus) – 10 minutes
- Verification of Numerical Model Forecasts of Precipitation and Satellite-derived Rainfall Estimates over the Tropics and the Mid-latitudes (Laura Bertolani) – 10 minutes
- Influence of Model Resolution on Numerical Predictions and a Comparison with Observations in Selected Case Studies (Raffaele Salerno) – 10 minutes
- Analysis of Model Error using MOLTS Location Data (Martin Koehler) – 10 minutes
- Evaluating the variations in analyzed data products (Michael Bosilovich) – 10 minutes

Posters:
- Model Output/Intercomparison: CPTEC GCM andEta Model verifications against Rondônia Reference site in Brazil (Sin Chan Chou, Patricia Waldheim, Claudine Dereczynski, José Marengo)
- GMAO Reanalysis (Mike Bosilovich)
- CEOP-based Diagnosis of Prediction Skill of Current Operational General Circulation Models and Land Data Assimilation Systems (Kun Yang, Mohamed Rasmy, Surendra Rauniyar, Toshio Koike, Kenji Taniguchi, Katsunori Tamagawa, Michael G. Bosilovich, Steve Williams)

1250 – 1350  LUNCH
Monday, 27 February 2006; – Continue:

1350 – 1410 2.3 CEOP SATELLITE DATA ARCHIVE (T. Koike and P. Houser will organize and moderate this section)

The work associated with satellite data set development and integration that was undertaken during Phase 1 has progressed as planned. This session will introduce the current status of the CEOP satellite data set and the Centralized Archive at the University of Tokyo and will outline the perspectives for Phase 2.

Oral presentations:
- JAXA’s Contribution to CEOP Satellite Data Archive (Naoto Matsuura) – 20 minutes

Posters:
- JAXA’s Satellite Datasets for CEOP (JAXA group)
- ALOS: First Images (JAXA group)
- GPM (JAXA group)

1410 – 1540 2.4 CEOP MONSOON SYSTEMS STUDIES (W. Lau will organize and moderate this section of the Agenda)

One of the unique achievements in CEOP Monsoon Systems Studies is the intercomparison of monsoon systems in the world during the CEOP coordinated data collection period with focus on the seasonal march of the monsoon systems, monsoon systems driving mechanisms, intra-seasonal variations, and diurnal cycle. Milestones in the development of a CEOP Inter-monsoon Model Study (CIMS) will be presented by participants selected by the Co-conveners of this session. As highlighted in the Preamble, the CIMS representatives will also introduce the plans for Phase 2, in particular the newly proposed study on Aerosol-Monsoon Water Cycle Interaction, which aims to address the natural and human-induced effects on the water cycle, and outline the proposed implementation steps and envisioned cooperation with other projects and research activities focusing on monsoon processes.

Oral presentations:
- Activity Update for CEOP inter-monsoon system studies (CIMS) (William Lau) – 15 minutes
- Monsoon studies of the Americas (Jose Marengo) – 15 minutes
- Diurnal Variation of monsoon precipitation and water cycle in a global context: a challenge to climate models (Mike Chen) – 15 minutes
- Increasing of atmospheric temperature in the upper troposphere and cumulus convection over the Tibetan Plateau (Kenji Taniguchi) – 15 minutes
- Intraseasonal variability of the South American monsoon (Carlos Roberto Mechoso) – 15 minutes
- Global Scale Transferability of Inference Schemes for Radiative Forcing under CEOP (Rachel Pinker) – 15 minutes

1540 – 1600 BREAK

1600 – 1720 2.5 CEOP WATER AND ENERGY SIMULATION AND PREDICTION (WESP) (J. Roads and J. Marengo will organize and moderate this section of the Agenda)

The WESP group has begun to use the CEOP datasets to accomplish a comprehensive synoptic climatological case study of regional CSE and global water and energy budgets as a guide to the interpretation of longer-term global and regional analyses and datasets. The milestones achieved through the three WESP elements, namely Water and Energy Budget Studies (WEBS), the Global Land Data Assimilation System (GLDAS), and Inter-CSE Transferability Study (ICTS), will be presented focusing on the assessment aspect as indicated in the Preamble. The presenters will be asked to provide overview of the Phase 2 plans including the proposed implementation strategy.

Oral presentations:
- Introduction (John Roads) – 5 minutes
Monday, 27 February 2006; – Continue:
1600 – 1720 Session 2.5 CEOP Water and Energy Simulation and Prediction (WESP)

- The Global Land Data Assimilation System (GLDAS): Results and New Directions (Matt Rodell) – 15 minutes
- GLDAS (Paul Houser) – 15 minutes
- Inter-CSEs Transferability Study (ICTS) (Burkhardt Rockel) – 15 minutes
- The diurnal cycle of water and energy over the Continental United States from three reanalyses (Alex Ruane) – 15 minutes
- An Auto-calibration System to Assimilate AMSR-E data into a Land Surface Model for Estimating Soil Moisture and Surface Energy Budget (Toshio Koike) 15 minutes

Posters:
- Global evaluation of the RSM simulated precipitation through transferability studies during CEOP (I. Meinke, J. Roads, and M. Kanamitsu)

1720 – 1810 3. CROSS-CUTTING ELEMENTS AND WATERSHED HYDROLOGY

The CEOP Phase 2 science framework is constructed for making maximum use of the unique CEOP data sets and specific data integration tools that has been established over Phase 1 for addressing the CEOP guiding goal, by modifying and adding to the Phase 1 science elements. Within the expanded framework, two cross-cutting activities, namely a CEOP Analyses Intercomparison Project (introduced in Session 2.2-II, 11:30 – 12:50, Monday 27 February), and an Extreme Events Impact Analysis Project for increased understanding of hydroclimate processes and improving model predictability, are being introduced to address certain basic aspects and to synthesize other elements, respectively, that are common to the CEOP objectives. In addition, a Watershed Hydrology Study including a downscaling study is being established in Phase 2 as a focused activity that spans WESP and CIMS and provides linkage to water resources studies.

1720 – 1810 3.1 CEOP EXTREME EVENTS IMPACT ANALYSIS PROJECT – (R. Stewart will organize and moderate this section of the Agenda)

CEOP represents a unique opportunity to advance understanding of extremes including their occurrence, characteristics and inter-connections through a ‘global case study’ that is proposed be carried out in cooperation with the GHP WISE initiative during the second CEOP phase and that will focus on extremes at a particular time around the world. This session will provide the group with understanding of the relevance of the Extreme Events Impact Analysis Project to the CEOP objectives through contributions to better understanding the cycling of water and energy during extremes over land and to the inter-connections of such extremes. More details about the Phase 2 plans and the implementation approach as well as the results of the WISE activities related to the CEOP Extreme Event project up to the present will be presented.

Oral presentations:
- Introduction (Ron Stewart) – 2 minutes
- Extremes around the world including during CEOP: Definitions and characteristics of extreme precipitation (Ben Burford) – 10 minutes
- Extremes in the La Plata Basin (Hugo Berbery) – 10 minutes
- The Drought of Amazonia in 2005 (Jose Marengo) – 10 minutes
- A Severe Recent Drought over the Canadian Prairies (Ron Stewart) – 8 minutes
- Predicting drought (Eric Wood) – 10 minutes

POSTER SESSION WILL START IN THE AFTERNOON (The exact time will be announced in due course)

1810 ADJOURN

1830 Icebreaker (UNESCO facilities: Bar des Conférences)
Venue: UNESCO Headquarters – Fontenoy Bldg. 2. Room IX

Breakout sessions: Room IX (except for 1400–1500, occupied by another group), Room VI, Room VII, Room VIII

0830 – 0910 3. CROSS-CUTTING ELEMENTS AND WATERSHED HYDROLOGY - CONTINUE

0830 – 0910 3.2 CEOP WATERSHED HYDROLOGY STUDY (E. Wood will organize and moderate this section of the Agenda)

The urgent need of usable information for sound water management decision-making and the opportunity offered by the unique multi-scale CEOP data sets developed during the initial phase have been main motivations for proposing a Watershed Hydrology Study as a new element of the scientific CEOP framework. The developed data sets and capabilities allow for CEOP to follow two paths for addressing this issue; one is to aggregate in-situ measurements to a basin scale and the other to downscale from the water cycle information at global and regional scales to a basin scale. This session will inform the participants about the progress in establishing a network of CEOP Reference Hydrological Basins and issues associated with these efforts and will introduce science objectives and implementation strategy.

Oral presentations:
- The Land Information System (LIS): Thinking Globally, Acting Locally (Matt Rodell) – 15 minutes
- An Update and Evolution of the CEOP Watershed Data Strategy (Eric F Wood) – 15 minutes
- Discussion – 10 minutes

0910 – 1130 4. NEW WESP ELEMENTS – SEMI-ARID REGION AND COLD REGION STUDIES

CEOP has recognized through its WESP science and implementation review process (and endorsed by the AOC and SSC) that there is a need to advance knowledge of processes under specific climate conditions such as in semi-arid and cold regions, both of which are vulnerable and sensitive to climate change and global warming and, therefore, two new elements are being proposed under the WESP working group that will focus on semi-arid regions and cold regions, respectively.

Similarly as in Section 3, the new WESP elements will be introduced in the respective sessions of this section through the three views: background, unique contributions, and implementation approach with focus on specific scientific issues to be addressed and also providing a perspective of cooperation with related scientific activities.

0910 – 1000 4.1 CEOP SEMI-ARID REGION STUDY – (C. Fu will organize and moderate this section of the Agenda)

It was determined through the CEOP review process that contributions to understanding the water and energy cycle of semi-arid regions and their roles in the climate system by analysis of globally integrated data systems of CEOP in-situ reference sites over semi-arid regions, with coordinated satellite observations and model outputs, could serve an important function for understanding and managing water resources in semi-arid regions. Further, it was felt that by applying CEOP tools the study in the semi-arid regions could improve the understanding of the land surface process and hydrological cycle of these regions and their roles in the climate system. Specific targets and proposed implementation steps will be presented.

Oral presentations:
- Introduction of CEOP semi-arid region study in phase II and some preliminary analysis (Congbin Fu) – 10 minutes
- Water and CO2 fluxes over a cropland and degraded grassland in semi-arid Asia region based on Tongyu station in northeast China (Huizhi Liu) – 10 minutes
- Quantifying the exchange of water and energy between land and atmosphere in semi-arid regions of North America (Jie Song) – 10 minutes
- Research plan of a new CEOP reference site over Loess Plateau (Jianping Huang) – 10 minutes
- Discussion on the implementation of future plan (open for all participants) – 10 minutes
Tuesday, 28 February 2006 – continue:

1000 – 1020 BREAK

1020 – 1130 4.2 CEOP COLD REGION STUDY AND CliC JOINT SESSION – (B. Goodison, S. Williams, T. Koike, T. Ohata, and J. Moore will organize and moderate this section of the Agenda)

The CEOP Cold Region Study implementation strategy is based on close collaboration with the WCRP CliC project. Accordingly, the CliC representatives are invited to participate in this session and introduce the CliC views of cooperation with CEOP during Phase 2 that includes but is not limited to the joint initiative as a part of the International Polar Year project. Specific scientific issues to be addressed through the collaborative CEOP-CliC efforts and the associated requirements for the CEOP data collection and management framework as well as concrete implementation steps will be outlined by the participants as nominated by the conveners of this session.

Oral presentations:
- CliC Overview and Cryosphere Reference Sites (Barry Goodison) – 20 minutes
- CliC DMIP and DISC (Steve Williams) – 15 minutes
- IPY Overview (Barry Goodison) – 10 minutes
- CliC-CEOP IPY Proposal (Tetsuo Ohata) – 10 minutes
- CliC-CEOP Collaboration Discussion (Steve Williams/Toshio Koike) – 15 minutes

Posters:
- CliC CPA1 (CliC group)
- IGOS-cryo (CliC group)

1130 – 1145 The role of CEOP in GEWEX (Soroosh Sorooshian)

1145 – 1500 5. CONVENING OF JOINT SESSION OF THE CEOP SCIENCE STEERING COMMITTEE (SSC) (H. Grassl – CHAIR) AND THE CEOP ADVISORY AND OVERSIGHT COMMITTEE (Kaye/Sumi Co-Chairs) / PARALLEL BREAKOUT SESSIONS ON OBSERVATIONS AND RESEARCH (All Participants)

The session considers a “working lunch” – timing and “style” is upon each group

Four breakout sessions are planned:

5.1 CEOP Observational Data and Watershed Hydrology Session – (Co-Chairs: Williams/Wood, Correspondents: Isemer/Horta)

The Chairs and Correspondents will organize the group to respond to at least the following topics:
(i) Implementation/Collection issues for EOP-3, -4 and beyond
(ii) Reference Site Categories for CEOP Phase 2
(iii) New Sites/Data Availability/Needs for Semi-arid and Cold Regions
(iv) Watershed Hydrology and Reference Basins Issues
(v) Application of the Quality Control Tools developed at UT: Experiences/Possibilities of future exploitation
(vi) Review of Quality Assurance/Control Data Policy for Phase 2
(vii) Gap filling for EOP-2
(viii) Links to other datasets (e.g. BSRN, etc.)
(ix) User Identification/Experiences Data Availability, Data Archive/Flow/Ease of use, etc.
(x) Concrete objectives to be achieved within the following year and proposed implementation steps
Tuesday, 28 February 2006 – Continue:
1145 – 1500 Joint AOC and SSC Session, Breakout Sessions

5.2 **CEOP Water and Energy Budget Science Session** (includes cold and semi-arid regions and extreme events study issues) – (Co-Chairs: Roads/Stewart, Correspondents: Goodison/Fu)

There is a need to discuss progress of the main research issues in WESP including Water and Energy Budget Studies and Transferability, as well as how to accommodate new topics such as Semi-arid and Cold region studies and Extremes initiative. The session will assess the fulfilment of Phase 1 commitments and identify remaining issues as well as further specify plans for Phase 2 with the emphasis on particular tasks to be accomplished over the following year.

Specific items to be addressed include:
(i) Milestones/Results achieved/remaining in Phase 1 and planned for Phase 2
(ii) Evaluation of Current Data Collection/Archive/Application processes
(iii) New/Different In-situ, Satellite, Model Data Requirements
(iv) Frameworks for accommodating new Science Foci, namely Semi-arid and Cold region studies
(v) Extreme Events Impact Analysis Project – connections to WESP elements
(vi) Connections/Joint activities with other Projects, in particular the core projects of WCRP
(vii) Concrete objectives to be achieved within the following year and proposed implementation steps

5.3 **CEOP Monsoon System Science Session** – (Co-Chairs: Lau/Mechoso, Correspondents: Berbery/Marengo)

There is a need to discuss progress of the main research issues in CEOP Monsoon Studies Working Group including the CEOP Inter-monsoon Model Study (CIMS), as well as how to accommodate new topics such as Aerosol/Water Cycle Interactions. The session will assess the fulfilment of Phase 1 commitments and identify remaining issues as well as further specify plans for Phase 2 with the emphasis on particular tasks to be accomplished over the following year.

Specific items to be addressed include:
(i) Milestones/Results achieved/remaining in Phase 1 and planned for Phase 2
(ii) Evaluation of Current Data Collection/Archive/Application processes
(iii) New/Different In-situ, Satellite, Model Data Requirements
(iv) Frameworks for accommodating new Science Foci, namely Semi-arid and Cold region studies
(v) Connections/Joint activities with other Projects, in particular the core projects of WCRP
(vi) Concrete objectives to be achieved within the following year and proposed implementation steps

5.4 **CEOP Modeling and Data Integration/Assimilation Session** (includes CEOP analyses intercomparison project, downscaling issues) – (Co-Chairs: Bosilovich/McDonald, Correspondents: Rikus/Burford)

The Chair(s) and Correspondents will organize the group to respond to at least the following topics:
(i) Status of Development of Tools/Formatting/Archiving
(ii) Milestones/Results achieved/remaining in Phase 1 and planned for Phase 2
(iii) User Interface and Application experiences
(iv) Quantification of impacts on Science initiatives
(v) Accommodation of New Science Requirements
(vi) Plans of CEOP Analyses Intercomparison Project and Downscaling Initiative for Phase 2
(vii) Data Contribution Agreements for Phase 2
(viii) Concrete objectives to be achieved within the following year and proposed implementation steps

5.5 **Joint CEOP SSC** (Chair: H. Grassl) and **AOC session** (Co-Chairs: Kaye/Sumi)

Participants/Speakers:
Hartmut Grassl (EC), Jack Kaye (NASA), Akimasa Sumi (JAXA), Naoto Matsuura (JAXA), Jin Huang (NOAA), Einar-Arne Herland (ESA), Karyn Sawyer (NCAR), Toshio Koike (CEOP, UT), Soroosh Sorooshian (GEWEX), Rick Lawford (GEWEX, IGWCO), Gilles Sommeria (WCRP), and others
Drs H. Grassl and J. Kaye will convene a joint breakout session of the CEOP SSC and AOC to address at least the following issues:

(i) Endorsement of CEOP Phase 2 Implementation Plan
(ii) Maximizing the Science and Technology Benefits from CEOP
(iii) Framework for Oversight of CEOP Science Implementation Plans/Results
(iv) Specific recommendations for efficient organization and management of CEOP to achieve the main science objectives
(v) Discuss CEOP Phase 2 plans and schedules in the context of the priorities being set by the broader International Climate Research Community and provide comments for final refinement of the CEOP Phase 2 Implementation/Science Plan document.
(vi) A strategy to foster close coordination between all elements of CEOP and the International framework for Climate System Research, in particular core projects of WCRP.

1500 – 1520  BREAK

1520 – 1700  6. PLENARY SESSION (All Participants)

The plenary session will be held to discuss the next steps in refining the CEOP Phase 2 Implementation/Science Plan document and to review the results and recommendations coming from this meeting.

POSTER SESSION – ALL DAY

1700  ADJOURN

CEOP POSTERS for Monday and Tuesday:

1. WESP: Global evaluation of the RSM simulated precipitation through transferability studies during CEOP (I. Meinke, J. Roads, and M. Kanamitsu)
2. Satellite data and issues: JAXA’s Satellite Datasets for CEOP (JAXA group)
3. Satellite data and issues: ALOS: First Images (JAXA group)
4. Satellite data and issues: GPM (JAXA group)
5. Model Output/Intercomparison: CPTEC GCM and Eta Model verifications against Rondônia Reference site in Brazil (Sin Chan Chou, Patricia V. Waldheim, Claudine P. Dereczynski, José A. Marengo)
6. Model Output/Intercomparison: GMAO Reanalysis (Mike Bosilovich)
8. Cold regions: CliC-CPA1 (CliC group)
9. Cold regions: IGOS-cryo (CliC group)
IGWCO-CEOP JOINT WORKSHOP ON ACTIONS CONTRIBUTING TO GEOSS

Venue: UNESCO Headquarters – Fontenoy Bldg. 2, Room IX

0800 – 0830 REGISTRATION

0830 – 1215 1. OPENING OF THE WORKSHOP AND OVERVIEW TALKS

0830 – 0900 1.1 INTRODUCTIONS AND WELCOMING REMARKS
- Rick Lawford (IGWCO)
- Toshio Koike (CEOP)
- Gilles Sommeria (WCRP/COPES)
- Wolfgang Grabs (WMO)
- Walter Erdelen (UNESCO)
- Chu Ishida (IGOS-P, JAXA)
- Jose Achache (GEO)

0900 – 1015 1.2 OVERVIEW TALKS

0900 – 0930 GEO (Jose Achache)
0930 – 0950 IGWCO update (Rick Lawford)
0950 – 1010 CEOP update (Toshio Koike)

1010 – 1030 BREAK

1030 – 1215 1.3 OVERVIEWS OF PROGRAM ACTIVITIES RELATED TO GEO/IGWCO/CEOP

1030 – 1045 IGOS-P (Chu Ishida)
1045 – 1100 WMO (Wolfgang Grabs)
1100 – 1115 CEOS (Stephen Briggs)
1115 – 1130 UNESCO IHP (Mike Bonell)
1130 – 1145 WCRP/ COPES (Gilles Sommeria)
1145 – 1200 GEWEX (Soroosh Sorooshian)
1200 – 1215 The Geohazards Theme and Links with IGWCO (Stuart Marsh)

1215 – 1315 LUNCH

1320 – 1520 2. IGWCO: PAST, PRESENT, FUTURE

1315 – 1330 Precipitation (Phil Arkin)
1330 – 1345 Soil Moisture (Peter van Oevelen)
1345 – 1400 Water Quality (Stephen Greb)
1400 – 1415 Runoff (Wolfgang Grabs)
1415 – 1430 Groundwater Changes During Extremes (Jaroslav Vrba)
1430 – 1445 Capacity Building and Applications (Ana Medico)
1445 – 1500 Global Water System Project Linkages (Charles Vorosmarty)
1500 – 1515 Future Plans (Rick Lawford)

1515 – 1535 BREAK
Wednesday, 1 March 2006 – Continue:

1535 – 1735  3.  CEOP: PAST, PRESENT, FUTURE

1535 – 1625  3.1  CEOP PHASE 1 ACCOMPLISHMENTS

1535 – 1550  CEOP Reference Site Network and Data Archive (Steve Williams)
1550 – 1610  Centralized Data Integration Services (University of Tokyo group)
1610 – 1625  Distributed Data Integration Services (WGISS Test Facility for CEOP group)

1625 – 1735  3.2  CEOP PHASE 2 IMPLEMENTATION PLAN

This session will provide a summary of the plans for CEOP Phase 2 within the framework of close cooperation with other national and international activities concerned with research of the Earth's water and energy cycle. Based on the outcomes of the business meeting and CEOP talks earlier in the week as well as conclusions from the breakout sessions, concrete plans and implementation strategies of CEOP science elements will be presented and specific connections to other related projects and activities clearly outlined. Representatives of each science element will be asked to give a brief presentation (~10 minutes).

1625 – 1635  Cold Region Study (Tetsuo Ohata)
1635 – 1645  Semi-arid Region Study (Congbin Fu)
1645 – 1655  Aerosol - Monsoon Water Cycle Interaction (William Lau)
1655 – 1705  CEOP Analyses Intercomparison Project (Mike Bosilovich)
1705 – 1715  Extreme Events Impact Analysis Project (Ron Stewart)
1715 – 1725  Down Scaling (Toshio Kölke)
1725 – 1735  Watershed Hydrology Study (Eric Wood)

1735 – 1815  4.  PRESENTATIONS AND DISCUSSION ON GEO/IGWCO/CEOP COLLABORATION

- Workplan 2006
- Asian Water Cycle Observations Initiative
- Water Cycle Community of Practice
- others?

1815  ADJOURN

1830  Reception – (UNESCO facilities: Restaurant - 7th Floor)

POSTER SESSION – ALL DAY

IGWCO POSTERS:

- Soil Moisture, Crop and Vegetation Study Using AirSAR Data (Flaviana Hilario)
- Groundwater Resources Assessment under the Pressures of Humanity and Climate Changes (GRAPHIC) (Makoto Taniguchi and Alice Aureli)
- The Environmental Satellites Division at CPTEC/INPE (DSA-Divisão de Satélites e Sistemas Ambientais) (Jose Marengo)
- Utilization of Remote Sensing Data for Flash Flood Warning Purpose (Muntana Brikshavana)
- Understanding the Global Water System (Marcel Endejan)
- Remote sensing data and water cycle observation in Vietnam (Nguyen Thi Tan Thanh, B.Eng. Dang Thi Mai)
- Using Regional Climate Change Scenarios for Studies on Vulnerability and Adaptation in Brazil and
- South America: Amazon, São Francisco and Parana-La Plata River Basins (GOF-UK-CPTEC) (José A. Marengo, Carlos Nobre, Diana Raigoza, Cassiano D’Almeida, Igor Pisnitchenko)
- Use of remote sensing and GIS technology in integrated land and water management - case studies from India (Diwakar Parsi)

CEOP POSTERS*:

- WESP: Global evaluation of the RSM simulated precipitation through transferability studies during CEOP (I. Meinke, J. Roads, and M. Kanamitsu)
- Satellite data and issues: JAXA’s Satellite Datasets for CEOP (JAXA group)
- Satellite data and issues: ALOS: First Images (JAXA group)
- Satellite data and issues: GPM (JAXA group)
- Model Output/Intercomparison: CPTEC GCM and Eta Model verifications against Rondônia Reference site in Brazil (Sin Chan Chou, Patricia V. Waldheim, Claudine P. Dereczynski, José A. Marengo)
- Model Output/Intercomparison: GMAO Reanalysis (Mike Bosilovich)
- Model Intercomparison: CEOP-based Diagnosis of Prediction Skill of Current Operational General Circulation Models and Land Data Assimilation Systems (Kun Yang, Mohamed Rasmy, Surendra Rauniyar, Toshio Koike, Kenji Taniguchi, Katsunori Tamagawa, Michael G. Bosilovich, Steve Williams)
- Cold regions: CliC-CPA1 (CliC group)
- Cold regions: IGOS-cryo (CliC group)

*Two of the listed posters will be displayed on Monday and Tuesday only. These will be nominated later.