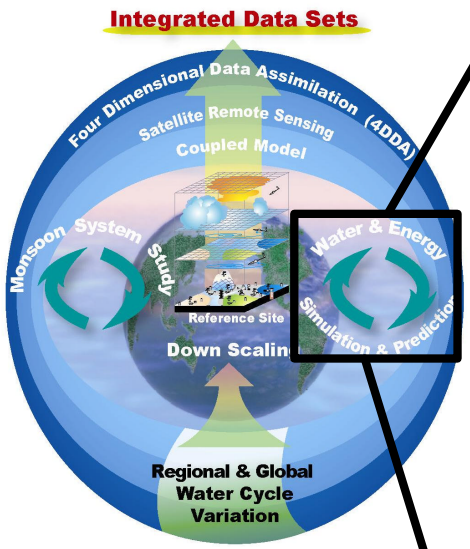
CEOP WESP

(Water & Energy Simulation and Prediction)



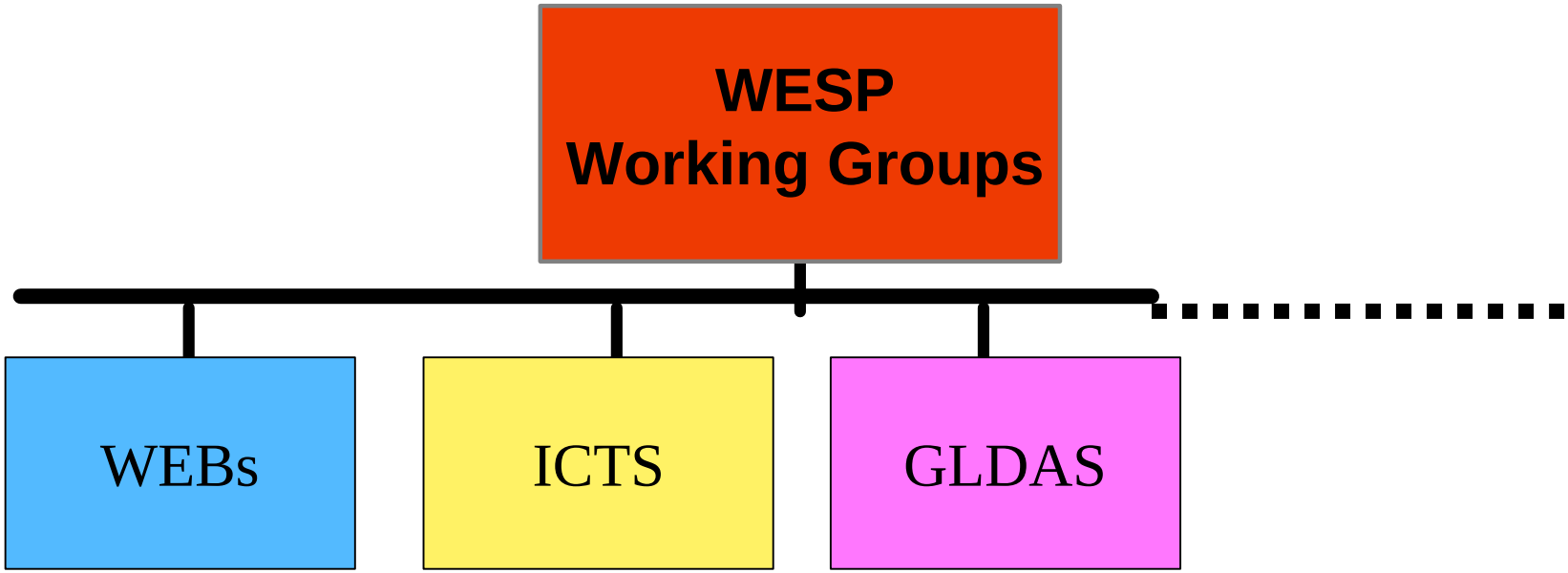
CEOP

An element of WCRP, initiated by GEWEX (Hydrometeorology Panel)

To understand and model the influence of continental hydroclimatic processes …

2006: WESP/Roads

WESP (Phase I) Working Groups



The goal of CEOP/WESP is to use the enhanced CEOP observations to better document and simulate water and energy fluxes and reservoirs over land on diurnal to annual scales and to better predict these variables and processes for water resource applications

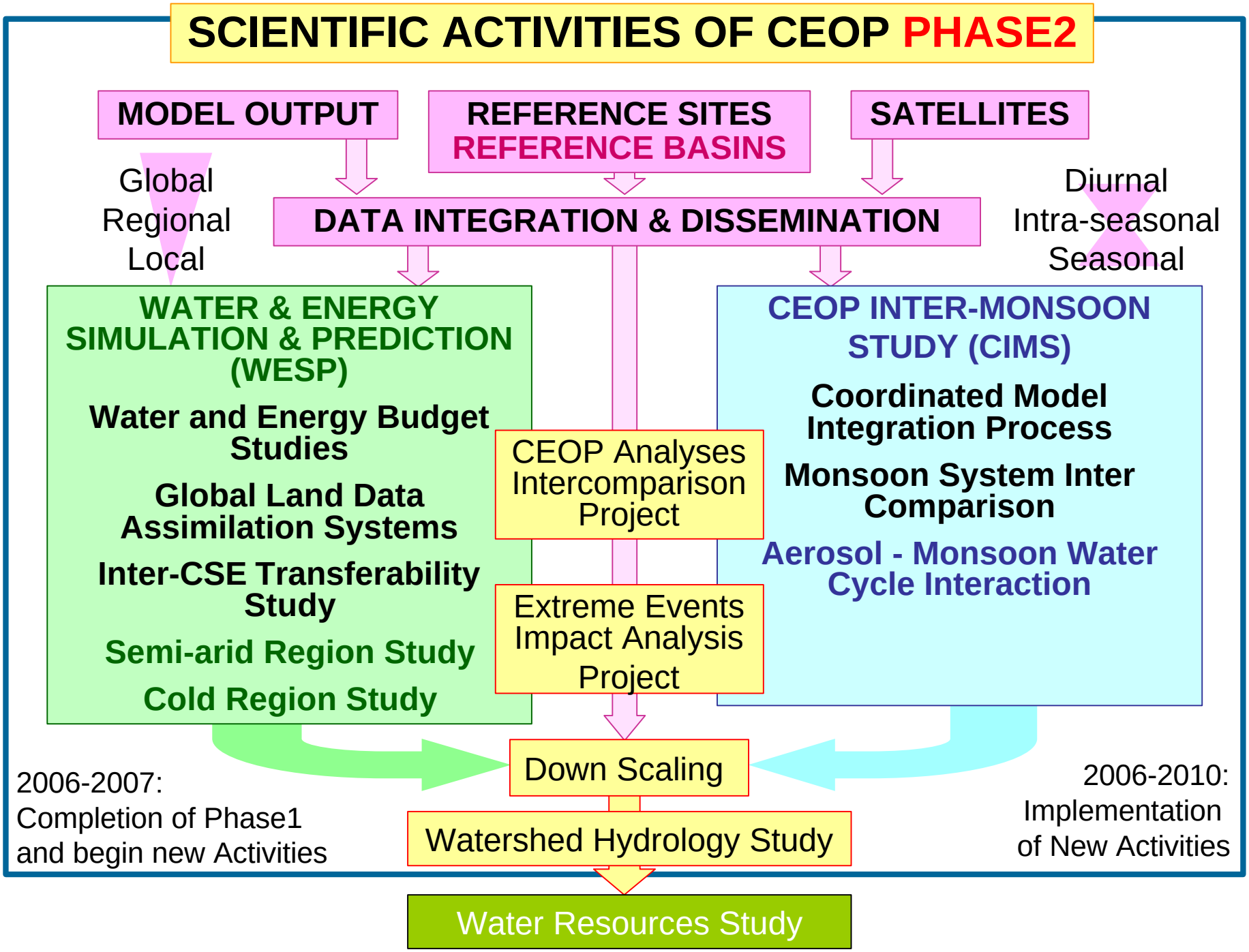
CEOP/WESP will initially conduct a pilot 3.5 year synoptic climatological case study of regional and global water and energy budgets as a guide to the interpretation of longer-term past and future global and regional analyses and observations.

Milestones Completed

- Established modeling groups
- Efforts to compare models with observations and with each other are underway and will be completed this year.
- Papers submitted to CEOP special issue (14 identified as WESP submissions)

Milestones planned for phase 2

- WEBS:
  - Improve understanding of water and energy seasonal and diurnal cycles locally, regionally, and globally
    - Surface and column
    - Fluxes, convergences and reservoir tendencies in atmosphere and land surface
- ICTS:
  - update boundary conditions and increase resolution, milestones still under consideration
  - Will maintain its efforts in comparing regional climate models to make them useful to global models
  - May tune global (and regional) models to lessons learned in phase 1
- GLDAS:
  - Output will continue to be made available to CEOP community
  - Actual data assimilation (snow cover, surface temperature, etc.) planned for phase 2 outside of experimental mode
  - Make a better connection to other LDAS groups or form a more international working group


SCIENTIFIC ACTIVITIES OF CEOP PHASE2
MODEL OUTPUT
REFERENCE SITES
REFERENCE BASINS
SATELLITES
Global
Regional
Local
DATA INTEGRATION & DISSEMINATION
Diurnal
Intra-seasonal
Seasonal
WATER & ENERGY SIMULATION & PREDICTION (WESP)
Water and Energy Budget Studies
Global Land Data Assimilation Systems
Inter-CSE Transferability Study
Semi-arid Region Study
Cold Region Study
CEOP Analyses Intercomparison Project
Extreme Events Impact Analysis Project
CEOP INTER-MONSOON STUDY (CIMS)
Coordinated Model Integration Process
Monsoon System Inter Comparison
Aerosol - Monsoon Water Cycle Interaction
Down Scaling
Watershed Hydrology Study
Water Resources Study
2006-2007:
Completion of Phase1
and begin new Activities
2006-2010:
Implementation
of New Activities

Milestones for Phase 2

- Extremes
  - Initiate inventory of global precipitation extremes
  - Initial water and energy budgets of at least one extreme event
  - May examine historical data and specific events related to events during CEOP period but not explicitly in CEOP period
  - Groundwater will be among hydrologic extreme foci
- Semi-arid
  - Evaluation of data comparison using CEOP reference sites in Asia and in comparison to N. America
  - Establish new CEOP reference site
  - Compare Tongyu crop and degraded grassland sites
  - Aim to develop new land-surface model for arid regions and evaluate existing models
  - Hope to incorporate eco-hydrological and groundwater models
  - Focus on dust storms' radiative and hydrologic impacts
  - Linkage with monsoon groups through dynamics and aerosols

2006: WESP/Roads

Milestones for Phase 2

- Cold region study:
  - Updating existing reference sites (clouds, radar, etc.)
  - Develop better hydrometeorological products
  - Using those data to better understand the water cycle in cold regions
  - Distinguish snow and rain from satellite?
  - 3 new stations in Tibetan Plateau may be added to CEOP archive
    - Connects to semi-arid and cold-region projects, aerosols also measured over plateau

2006: WESP/Roads

Data Access

- Additional Satellite and model data would be useful, also need GEWEX global products,
  - Really need to have timelines for when GEWEX data, CEOP model data, and satellite data will be available to CEOP community.
  - BSRN data important
- Additional data
  - Cloud data
  - Ground Water
  - Streamflow
  - Stable isotopes
  - Soil ice/water content
- Web-based interfaces
  - Centralized 3-dimensional analysis tools would be very useful

Data Requirements

- In-Situ
  - Known flux biases/errors should be quantified and clearly identified
  - What makes a tier 1 reference site?
    - Evaluation should be available on CEOP website
    - Use BSRN, WMO standards?
    - Need to reemphasize CEOP data standards and understand what are the requirements for becoming and remaining a CEOP reference site.
  - Additional reference site information requested
    - Soil organic content
    - Root depth

2006 objectives and implementation

- WEBS
  - Evaluation of Model Parameterizations on diurnal time scales
    - Locally, regionally and globally
    - Convective and radiative parameterizations
    - Complete and submit papers (and theses)

2006 objectives and implementation

- Semi-arid Regions
  - Obtain funding for US climate connection
  - First evaluation of new semi-arid reference sites
  - Semi-arid workshop planned for 2007 in Lanzhou, China

2006 objectives and implementation

- ICTS
  - All runs will be completed and put in archive
  - Paper submitted describing first comparison
  - Begin planning for Phase 2 activities including boundary conditions and higher resolution
  - Special ICTS session at international meeting planned for 2007

2006 objectives and implementation

- Cold-region study
  - Get funding to do proposed work in Asia
  - Still planning interactions with NEESPI and CliC
  - High(est) altitude reference site established on Tibetan Plateau at 7000m
    - Transect of isotope measurements will be made associated with this station
  - Isotope measurements planned for Siberia
    - Siberian isotope network could become a unique component of Cold-region study

2006 objectives and implementation

- GLDAS
  - Will finish delivering global products to archive for use by the general community
  - Will begin developing assimilation capabilities
    - Products (NASA)
    - Radiances (University of Tokyo)

CEOP/WESP connections

- CEOP WESP is a child of GEWEX/GHP and has considerable overlap.
- The strategy of CEOP/WESP is similar to GEWEX/GHP in that water and energy budgets have to be studied in a wide variety of regions with a wide variety of models on a wide variety of time and space scales in order to understand the global water and energy cycle.
- CEOP has provided a major enabling mechanism for many of the things GHP has wanted to do, although limited to a certain time period. and GHP will thus continue to actively support and contribute to CEOP.