



# DATA COORDINATION AND MANAGEMENT



**Steve Williams**  
**NCAR Earth Observing Laboratory**  
**Boulder, Colorado**

**2<sup>nd</sup> Asian Water Cycle Symposium**

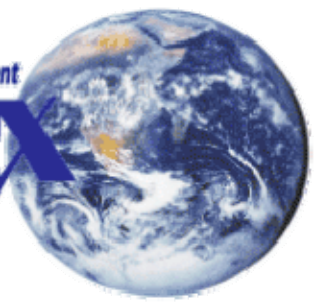
**Tokyo, Japan**

**9-10 January 2007**

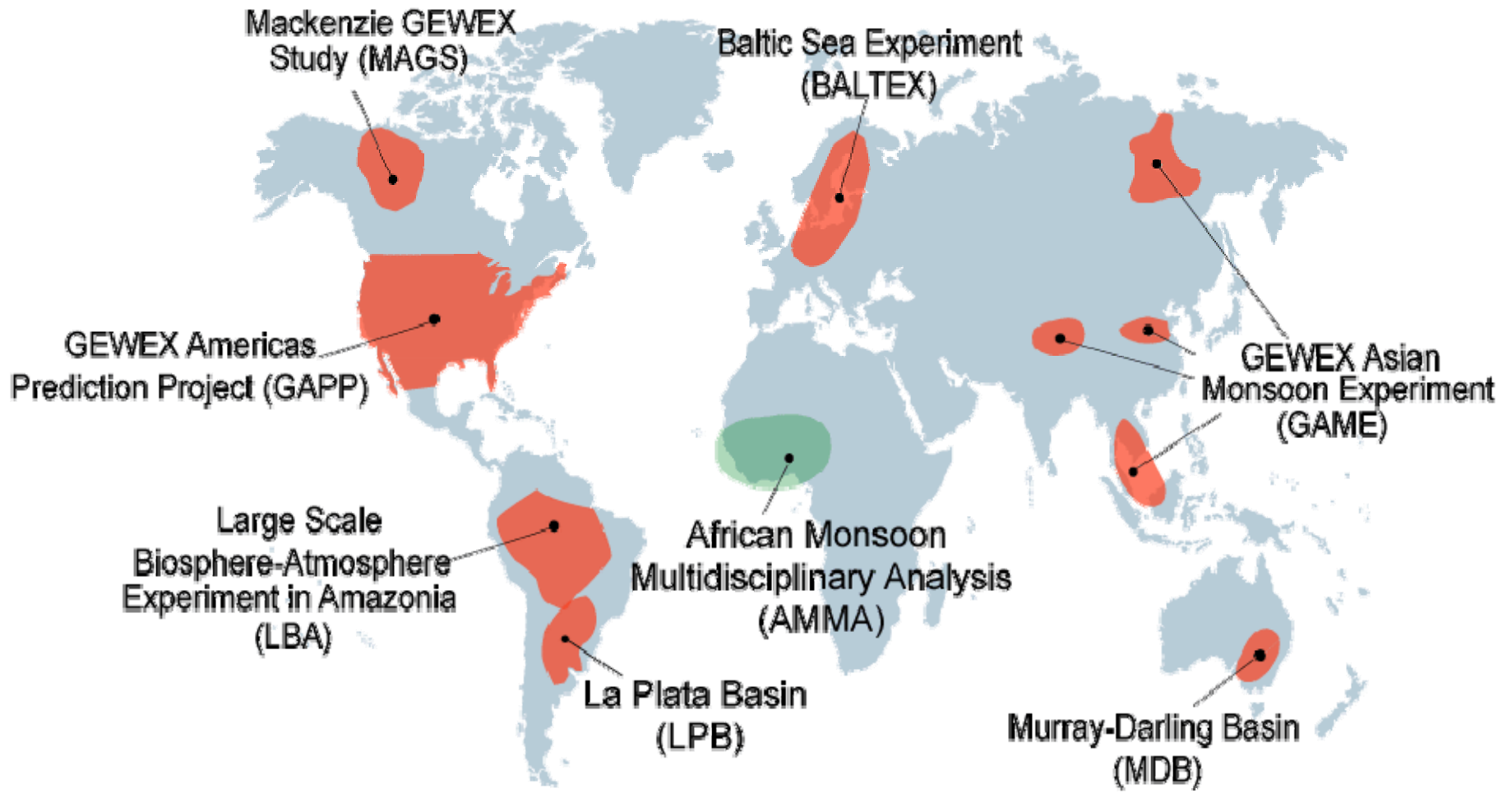


**EOL CEOP work supported by NOAA Climate Projects Office**





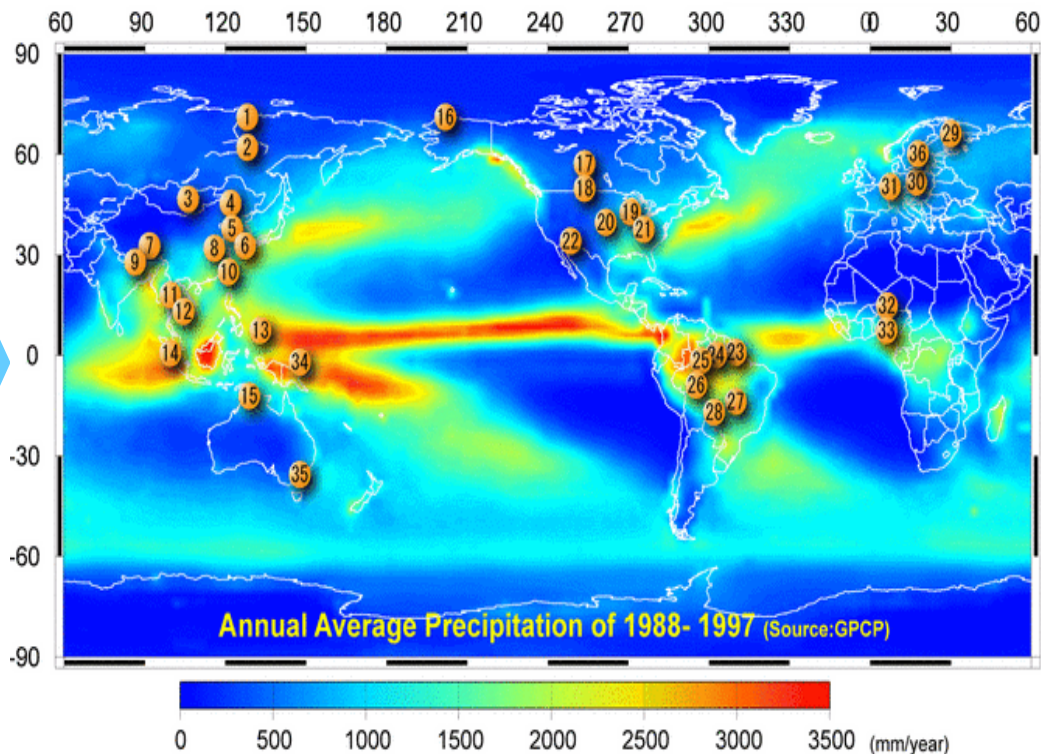
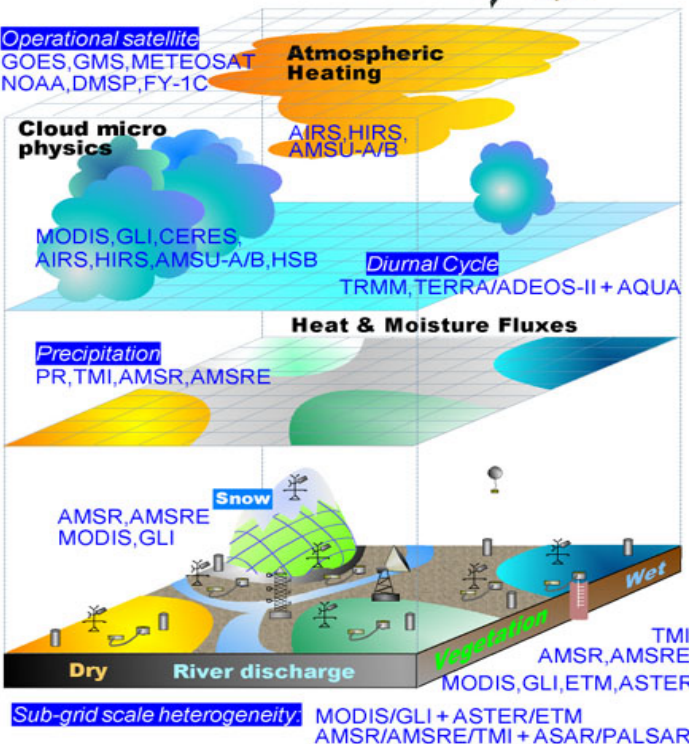
## Continental-Scale Experiments



# COORDINATED ENERGY and water-cycle OBSERVATIONS PROJECT (CEOP)

**The 1st Opportunity for Global and Comprehensive Data Sets and the Beginning of the 21C**  
 New Generation Satellite  
 TRMM, TERRA, AQUA, ADEOS-II, ENVISAT, ALOS

**Operational satellite**  
 GOES, GMS, METEOSAT  
 NOAA, DMSP, FY-1C



CEOP Phase 1

2001

2002

2003

2004

The CEOP Preliminary Data Period

1 July 30 September

The CEOP Buildup phase

1 October 30 September

The First CEOP Annual Cycle Period

1 October 30 September

The Second CEOP Annual Cycle Period

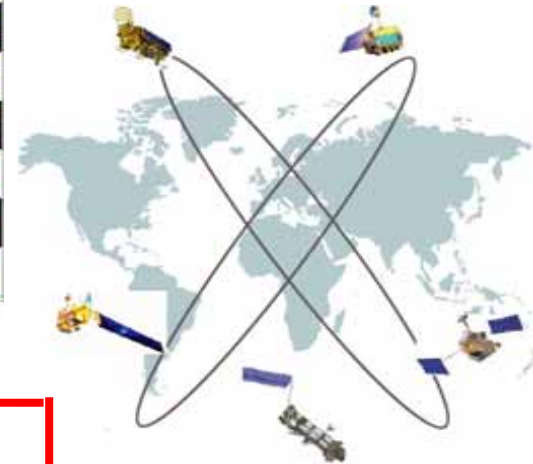
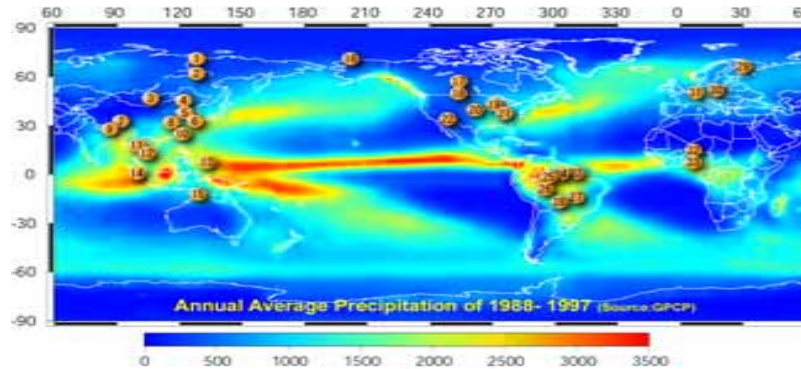
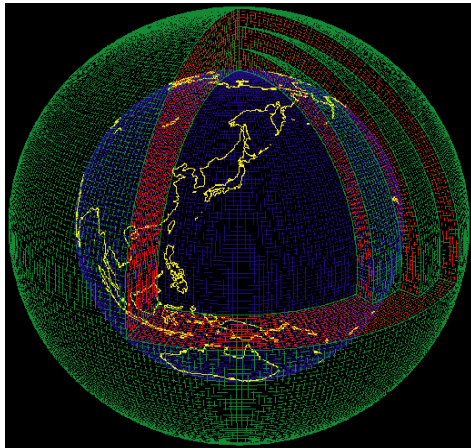
1 October 31 December





# Coordinated Energy and water-cycle Observations Project Three Unique Capabilities

## A Well Organized Data Archive System



Model Output Data Archiving  
Center at the **World Data  
Center for Climate, Max-Planck  
Institute for Meteorology** of  
Germany

In-Situ Data Archiving  
Center at **UCAR (University  
Corporation for  
Atmospheric Research)** of  
USA

Data  
Integrating/Archiving  
Center at **University of  
Tokyo and JAXA** of  
Japan





## Data exchange guidelines:

- (1) To comply with WMO Resolutions 40 (CG-XII) and 25 (CG-XIII) in particular: No financial implications.
- (2) CDA and *data users*: Commercial exploitation of CEOP data is prohibited.
- (3) *Data users*: No transfer to third parties.
- (4) Data release to *data users*: Turn-around period.  
*Category 1 data*: 6 months *Category 2 data*: 15 months
- (5) Acknowledgement and citation
- (6) Co-Authorship for Reference Sites' PIs recommended, collaboration base required if PI requests co-authorship (in particular for *category 2 data*)
- (7) CEOP Publication Library at CDA



## Lindenberg Reference Site



### STATION NAME:

Falkenberg

### CONTACT:

**Name:** Dr. Frank Beyrich

**Affiliation:**

Meteorologisches Observatorium Lindenberg  
Deutscher Wetterdienst (DWD)

**Address:**

Am Observatorium 12  
D - 15848 Tauche - OT Lindenberg  
Germany

**E-mail:** frank.beyrich AT dwd DOT de

**Telephone:** +49 33677 60228

**Fax:** +49 33677 60280

### WEB PAGES:

- [Lindenberg Meteorological Observatory Web Page](#)
- [BALTEX Home Page](#)

### STATION LOCATION:

All meteorological, radiation, soil, tower and flux measurements have been performed at the Falkenberg Boundary Layer Field Site of the Meteorological Observatory Lindenberg (MOL).

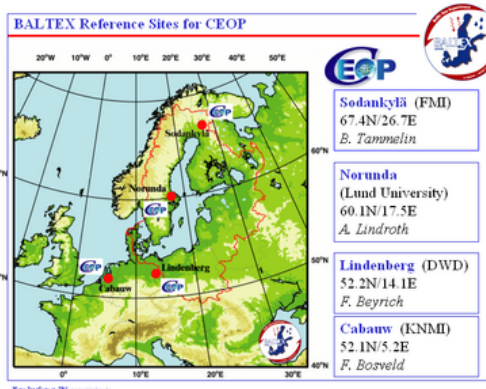
The coordinates of the GM Falkenberg are given by:

52° 10' 01" N (52.17°N) and 14° 07' 27" E (14.12°E) at 73 m elevation.

The radiosondes are released at the site of the Meteorological Observatory Lindenberg (MOL) which is about 5 km to the North of the Falkenberg site.

The co-ordinates of the MOL are given by:

52° 12' 36" N (52.21°N) and 14° 07' 12" E (14.12°E) at 112 m elevation.



### STATION DESCRIPTION:

## Individual Site Metadata includes:

- Station (s)
- Contact (s)
- Links to relevant web pages
- Station location (e.g. maps, photos)
- Station description (e.g. vegetation characteristics, soil types, climate)
- Parameters and Instrumentation descriptions (SFC, TWR, STM, FLX, UA)
- Links to presentations
- Links to data sets and additional documentation

# CEOP LAND COVER AND SOILS QUESTIONNAIRE

The screenshot shows a web browser window titled "CEOP Land Cover and Soils Information - Mozilla Firefox". The address bar shows the URL "http://www.joss.ucar.edu/cgi-bin/ceop/ceop\_qr". The page header includes the CEOP logo and the title "Land Cover and Soils Questionnaire". Below the header, there are logos for GELEX, CEOP, and CIRC. The main content is a questionnaire form with several sections:

- Minimum Requirements - All Reference Sites are requested to fill out this portion**
- Which CEOP Continental Scale Experiment (CSE) and Reference Site are these responses related to?:** A dropdown menu with "BALTEX Calicut" selected.
- Which Station at the Reference Site are these responses related to?:** A text input field.
- Soils Minimum Requirement**
- Surface sand, silt and clay percentages; or [texture class](#)**
- Surface porosity (%)**
- Land Cover Minimum Requirement**
- Dominant land cover at the ground measurement location (detailed description or [USGS class](#) preferred; other classification optional, but specify)**
- Has there been a major change in land cover at the ground measurement site during the period from 1 October 2002 to 31 December 2004 (e.g. deforestation, crop rotation, fires, etc)? If yes, please provide details.**
- Elevation Minimum Requirement**
- Elevation (m) at the ground measurement location**
- Enhanced Information - All Reference Sites may fill out this section, but BALTEX Linderberg, CAMP Tanggu, GAPP Bandung and MDR are specifically requested to fill out this section.**
- Soils Enhanced Information**
- Textures in deeper soil layers: Layer sand, silt and clay percentages; or [texture class](#)**
- Porosity (%) in deeper soil layers**
- Soil infiltration rate (mm/hr)**
- Bulk dry density (g/cm<sup>3</sup>)**
- Saturated hydraulic conductivity (cm/s)**

**Reference Site (Station)**

**Minimum Soils Information**

Texture Class, Porosity

**Minimum Land Cover**

USGS Class, Site Changes

**Enhanced Soils Information**

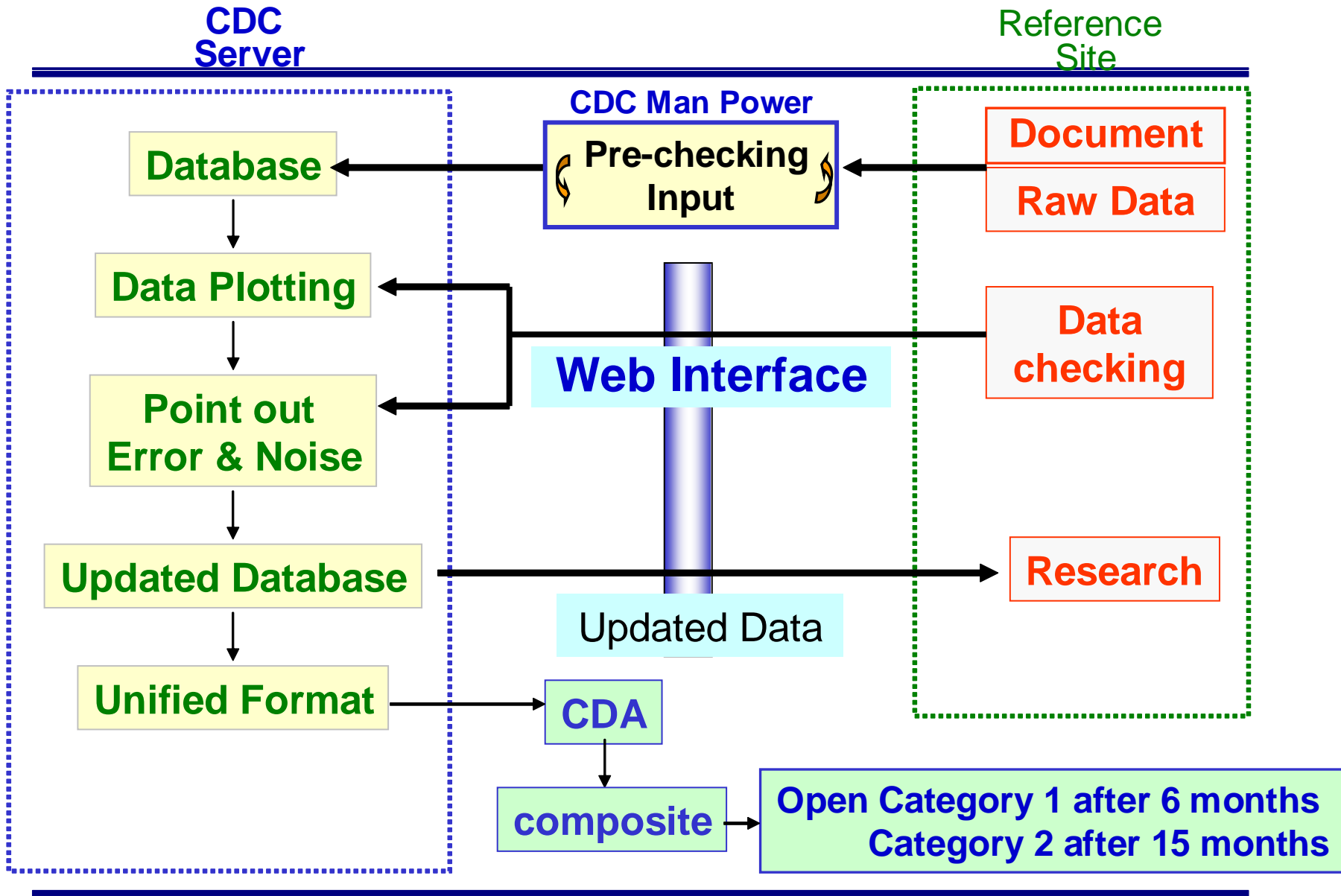
Profile (texture, porosity, infiltration, bulk dry density, saturated hydraulic conductivity, reference groups)

**Enhanced Land Cover Information**

Land cover (50m, 500m, 12km, seasonal changes)

Elevation information (slope)

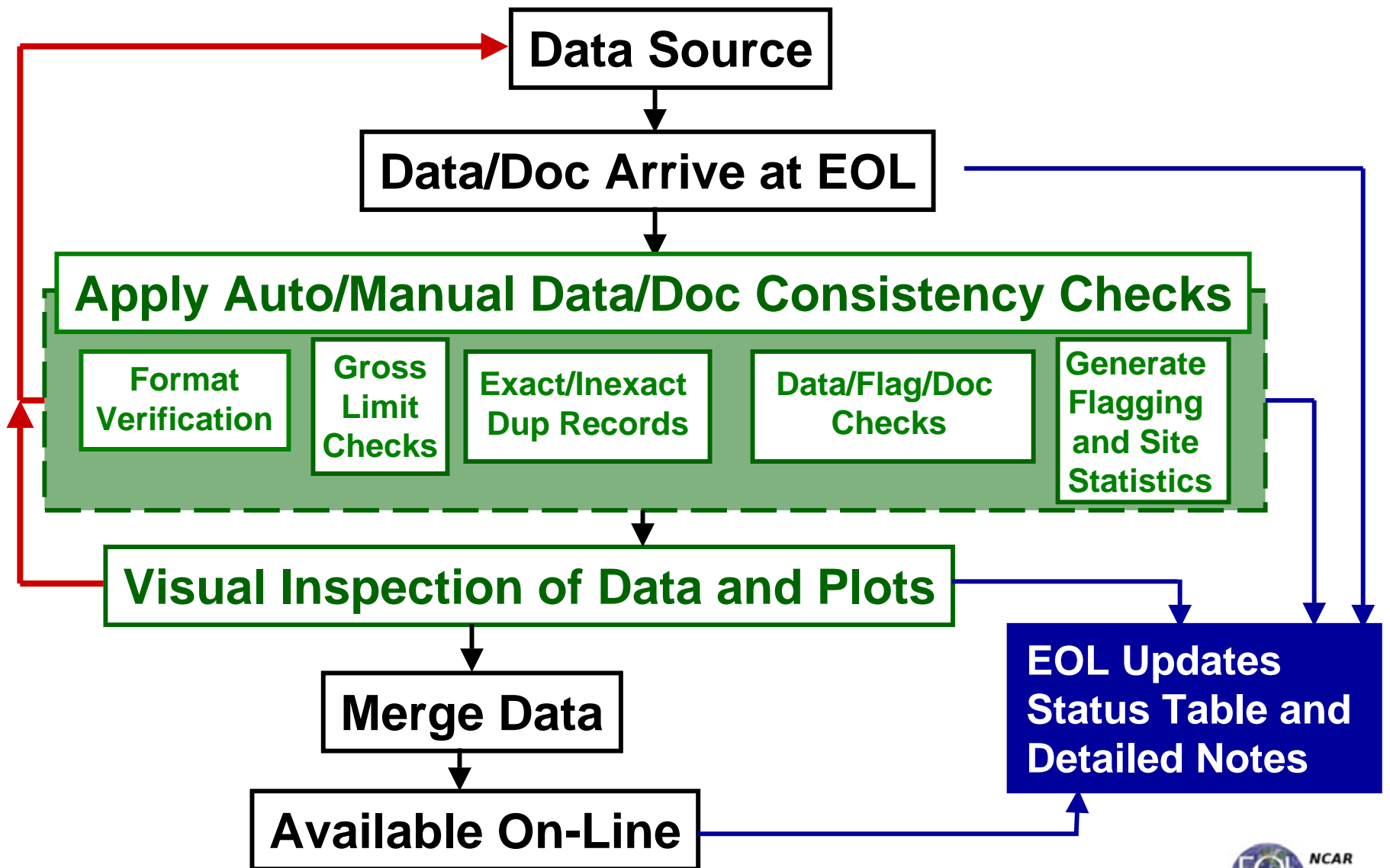
# CAMP Data Center(CDC)

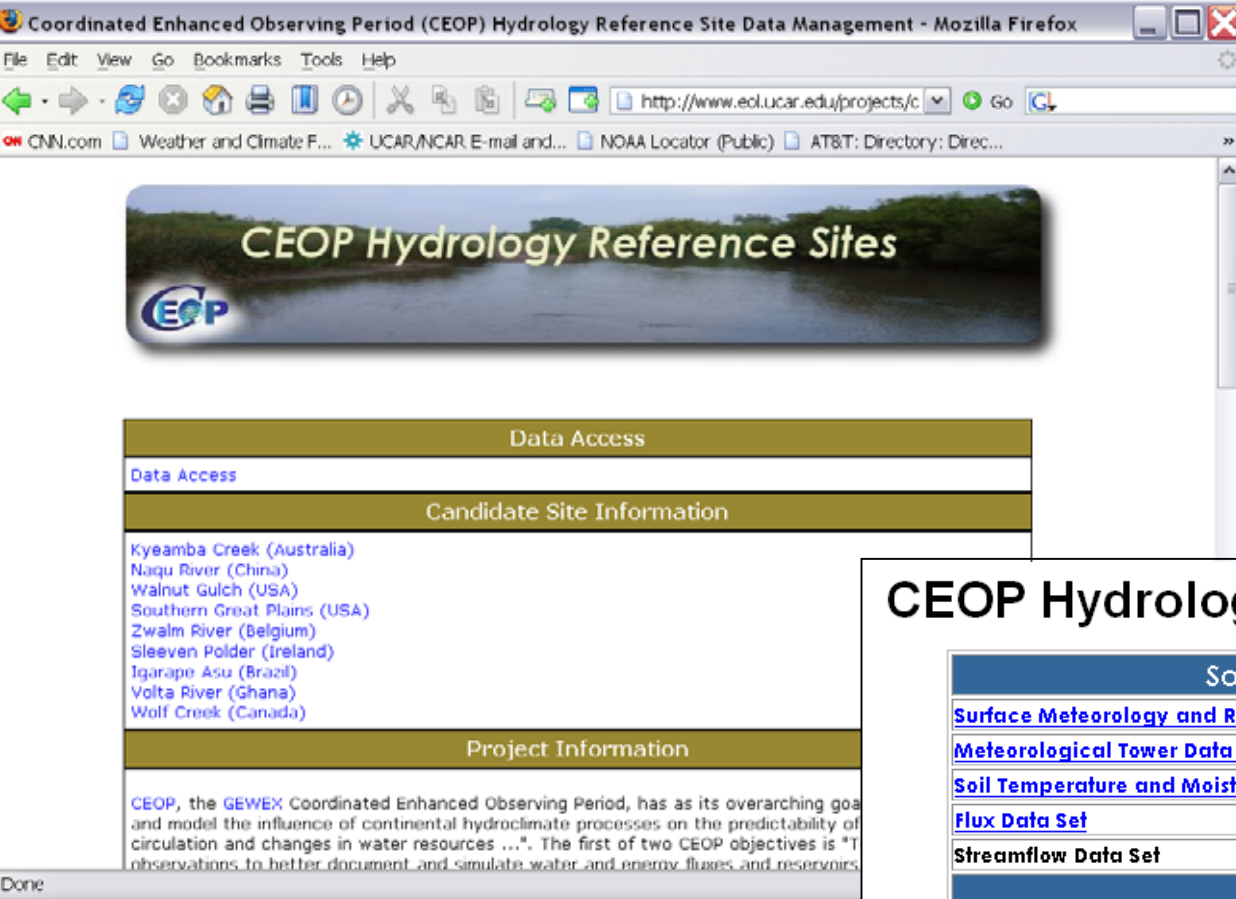






# Reference Site EOP-3/4 Data Flow





## CEOP Hydrology Reference Site Data Sets

Southern Great Plains (USA)		
<a href="#">Surface Meteorology and Radiation Data Set</a>	Oct 2002 - Dec 2004	CEOP Format
<a href="#">Meteorological Tower Data Set</a>	Oct 2002 - Dec 2004	CEOP Format
<a href="#">Soil Temperature and Moisture Data Set</a>	Oct 2002 - Dec 2004	CEOP Format
<a href="#">Flux Data Set</a>	Oct 2002 - Dec 2004	CEOP Format
<a href="#">Streamflow Data Set</a>		
Walnut Gulch (USA)		
<a href="#">Daily/Monthly/Annual Precipitation Data</a>	1954 - Current	Source Format
<a href="#">Daily/Monthly/Annual Runoff Data</a>	1954 - Current	Source Format
Naqu River (China; CAMP Tibet)		
<a href="#">Surface Meteorology and Radiation Data Set</a>	Oct 2002 - Mar 2003	CEOP Format
<a href="#">Meteorological Tower Data Set</a>	Oct 2002 - Sep 2003	CEOP Format
<a href="#">Soil Temperature and Moisture Data Set</a>	Oct 2002 - Mar 2003	CEOP Format
<a href="#">Flux Data Set</a>	Oct 2002 - Mar 2003	CEOP Format
Zwalm River (Belgium)		
No data yet.		
Kyeamba Creek (Australia)		
No data yet.		
Sleeven Polder (Ireland)		
No data yet.		
Igarape Asu (Brazil)		

- Contacting Data Sources
- Subsetting Data Sets
- **Need to reformat into CEOP format**

## What is this?

### Candidate Sites

- > Kyeamba Creek (Australia)
- > Sleeve Polder (Ireland)
- > Walnut Gulch (US)
- > Igarape Asu (Brazil)
- > **Zwalm River (Belgium)**
- > Volta River (Ghana)
- > Wolf Creek (Canada)
- > Naqu River (China)

### Submit Your Site

### Current Entries

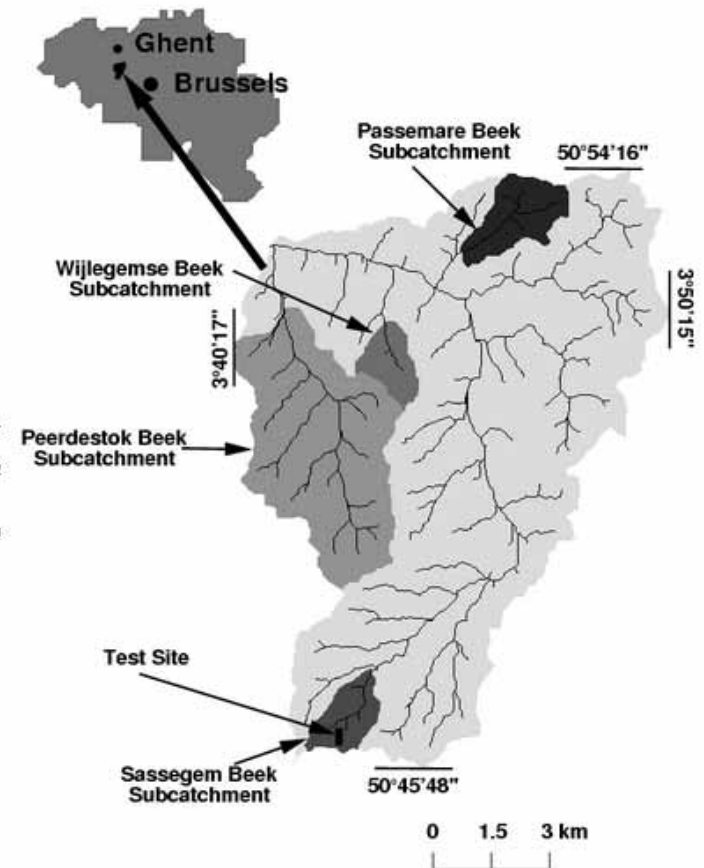
## Zwalm River, Belgium

### Site Summary

The Zwalm catchment, a subcatchment of the the Schelde River basin, is situated in the province of East-Flanders, Belgium at approximately 50.84oN and 3.78o E, (see Figure) with the outlet of the basin south of Gent near the village Nederzwalm. The total drainage area is 114 km<sup>2</sup> and the total length of perennial streams is estimated from topographic maps, scale 1:10000, to be 177 km. Therefore, the drainage density is 1.55 km/km<sup>2</sup>, a value characteristic for humid catchments. The topography of the basin is characterized by rolling hills and mild slopes. The maximum elevation difference in the basin is 150 m. The mean slope of first order streams (Strahler order) is 3.8%. The catchment is situated in the sandy-loam area of Flanders. Surface sampling has confirmed that most of the top layer of the soil profile has sandy loam texture, even though the Belgian soilmap surface to consist of deep loam soils (A-texture). The depth of the eolic cover is estimated to range between 0 and 10 m. Most of the land use is agriculture (arable crops and permanent pasture) but in the southern portion of the catchment it is forested (~50% Brakel-bos). The degree of urbanization is about 10% with urbanized areas mainly situated in the Northeast (Zottegem) and Southeast (Brakel).

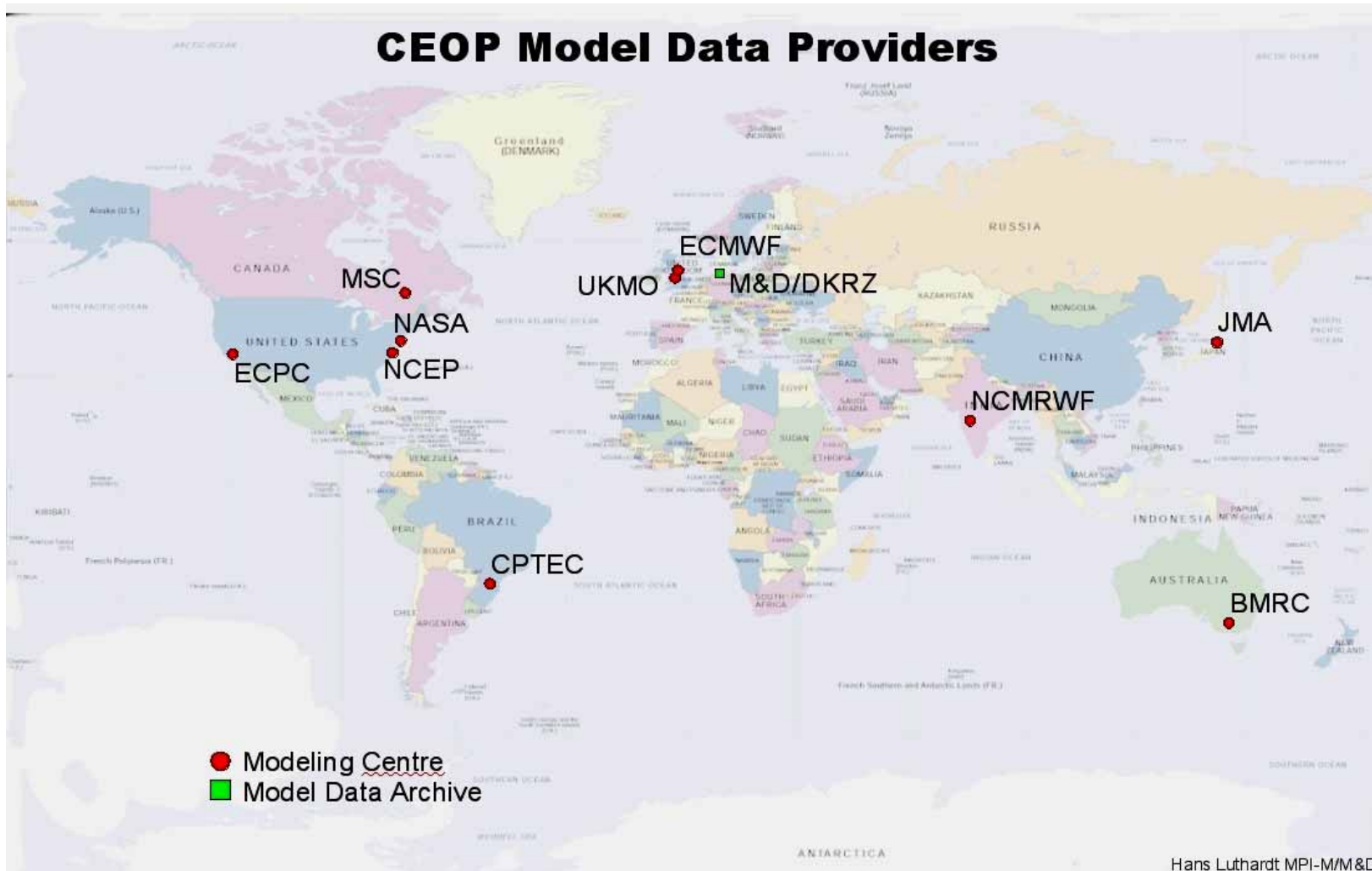
Within the Zwalm are a number of gauged subcatchments, as shown in the figure. The Passemare Beek is a second order (Horton order) stream with a drainage area of 2.52 km<sup>2</sup>, and a total channel length of 2.97 km. The average slope is around 5% (channel slope 4.8% and hill slope 5.6%). The Sassegem subcatchment, with a drainage area of 2.49 km<sup>2</sup> and a total channel length of 2.92 km, is situated in the extreme south of the Zwalm catchment. With average slopes of 8.5%, it is steeper than the Passemare.

Climatic conditions can be described as humid temperate. The mean annual rainfall is 775 mm and is distributed almost uniformly over the year. The average year temperature is 10 deg. C, with January the coldest month (mean temperature 3 deg. C) and July the warmest month (mean temperature 18 deg. C). The annual evaporation is approximately 450 mm.





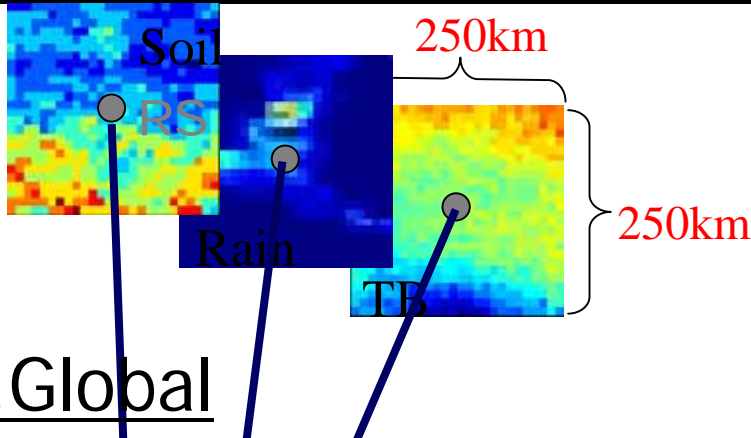
## CEOP Model Data Providers



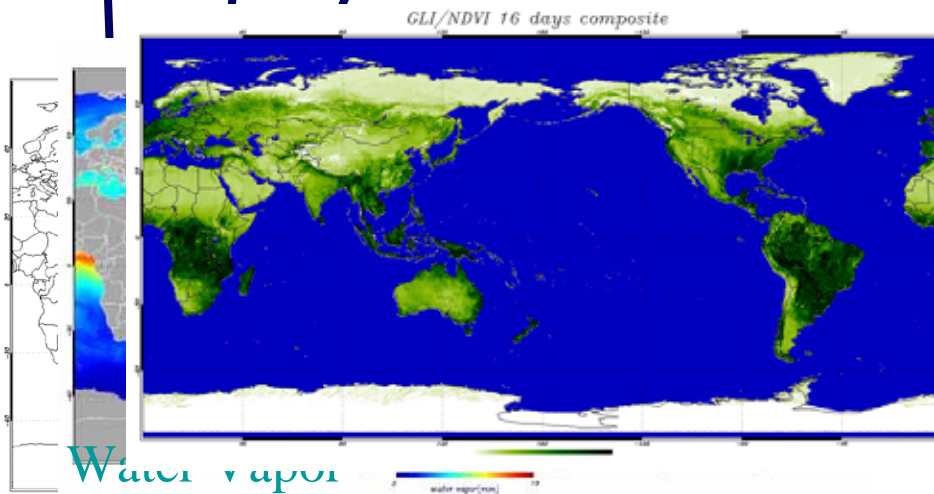
# Satellite datasets for CEOP

## At 3 type scales

### 1. Reference site: 35 Points



### 3. Global



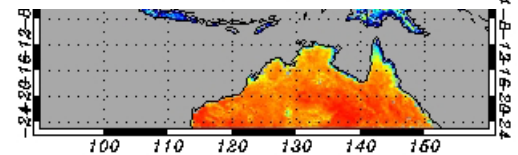
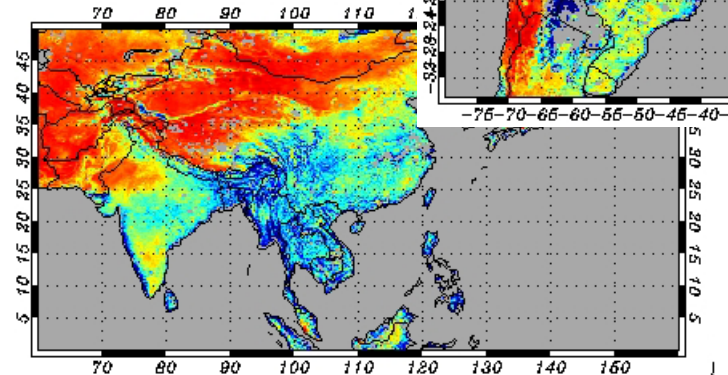
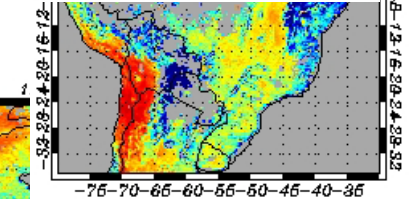
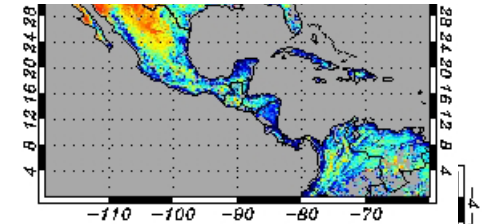
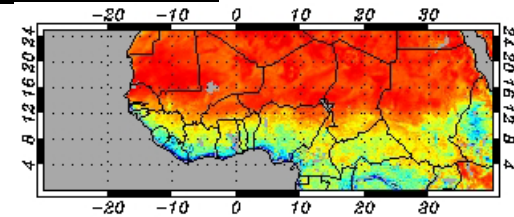
### 2. Monsoon Region

>West African

>North American

>South American

>Asia- Australian



Metadata design for integrating CEOP satellite imagery, reference site data and simulation result data

Version 1.0

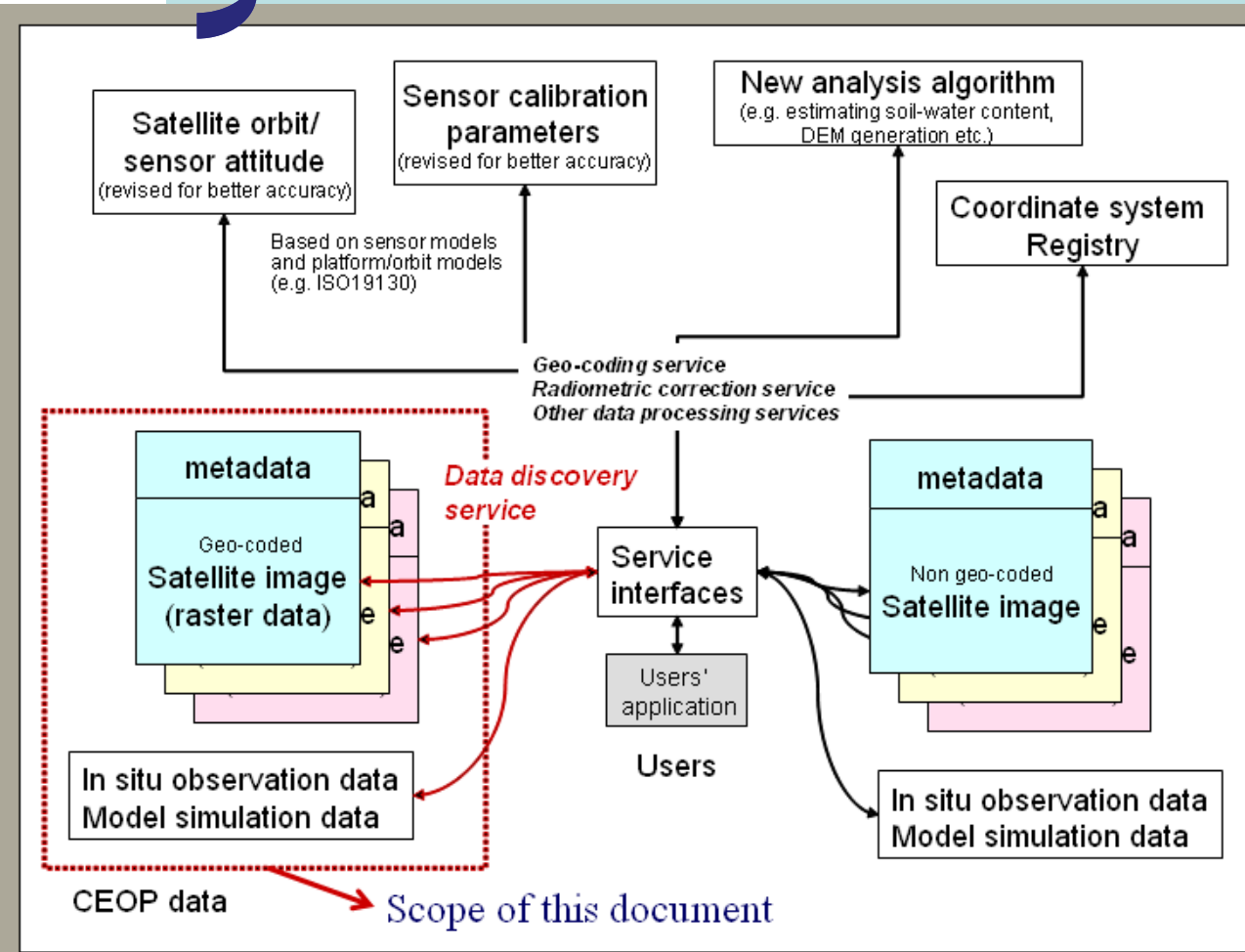
Shibasaki Group  
For "Koike global water informatics" project

October 30, 2004

Center for Spatial Information Science  
The University of Tokyo  
4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan  
Tel: +81-3-5452-6412  
Fax: +81-3-5452-6414  
<http://shiba.is.u-tokyo.ac.jp>

# CEOP Metadata Design Meeting

University of Tokyo, 1-2 November 2004



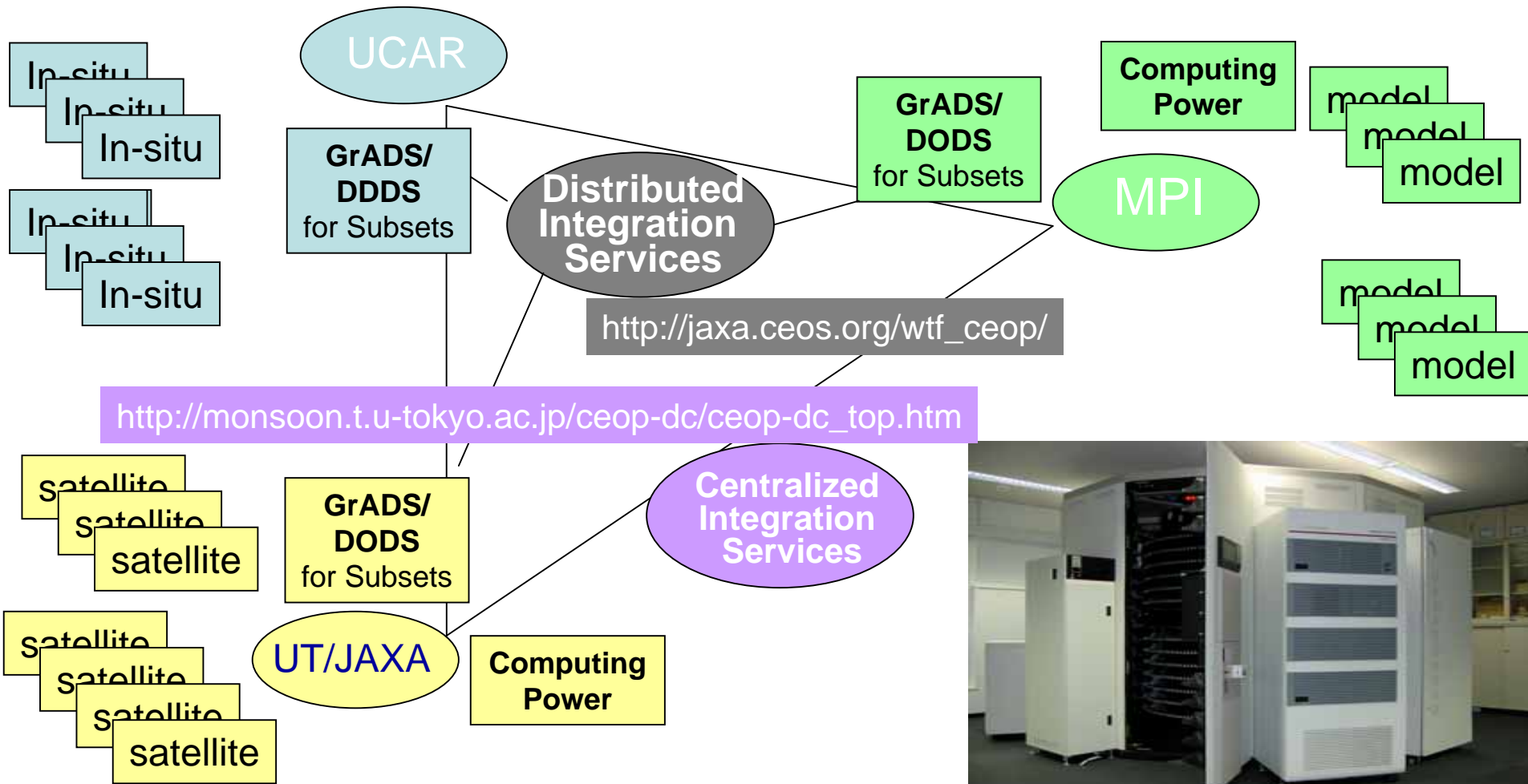
- Based on ISO 19115 Metadata Standards
- Design for *Finding* and *Integrating* data



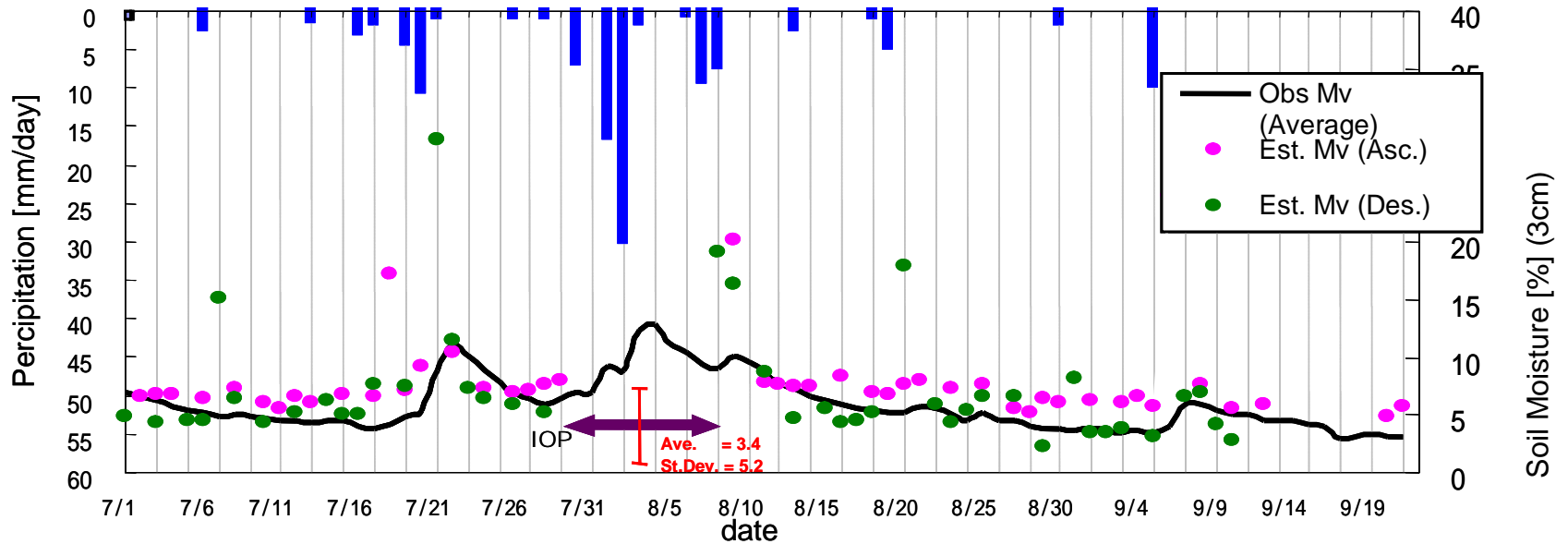
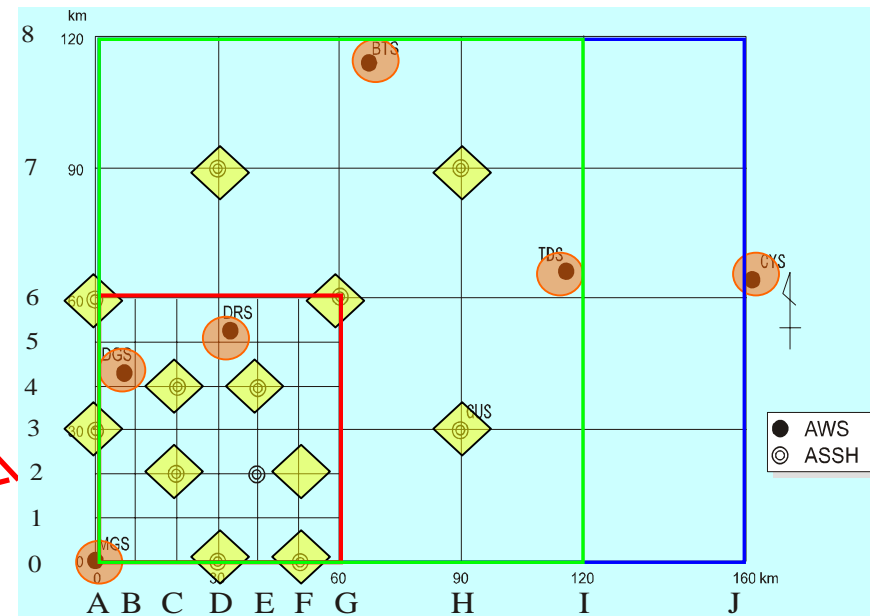
# Coordinated Energy and water-cycle Observations Project Three Unique Capabilities

## Data Management

*Distributed- and Centralized- Data Integration Functions*



# AMSR-E Soil Moisture Validation at the Reference Site in Mongolia



(Koike et al., 2003)



<http://www.eol.ucar.edu/projects/ceop/dm/>

**INTEGRATED**



<b>CEOP Data Access</b>
<b>Integrated Data Servers</b>
WTF-CEOP Distributed Data Integration Prototype System CEOP Centralized Data Integration System GCMD CEOP Portal
<b>In-Situ</b>
<b>Data Sets</b>
CEOP EOP-3/4 Data Sets CEOP EOP-1 Data Sets NASA/GMAO GRADS/DODS Server Baseline Surface Radiation Network (BSRN) GEWEX Land Processes Database Map Server IAEA Global Network of Isotopes in Precipitation
<b>Information</b>
CEOP Reference Site Data Set Procedures Report CEOP Reference Site Station Characteristics Virtual Tour of Reference Sites Slideshow CEOP Reference Site Map CEOP Hydrology Reference Sites Reference Site Data Management Update (GEWEX SSG Meeting, 20-24 January 2003) CEOP In-Situ Data Source Agency Links
<b>Satellite</b>
<b>Data Sets</b>
EOP-1 Satellite Data Sets NASA/GMAO GRADS/DODS ISCCP Surface T and Cloud Amount for CEOP EOP1 NOAA CLASS Archive TRMM Online Visualization and Analysis System
<b>Information</b>
CEOP Satellite Data Source Agency Links
<b>Model</b>
<b>Data Sets and Information</b>
Model Output and Information

**IN-SITU**



**SATELLITE**



**MODEL**



<b>CEOP Documentation</b>
<b>Data Policies</b>
CEOP Reference Sites Data Release Guidelines BALTEX CAMP AMMA GAPP LBA MAGS
<b>Data Standards Information</b>
CEOP Metadata Design (Proposed) National Spatial Data Infrastructure (NSDI) Presentation (September 2004) Assistance for Land-surface Modelling activities (ALMA) Atmospheric Model Intercomparison Project (AMIP) ISO/TC 211
<b>Documents</b>
CEOP Implementation Plan 3rd Implementation Planning Meeting Report (March 2004) Executive Summary Appendices 2nd Implementation Planning Meeting Report (July 2003) WESP Major Activities Plan (1 June 2003) Establishment of a Global Hydrological Observation Network for Climate" GCOS/GTOS/HWRP Meeting Report (June 2000)
<b>Questionnaires</b>
CEOP Land Cover and Soils Questionnaire Responses CEOP Frozen Precipitation Questionnaire Responses CEOP Reference Site Rawinsonde Station Responses
<b>Other Links</b>
CEOP Home Page WCRP Home Page GEWEX Home Page CLIVAR Home Page CLIC Home Page ACSYS Home Page Global Modeling and Assimilation Office (NASA/GSFC) Land Information System (NASA/GSFC) Model Parameter Estimation Experiment (MOPEX) NASA/Goddard Institute for Space Studies (GISS) Data International Atomic Energy Agency (IAEA) IAEA Isotope Hydrology Section

