NOTES FROM THE FIRST AND SECOND FORMAL COORDINATED ENERGY AND WATER-CYCLE OBSERVATIONS PROJECT (CEOP) TELECONFERENCE SATELLITE DATA ISSUES HELD ON 23 JULY and 3 SEPTEMBER, respectively
FIRST DRAFT, 1 December 2008

1. INTRODUCTION

The First and Second Coordinated Energy and Water-Cycle Observations Project (CEOP) Satellite Data Teleconference took place on Wednesday 23 July 2008 at 13:00 UTC and on Wednesday 3 September 2008, respectively.

The issues that were brought up and discussed on the subject conference calls included:

(i) CEOP Strategic Implementation Plan (SIP) and related satellite data requirements;
(ii) Status of the CEOP satellite data archive and the CEOP Satellite Data Gateway;
(iii) Satellite data providers reports including JAXA, NASA, ESA and NOAA;
(iv) The Second CEOP Annual Meeting in Geneva;
(v) CEOP data and satellite data element coordination strategy

Participants

The participants of the First call on 23 July were:

Toshio Koike	Tokyo, Japan, CEOP Co-Chair & Satellite Data WG Chair
Einar-Arne Herland	Frascati, Italy, ESA Earth Sciences Division
Michael Teague	Maryland, USA, NASA MODIS Team
Michael Theobald	Maryland, USA, NASA AIRS data
Ed Kearns	Washington DC, USA, NOAA NESDIS
Kazuo Umezawa	Tokyo, Japan, JAXA
Steve Williams	Boulder, Colorado, USA, CEOP Data Management
Petra Koudelova	Tokyo, Japan; CEOP International Coordination Function
Sam Benedict	San Diego, California, USA; CEOP International Coordination Function

Drs Christopher Lynnes (Representing NASA AIRS team), John Bates (Representing NOAA NESDIS), and Satoko Miura (Representing JAXA) were not available for this call, however the NASA AIRS team was represented by Dr. Michael Theobald, the NOAA NESDIS team was represented by Dr. Ed Kearns, and JAXA team was represented by Dr. Kazuo Umezawa.

The participants of the Second call on 3 September were:

Toshio Koike	Tokyo, Japan, CEOP Co-Chair & Satellite Data WG Chair
Einar-Arne Herland	Frascati, Italy, ESA Earth Sciences Division
Michael Theobald	Maryland, USA, NASA/ AIRS data
Christopher Lynnes	Maryland, USA, NASA/ AIRS data
Kazuo Umezawa	Tokyo, Japan, JAXA
Steve Williams	Boulder, Colorado, USA, CEOP Data Management
Katsunori Tamagawa	Tokyo, Japan; University of Tokyo
Petra Koudelova	Tokyo, Japan; CEOP International Coordination Function
Sam Benedict	San Diego, California, USA; CEOP International Coordination Function

Drs Michael Teague (Representing NASA MODIS team), John Bates (Representing NOAA NESDIS), Ed Kearns (Representing NOAA NESDIS), and Satoko Miura (Representing JAXA) were not available for this call, however JAXA team was represented by Dr. Kazuo Umezawa.

2. NEXT CONFERENCE CALL

The next, **3rd CEOP International Satellite Data Teleconference** is proposed to take place on **Wednesday 3 December 2008**. **Koudelova/Benedict** have the **action (A1)** to inform the group of the details of the next call nearer to the time of the call and to coordinate the origination of the call through the WebEx service **(action A1a)**.

3. SATELLITE DATA GROUP GENERAL ISSUES

3.1 CEOP Satellite Data Calls

At the beginning of the first call, **Benedict** explained the participants that the CEOP leaders had proposed a new series of formal calls that would be dedicated to CEOP Satellite Data issues in order to regularly update on the overall status of the satellite data element and assure appropriate coordination among the members. Following the well-working scheme with similar calls focused on CEOP Model Output issues, it was suggested the Satellite Data Calls be held on a regular basis every two or three months.

3.2 CEOP Strategic Implementation Plan

Koike gave a brief overview of the Coordinated Enhanced Observing Period (CEOP Phase 1) commitments and achievements in terms of satellite data and explained expanded requirements for the newly established Coordinated Energy and water cycle Observations Project (CEOP) that was formed by merging former CEOP and GEWEX Hydrometeorology Panel in 2007. The background and rationale for the merger and the strategic approaches of the new CEOP Elements are described in the **CEOP Strategic Implementation Plan (SIP)** that is available at (http://www.eol.ucar.edu/projects/ceop/dm/new/). The SIP document is undergoing revision based on the comments from the GEWEX SSG and the pre-final draft is expected prior to the 2nd CEOP Annual Meeting that will be held in Geneva 15 –17 September 2008 (see also section 5.1).

As part of the initial discussion item **Koike** highlighted that agreement had been reached to designate **1 January 2007 as the start date for the Coordinated Energy and water cycle Observation Project (CEOP) data generation that includes in-situ, satellite and model output data. The five-year period from 1 January 2007 to 31 January 2011 was the formal investigative element of the Project.** Backfilling for 2005-2006 data, which would assure continuity between CEOP Phase 1 and new CEOP, is desirable if technical, financial and manpower resources of respective data providers allow executing of this extension of the formal commitment.

3.3 Satellite Data requirements and commitments

The satellite data requirements are based on the CEOP data needs to achieve its scientific goals and also on the opportunities given by various missions of the contributing space agencies including JAXA, NASA, ESA, and NOAA. All these agencies had committed to provide the required data per agreed to lists that were developed for CEOP Phase 1. The same level of support is expected for the term of the new CEOP.

In addition to the data provision, JAXA had accepted the task to process and subset datasets from NASA MODIS team and ESA to the desirable formats including (i) development and implementation of a proper metadata scheme, and (ii) subsetting to Monsoon region subsets covering five world monsoon areas (see Attachment 1) and Reference Site subsets covering square areas of 250km x 250km around the CEOP Reference Sites (see Attachment 2). Since the required amount of data is considerably large, the processing and subsetting process is a long-term task that JAXA is undertaking continuously and in cooperation with other agencies.

The NASA AIRS team has agreed to make the maximum effort to provide the final products in the requested formats but if this task exceeds their human/financial capacities, JAXA will also assist with the NASA AIRS team data.

The details of data provision procedure by the NOAA team are now under discussion. **Koike** and the UT group has **action A2** to review the NOAA data requirements and to communicate with the NOAA team possibilities of the NOAA data provision.

3.4 CEOP Satellite Data Gateway

The CEOP Satellite Data Gateway was opened in June 2008 and allows the registered users to download satellite data available in the CEOP Satellite Data Archive administered jointly by the University of Tokyo and JAXA. The University of Tokyo IT team is responsible for the database management and making the data accessible through the Gateway. The Gateway is available at: http://monsoon.t.u-tokyo.ac.jp/ceop2/satellite/ and the link has been added to the main CEOP Data Management Page (http://www.eol.ucar.edu/projects/ceop/dm/).

CEOP satellite as well as in-situ and model output data are also accessible through the CEOP Centralized Data Integration System that offers multiple tools for data visualization and analysis. The System is available at: http://monsoon.t.u-tokyo.ac.jp/ceop-dc/ceop-dc_top.htm.

4. THE SATELLITE DATA ARCHIVE STATUS AND AGENCY REPORTS

4.1 The CEOP Satellite Data Archive Status

(4.1a) Data currently available through the CEOP Satellite Data Gateway in the three subsets (global, monsoon regions, and reference sites) include:
CEOP Phase 1 EOP-1 period (01/07/2001 – 30/09/2001): DMSP F13 – F15 SSM/I; TRMM PR, TRMM TMI, GMS-5 VISSR, NOAA AVHRR, TERRA MODIS

CEOP Phase 1 EOP-3, EOP-4 period (01/10/2002 – 31/12/2004): DMSP F13 – F15 SSM/I; TRMM PR, TRMM TMI, GMS-5 VISSR, GOES-9 VISSR, ADEOS-II AMSR, ADEOS-II GLI, Aqua AMSR-E

Detailed data overview is available at the mentioned Gateway site at:
http://monsoon.t.u-tokyo.ac.jp/ceop2/satellite/docs/eop1.pdf for the CEOP 1 EOP-1 datasets and
http://monsoon.t.u-tokyo.ac.jp/ceop2/satellite/docs/eop3-4.pdf for the CEOP 1 EOP-3, EOP-4 datasets.

Further data from other agencies will be added in the on-line accessible database in due course. As mentioned above, this task is demanding on human as well as financial resources and therefore it is being undertaken gradually. At the time of the call it was agreed that the priority would be on the EOP-4 data from other agencies in order to achieve as much complete database as possible for the most recent period of CEOP Phase 1 that is in connection to current CEOP. Data for EOP-3 will follow up and subsequently more recent data for current CEOP phase will be added.

(4.1b) It was stressed out that it would be highly desirable to periodically prepare “data metrics” describing the available data and also including statistics of usage. **Koike and the UT group** accepted this **action (A3)**.

4.2 JAXA report (Kazuo Umezava)

Umezawa reported that JAXA continued the generation of the microwave sensors' products: Aqua/AMSR-E, TRMM/PR, TMI, DMSP/SSM-I re-sampled on three scales: small scale (52 reference sites), large scale (five monsoon regions), and global scale (the entire area of the Earth) in 2008. JAXA also plans to generate ALOS products mosaiced on 12 sites (including CEOP reference sites and AWCI river basins). The 12 sites to be covered in 2008 will be selected by **Koike (action A4)**. In addition, JAXA has begun generation of Terra/MODIS products for CEOP Phase 1 (EOP-4) in cooperation with NASA MODIS Team. The products will be transferred from NASA site to DIAS server located in University of Tokyo to be archived.

4.3 NASA MODIS team report (Michael Teague)

Teague mentioned that the NASA MODIS team was committed to provide whatever MODIS data CEOP requires including both the Terra and Aqua MODIS sensors but a clear specification and eventually prioritization from the CEOP side is needed. He reported that they were working with the JAXA team on actual data transfer and the work was advancing well.

Drs. Michael Teague and Gang Ye represented the NASA MODIS team at the 2nd CEOP Annual Meeting in Geneva, 15 – 17 September 2008. They reported on the data provision to CEOP and other related activities.

4.4 NASA AIRS team report (Michael Theobald and Christopher Lynnes)

Theobald informed the group that the AIRS global datasets were completed for the CEOP 1 EOP-3 period and the EOP-4 period would be finished soon. He also mentioned that samples of reference site subset files were generated and the work on subsetting all datasets was undergoing. Regarding the monsoon region subset files, the AIRS team will communicate with JAXA to clarify the details of preparation this kind of product **(action A5a)**. In addition, the AIRS team needs to evaluate whether adequate resources for this work will be available **(action A5b)**. If preparing the monsoon region product is not viable by the AIRS team, JAXA will assist with this process.

Theobald and Lynnes further mentioned that the AIRS science team meeting would be held soon and they would report on its outcomes at the time of the next telecon **(action A5c)**.

4.5 NOAA report (Ed Kearns)

Kearns advised the group that the NOAA NESDIS offered a tool for subsetting historical NOAA data and that this system could be used for preparing the CEOP data. **Williams and the UT group** accepted **action A6a** to investigate possibilities of this system and will communicate with the NOAA team the needed details.

4.6 ESA report (Einar-Arne Herland)

Herland reported that the CEOP requirements submitted to ESA had been approved and processed into the required formats and the data was available for competent person(s) to order and receive them. The detailed information on where and how to order the data has already been sent to Toshio Koike. ESA also provides number of tools for further processing the data and the UT/JAXA group should contact the ESA data "helpdesk" about the capabilities of these tools regarding the metadata generation. **UT group and Koike** has **action A7** to try to order the data and check the ESA tools according to the instructions given in the said email.

5. OTHER CEOP ISSUES

5.1 The 2nd CEOP Annual Meeting

At the time of the first call in July, the participants were advised that the **CEOP Annual Meeting** would be held in **Geneva, Switzerland**, from **15 – 17 September 2008** and were asked to consider their participation in this event. Invitation letter and logistics page were subsequently sent to the call participants. The format, latest version of the agenda, and logistics of the meeting was briefly introduced at the time of the second call and the links to further information were given: http://monsoon.t.u-tokyo.ac.jp/ceop2/meetings.html; http://gewex.org/2008_ceop_mtg.html. Participants advised the group of their intended attendance of this event. Representatives of agencies, namely JAXA, NASA, and ESA, who would participate in the meeting, were asked to give a short opening remark on the first day of the meeting. This request was kindly accepted.

5.2 CEOP Special Issue of GEWEX News

Koudelova advised the group that the CEOP special issue of GEWEX News had been published and its PDF version was available through the CEOP Home Page at: http://monsoon.t.u-tokyo.ac.jp/ceop2/publications.html.

The contents of the Newsletter include:

- Leading article by Director WCRP, Ghassem Asrar
- In Memoriam note of John Roads
- Multimodel Analysis for CEOP, Mike Bosilovich and David Mocko
- ICTS progress, Burkhardt Rockel and Beate Geyer
- African Drought Monitor, Eric Wood et al.
- Report on the High-Elevation Study Kick Off Meeting in Padua, April 2008, Gianni Tartari
- Report on the Extremes Workshop in Vancouver, May 2008, Ron Stewart
- Announcements of the GEWEX science conference in 2009 and the GLASS meeting, IGPO
- JAXA statement on major update of the Distributed Data Integration System, Satoko Miura
- Satellite Data Gateway, Toshio Koike

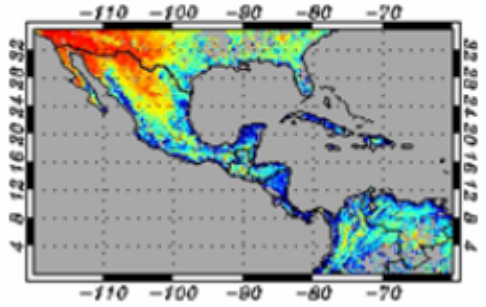
6. CLOSING

Koike acknowledged the participants for attending the calls and providing their valuable contributions, comments and suggestions.

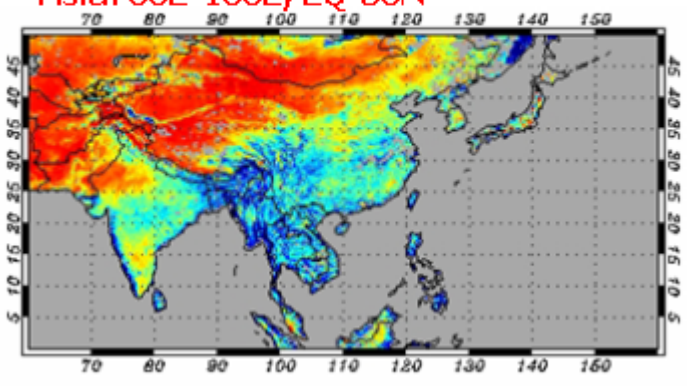
ATTACHMENT 1

Five Monsoon Regions covered with the CEOP Satellite Data Subsets

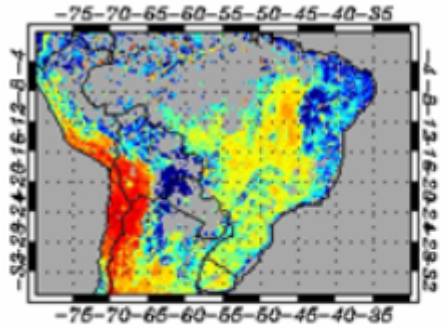
North America: 120W- 60W, EQ-35N



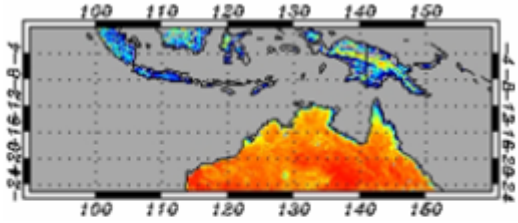
Asia: 60E-160E, EQ-50N



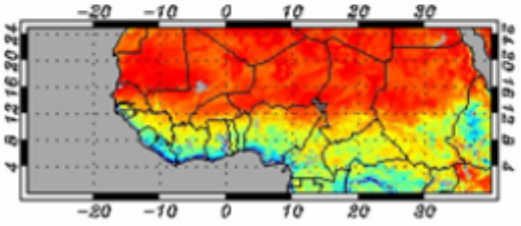
South America: 80W- 30W, EQ-35S



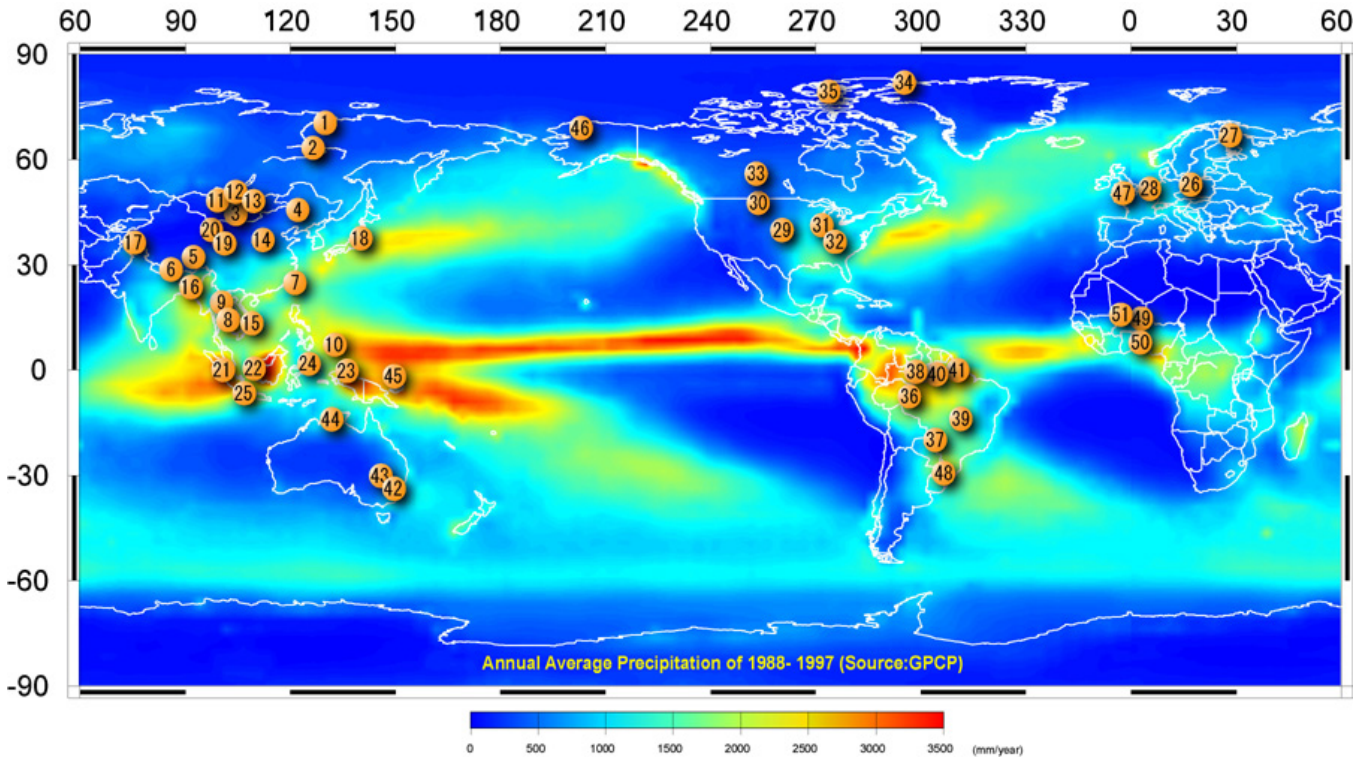
Australia: 90E-160E, EQ-25S



North Africa: 30W- 40E, EQ-25N



ATTACHMENT 2 **Map and list of CEOP 51 reference sites**



CSE/ RHP	Ref #	Ref. Site Name	Latitude		Longitude	
MAHASRI/(CAMP)	1	Eastern Siberian Tundra	71.617	N	128.750	E
	2	Eastern Siberian Taiga	62.255	N	129.618	E
	3	Mongolia	45.743	N	106.264	E
	4	Tongyu	44.416	N	122.867	E
	5	Tibet	31.370	N	91.900	E
	6	Himalayas	27.959	N	86.813	E
	7	Northern South China Sea - Southern Japan	24.967	N	121.181	E
	8	Chao-Phraya River	18.400	N	99.470	E
	9	North-East Thailand	14.466	N	102.379	E
	10	Western Pacific Ocean	7.452	N	134.476	E
	11	Mongol Arvayheer	46.246	N	102.798	E
	12	Mongol Nalaikh	47.766	N	107.336	E
	13	Northern Mongolia	47.213	N	108.742	E
	14	Downstream of the Yellow River	36.649	N	116.054	E
	15	Central Vietnam	16.033	N	109.185	E
	16	Northeast Bangladesh	24.900	N	91.893	E
	17	Pakistan Karakorum Network	35.728	N	76.286	E
	18	Tsukuba	36.110	N	140.100	E
	19	Lanzhou	35.946	N	104.137	E
	20	Heihe River Basin	39.500	N	100.000	E
	21	Western Maritime Continent	0.200	S	100.300	E
	22	Central Maritime Continent	0.000	S	109.400	E
	23	Eastern Maritime Continent	1.200	S	136.100	E
	24	Northern Maritime Continent	1.500	N	124.900	E
	25	Southern Maritime Continent	6.400	S	106.700	E

CSE/ RHP	Ref #	Ref. Site Name	Latitude		Longitude	
BALTEX	26	Lindenberg	52.170	N	14.120	E
	27	Sodankyla	67.370	N	26.633	E
	28	Cabauw	51.970	N	4.930	E
CPPA /GAPP	29	ARM/Southern Great Plains	36.610	N	97.490	W
	30	Fort Peck	48.310	N	105.100	W
	31	Bondville	40.010	N	88.290	W
	32	Oak Ridge	35.960	N	84.290	W
CliC	33	BERMS (MAGS)	53.990	N	105.120	W
	34	Alert, Nunavut	82.467	N	62.500	W
	35	Eureka, Nunavut	79.995	N	85.813	W
LBA	36	Rondonia	10.080	S	61.930	W
	37	Pantanal	19.560	S	57.010	W
	38	Manaus	2.610	S	60.210	W
	39	Brasilia	15.930	S	47.920	W
	40	Santarem	3.020	S	54.970	W
	41	Caxiuana	1.710	S	51.510	W
MDB	42	Tumbarumba (tower)	35.660	S	148.150	E
	43	Murrumbidgee (soil moisture, tempera	35.116	S	146.375	E
Others	44	ARM/Tropical West Pacific (Manus)	2.060	S	147.430	E
	45	ARM/Tropical West Pacific (Darwin)	12.430	S	130.890	E
	46	ARM/Northern Slope of Alaska	71.320	N	156.620	W
	47	Chilbolton, UK	51.150	N	1.433	W
LPB	48	Cruz Alta	28.600	S	53.400	W
AMMA	49	Niamey	13.530	N	2.660	E
	50	Ouémé	9.692	N	1.662	E
	51	Gourma	15.300	N	1.500	W