

Committee on Earth Observation Satellites (CEOS) CEOS-GEO Actions Table

NASA Summary Report

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**CEOS SIT Meeting
Woods Hole, Mass
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NASA "Lead" Actions

9 total actions

CEOS-GEO Action Number	SBA Area	Action Description	Due Date	POC	All Agency and Organization Participation	CEOS Working Group and Constellation Participation
DA-07-03_2	Transverse	Coordinate international ground validation (GV) activities and establish the scope of joint GV projects during the year. An international GV meeting will be held in Brazil during March 2008. Action ensures coordinated activities to support GPM pre-launch algorithm development at the national and international levels. Action is also part of the effort for determining error characteristics of satellite precipitation products.	3/31/2008	Steven Neeck	NASA, JAXA, CNES, ISRO, INPE, ESA, CAST/NRSCC, NOAA, NRL, EUMETSAT, DLR, CSA	PC
CL-06-02_2	Transverse	Conversion of TRMM Product into GIS format	4/30/2008	Steven Neeck	NASA	
DA-07-03_6	Transverse	TRMM data processing will be assumed by the Precipitation Processing System (PPS) effective 1 June 2008. This action allows an early build of the data processing system that will be used for GPM processing to be used to establish key aspects of a system required for multiple satellite data merging: flexibility, extensibility, and maintainability. In addition the action improves the access to the user community of all TRMM based data including the production merged satellite product.	6/1/2008	Steven Neeck	NASA, JAXA, CNES, ISRO, INPE, ESA, CAST/NRSCC, NOAA, NRL, EUMETSAT, DLR, CSA	PC
HE-06-03_1	Health	Complete an Atmospheric Composition Constellation (ACC) requirements and gap analysis.	6/30/2008	Ernest Hilsenrath	NASA, ESA, RAL, WMO	ACC, SEO
CL-06-02_12	Climate	Status report on June 2008 Jason-2 Launch	6/30/2008	Steven Neeck (Co-Lead with CNES)	NASA, CNES	OST
DA-07-03_1	Transverse	Complete the first intercomparison study undertaken by the Precipitation Measurement Missions (PMM) Science Team intercalibration working group in coordination with the CGMS/GSICS. This action is to be completed by August 2008. This action is an important step in establishing how PC data should be intercalibrated at antenna and brightness temperature stage. It also examines the issues involved in using a reference satellite as part of the intercalibration.	8/31/2008	Steven Neeck	NASA, JAXA, CNES, ISRO, INPE, ESA, CAST/NRSCC, NOAA, NRL, EUMETSAT, DLR, CSA	PC
CL-06-02_14	Climate	WGISS IDN TT iterate with Climate SBA (Lead, Mitch Goldberg) to demonstrate climate data records showing long-term trends and variability information for societal benefit on CEOS IDN Portal providing access to ECVs. Candidate drill-throughs include e.g PATMOSX.	9/15/2008	Martha Maiden	NOAA, NASA	WGISS
EN-06-04_1	Energy	Work with the Atmospheric Composition (AC) Constellation team to investigate how future space-based atmospheric parameter measurements can support the needs of the Energy SBA.	9/15/2008	Richard Eckman	NASA, ESA, DLR, IOC, USGS	ACC, SEO
CL-06-02_13	Climate	Conduct an ACC / Climate Workshop to develop requirements and long-term plans for supporting the measurement and long-term trending of atmospheric Essential Climate Variables (ECV).	12/1/2008	Ernest Hilsenrath	NASA, NOAA, ESA, CSA, GEO ADC, WMO	ACC, WGCV, WGISS, SEO



Action: DA-07-03_2

Primary SBA Area: Transverse

NASA Point of Contact: Steven Neeck

Due Date: 3/31/2008

Participating Organizations: NASA, JAXA, NOAA, AEB, INPE, ISRO, EC, FMI, KNMI, JMA, KMA, CNR, BMRC, LMD, ISAC, OPERA, SIMEPAR, CEDEX, UCLM, ETP-CNRS-UVSQ, German Weather Service, Cyprus Weather Service, Universities from U.S., Asia, and Europe

Participating CEOS groups: PC

Action Description

- Coordinate international GPM ground validation (GV) activities and establish the scope of joint GV projects during the year.
 - The objective of this action is to establish collaborative GV measurement and research activities between the GPM Mission and international partners to support pre-launch satellite algorithm development and post-launch product evaluation.
 - Action is important for coordinating GV assets and facilities around the world within a consistent framework to contribute to the refinement of satellite simulators and retrieval algorithms for GPM.
 - Action is also part of the effort for determining error characteristics of satellite precipitation products for the development and production of the next-generation multi-satellite global precipitation data products and for improved applications in weather forecasting and hydrological prediction.

- The 3rd International GPM GV Planning Workshop hosted by AEB/INPE was held in Buzios, Brazil, 4-6 March 2008, to develop joint research projects for investigators from the international community to collaborate with the U.S. Precipitation Measurement Mission (PMM) Science Team on GPM GV. The workshop concluded with plans for 24 joint projects from 19 nations. Of these 24 proposed activities, one has already been accepted by the PMM Program, one is in review, 11 are various stages of preparation, and 11 have been identified as potential opportunities.
- The workshop presentations are available online at <http://pindara.cptec.inpe.br/gpm/workshop/index.html>.
- A report summarizing the workshop activities and describing the general framework for international collaboration on GPM GV is in preparation for release in the summer of 2008.



Action: CL-06-02_2

Primary SBA Area: Transverse

NASA Point of Contact: Steven Neeck

Due Date: 4/30/2008

Participating Organizations: NASA

Participating CEOS groups: PC

Action Description

- Make precipitation data available to a broad additional group of users who are more familiar with GIS than the satellite data formats. Allow easy integration of precipitation data into GIS analysis.
 - The task is to make the prototype GIS format using TIFF with world files available to the general community in full operational mode. This action allows access to precipitation data to operational and research users who use GIS extensively and for whom HDF formats are not easily accessible.



- The GIS format real-time precipitation data was put into regular operational status on 20 March 2008.
- Data are available on an anonymous ftp server for regular pickup
 - 3hr, daily and 7 day rain accumulation products
 - trmmopen.gsfc.nasa.gov
 - pub/gis directory
 - Accessed by disaster monitoring organization (Pacific Disaster Warning group on Maui, Hi)
- Historical merged data product also available but not yet on anonymous server
 - Used by researchers at University of Georgia
 - Used by U.N. World Food Programme researcher
 - Will be soon moved to anonymous server



Action: DA-07-03_6

Primary SBA Area: Transverse

NASA Point of Contact: Steven Neeck

Due Date: 6/1/2008

Participating Organizations: NASA

Participating CEOS groups: PC

Action Description

- The Precipitation Processing System (PPS) will assume Tropical Rainfall Measuring Mission (TRMM) data processing effective 1 June 2008. This action allows an early build of and risk reduction for the data processing system to be used for the successor Global Precipitation Measurement (GPM) mission. This system will allow testing the architectural characteristics of multi-satellite data merging: flexibility, extensibility, and maintainability. In addition, the action improves the access to the user community of all TRMM-based data including the production merged satellite products.



- System testing ended on 31 March 2008
- Operational Acceptance Testing (OAT) began on 1 April 2008 and will continue through 31 May 2008
- System testing very successful and early OAT indicates the same
- Currently on schedule for 1 June 2008 changeover of TRMM processing



Action: **HE-06-03_1**

Primary SBA Area: Health

NASA Point of Contact: Ernest Hilsenrath

Due Date: 6/30/2008

Participating Organizations: NASA, NOAA, ESA, CSA, RAL, WMO

Participating CEOS groups: ACC, SEO

Action Description

- Complete an Atmospheric Composition Requirements and Gap Analysis in support of the CEOS Atmospheric Composition Constellation (ACC).
 - The objective of this Action is to collect and distil information on observational requirements, summarize the observational capabilities of current and planned satellite missions, and compare the requirements to the identified capabilities
 - The results of this assessment will be used to support long-term architecture planning for the CEOS ACC and help to identify critical atmospheric composition measurement gaps.
 - This task is cross-cutting since ACC covers multiple SBA's including climate
- Detailed analyses performed by the Rutherford Appleton Lab (RAL) directed by of J. Reburn.
 - RAL has conducted similar surveys for ESA, Eumetsat and EC mission requirements
 - Additional support provided by E. Hilsenrath (NASA, ACC Lead) and B. Killough (NASA, SEO).

- RAL submitted a first draft of the detailed requirements on 3/17/2008
 - E. Hilsenrath and B. Killough have reviewed the draft and conducted telecons to provide inputs for future updates.
 - The task is on schedule to complete a draft assessment and gap analysis by 6/30/2008. Final document available for the CEOS Plenary in November 2008.

- Assessment summary
 - Requirements are taken from the US (NRC Decadal Survey), International (CEOS, GCOS, and IGACO), and European (CAPACITY, GMES, Sentinel, MTG, Post-EPS).
 - The relevant timescale is from the present, over the next decade and beyond, and the analysis aims to be quantitative where possible.
 - Requirements and observational capabilities are defined in terms of geophysical products derived directly from measurements (level-2 data).
 - The requirements cover 19 atmospheric species, 9 atmospheric altitude domains (PBL to upper stratosphere), resolution (horizontal and vertical), sampling interval and revisit time, accuracy, coverage and stability.

- Final revisions
 - Add current and future mission and instrument measurement capabilities and time frame
 - Perform preliminary gap analyses to identify missing measurements and time gaps.



Action: CL-06-02_12

Primary SBA Area: Climate

NASA Point of Contact: Steven Neeck

Due Date: 6/30/2008

Co-Lead Organizations: CNES, NASA

Participating CEOS groups: OSTC

Action Description

- Provide a Status report on June 2008 OSTM/Jason-2 Launch
- The Ocean Surface Topography Mission/Jason-2 (OSTM/Jason-2) is a next-generation satellite oceanography mission that will measure the topography of Earth's oceans to study ocean circulation, climate change and sea level rise. It will extend the long-term record of these measurements that began with the Topex/Poseidon mission (1992-2005) and continues today with Jason (2001 to present).
- OSTM/Jason-2 will also serve as a bridge to future operational missions that will continue collection of these multi-decadal ocean topography measurements for use in a variety of societal applications in the areas of marine meteorology, operational oceanography, seasonal prediction and climate monitoring.
- Four partner collaboration involving NASA, CNES, NOAA, and EUMETSAT



- OSTM/Jason-2 is on schedule for a planned June 15, 2008 launch
- OSTM/Jason-2 has completed all preparations for shipment from the satellite provider in France to the launch site at Vandenberg Air Force Base (VAFB) in California, USA
 - Spacecraft Qualification Review completed March 11, 2008
 - Mission Operations Readiness Review completed April 8, 2008
 - Spacecraft Pre-Ship Review completed April 14, 2008
- The spacecraft is scheduled for shipment under CNES responsibility to the launch site on April 27, 2008
- The NASA-supplied Delta II launch vehicle is on schedule to support the planned launch date
 - The launch vehicle has been approved to be erected at the launch pad
- All ground segment elements are on schedule to support the planned launch and on-orbit operations.



Action: DA-07-03_1

Primary SBA Area: Transverse

NASA Point of Contact: Steven Neeck

Due Date: 8/31/2008

Participating Organizations: NASA, JAXA, CNES, ISRO, INPE, ESA, CAST/NRSCC, NOAA, NRL, EUMETSAT, DLR, CSA, Universities from the U.S. and Asia (Korea)

Participating CEOS groups: PC, WGCV (invited)

Action Description

- Complete the initial phase of the first intercomparison study undertaken by the Precipitation Measurement Missions (PMM) Science Team intercalibration working group in coordination with the CGMS/GSICS.
 - Consists of
 - Investigating algorithms for intercalibrating the brightness temperatures measured by similar, but not identical, spaceborne microwave radiometers, and
 - Comparing these algorithms using a common test data set.
 - This action is an important step in establishing how PC data should be intercalibrated at antenna and brightness temperature stage. It also examines the issues involved in using a reference satellite as part of the intercalibration.

- The working group met on 15-16 January 2008 at the University of Central Florida in Orlando, FL to discuss the preliminary study results.
 - Two categories of cross-calibration algorithms - “[brightness temperature mapping algorithms](#)” and “[limiting value algorithms](#)” - were identified. The two methods can be used to check against each other.
 - Comparison of radiative transfer codes is necessary precursor to algorithm comparison.
 - A number of sun angle effects must be addressed.
 - Wind azimuth effects were not significant.
- The working group will next meet on 3 August 2008 in Ft. Collins, CO to discuss initial phase study results and decide on the next steps.
 - Review radiative transfer code comparisons.
 - Review BESS/CSU and UCF/JAXA inter-calibration algorithm pair-wise comparisons.
 - Review improved sun angle correction techniques.
 - Produce a summary report to be made available by 31 August 2008.



Action: CL-06-02_14

Primary SBA Area: Climate

NASA Point of Contact: Lola Olsen

Due Date: 9/15/2008

Participating Organizations: NASA, NOAA

Participating CEOS groups: WGISS

Action Description

- WGISS IDN TT to iterate with Climate SBA (Lead, Mitch Goldberg) to demonstrate climate data records showing long-term trends and variability information for societal benefit on CEOS IDN Portal providing access through ECVs. Resulting graphics will be referenced as "Climate Visualizations" and will include examples such as PATMOSX.
- CEOS IDN to provide a conduit through the IDN's Data Set Portal that uses the Essential Climate Variables (ECVs) to locate available visualizations of long-term trends from other relevant analyses by data set providers, along with links to data providers' sites.

■ Initial prototype created

- Functionality demonstrated through a new “portal” created (only one entry at this time) using a link to the PATMOS-X “climate visualization” from the ISCCP 20 year data set, demonstrating global cloud cover changes during a 20 year period.
- Work in progress to identify other candidate “visualizations” that will highlight and clarify long-term trends and variability - for societal benefit.
- Sample portal to data sets using the Essential Climate Variables:
<http://gcmd.gsfc.nasa.gov/KeywordSearch/Home.do?Portal=NASAECV&MetadataType=0>
- Sample portal to “climate visualization” (one sample only at this time). Click on the word, “View” of the “View Climate Visualizations” in the lower right hand corner of the GCMD portal (directly above the CEOS logo) to see the functionality that could be achieved. Note that the portal using the ECVs, as seen in the link above, will be visible to the user to access the visualizations.
<http://gcmd.gsfc.nasa.gov/climatevisualization.html>

■ Next steps

- Iterate with Mitch Goldberg.
- Advertise the presence of this activity and provide an easy tool for scientists to share their visualizations.



Action: **EN-06-04_1**

Primary SBA Area: Energy

NASA Point of Contact: Richard Eckman

Due Date: 9/30/2008

Participating Organizations: NASA, ESA, DLR, IOC

Participating CEOS groups: ACC, SEO

Action Description

- Work with the Atmospheric Composition Constellation (ACC) team to investigate how future space-based atmospheric parameter measurements can support the needs of the Energy SBA.
 - Based on recommendations from GEO Energy Strategic Plan submitted to GEO IV Plenary (November 2007).
 - Follow-up to NASA Applied Sciences Program assessments of current NASA spaceborne observational capabilities of utility to energy decision making conducted by Battelle and SAIC.
 - Assessment results to be used to identify key planned atmospheric composition measurements relating to Energy SBA and to establish connections with relevant mission science teams (e.g., via ESA Earth Observation Market Development, NASA Applied Sciences Program, other CEOS-member agencies).
 - Engagement of ACC is initial step in proposed interaction with other Constellation teams.



- Energy SBA Lead (Eckman) will meet with ACC Lead (Hilsenrath) and SEO Lead (Killough) to identify mission and instrument requirements linked to energy sector decision making (April 2008).
- Engage SEO to perform a requirements assessment and gap analysis. Present findings at Energy SBA WebEx meeting (late summer 2008) and develop a report for presentation at the CEOS SIT meeting (September 2008).



Action: **CL-06-02_13**

Primary SBA Area: Climate

NASA Point of Contact: Ernest Hilsenrath

Due Date: November 1, 2008

Participating Organizations: NASA, ESA, CSA, WMO, SPARC

Participating CEOS groups: ACC, WGISS, Climate SBA Team

Action Description

- Conduct workshop on long term atmospheric composition data sets in the stratosphere and troposphere focusing on satellite data.
 - The connections between climate and AC are highly linked through chemistry and radiation. GHGs and aerosol trends are a direct cause of climate change with air quality and ozone depletion coupling
 - Long term data sets are crucial for model validation and subsequent model prediction accuracy and are a high priority for GCOS, GEO, WCRP, USCCSP, and NASA's Strategic Plan.
 - NASA is supporting six tasks (MeASURES Program) to provide long term data sets including radiatively and chemically active constituents such gases, aerosols, and surface reflectivity. These rely mostly on US satellites. Similar studies are starting in Europe using ESA sponsored satellites

- A Workshop is planned for October, 2008 at the Goddard Institute for Space Studies (GISS). Hilsenrath (ACC Lead) and Killough (SEO Lead) will coordinate workshop objectives and meeting details.

- The workshop will bring together various international research activities dealing with long term data sets to include observations and modeling. Collaboration is planned with the WMO, SPARC, IGAC and other international organizations.
 - Proceedings of workshop will be posted on an appropriate website
 - A summary of findings will be produced and provided to GEO and GCOS

- The CEOS Systems Engineering Office (SEO) is working with GCOS to develop a detailed assessment of climate requirements.
 - An initial database of missions, instruments, measurements, models, information products and decision-maker requirements has been developed for the climate domain to perform gap analyses and support future planning.
 - A gap analysis report and presentation will be developed for the ACC Workshop in October 2008.



NASA "Participating" Actions (1 of 2)

17 total actions

Action Number	SBA Area	Action Description	Lead Agency	NASA Status and Comments
AR-07-02_1	Transverse	Collaborate, assist and develop a contribution to the implementation of the Sensor Interoperability Session in the next iteration of the Architecture Implementation Pilot.	CSIR	NASA is part of the demo team (US-GEO Air Quality), co-led by Lawrence Freidl, and includes personnel from NASA GSFC (Francis Lindsay, Stu Frye), EPA, U of Wisconsin, and Batelle.
CL-06-01_1	Climate	Characterize historical HIRS instrument spectral response effects on HIRS intersatellite bias using IASI and AIRS	NOAA	NASA supporting the Atmospheric Radiation Measurement (ARM) Science Team.
CL-06-01_2	Climate	Four year extension of SBUV/2 Ozone Climate Data Record (CDR)	NOAA	NASA is leading the CEOS Atmospheric Composition Constellation (ACC) which supports the recommended extension for an Ozone CDR.
CL-06-02_1	Climate	Measurement consistency for 1-5 km sensors: 1) Complete Phase 1 of the project assessing the measurement consistency of MODIS, ATSR, and AVHRR and provide recommendations for recalibration. 2) Initiate Phase 2 of the project to generate FCDRs from 1KM AVHRR at a continental scale for North America and Asia.	NOAA	NASA supporting the MODIS, ASTR and AVHRR science teams as well as the CEOS WGCV.
CL-06-02_10	Climate	Implementation of routine GSICS LEO to GEO intercalibration.	NOAA	NOAA initiative with NASA climate science support.
CL-06-02_3	Climate	Proceed with planning both in the U.S. and Europe for the development and use of a wide-swath altimetry demonstration mission (Surface Water Ocean Topography (SWOT) mission) with a target launch in 2016; ensure the availability of adequate ground data system capabilities to take advantage of these new technologies	NOAA	SWOT mission currently part of NASA's Phase-2 Decadal Survey mission complement.
CL-06-02_4	Climate	Greenhouse Gas products (CO ₂ , CO, CH ₄) from AIRS and IASI. Products are currently available from AIRS via request and operational IASI products will be available from NOAA on or about April 2008.	NOAA	NOAA initiative with NASA climate science support.
DA-06-02_1	Transverse	Dome C Experiment: 1) Conduct a joint experiment using the Dome C site for cross comparison and evaluate its uncertainty and suitability for climate quality calibration. 2) Develop the theoretical basis and standard procedure for cross comparison. 3) Present results at the IGARSS and put on the cal/val portal	NOAA	NOAA initiative with NASA climate science support. NASA continues to support numerous Dome Concordia (Dome-C) validation experiments.
DA-06-02_2	Transverse	Data QA Framework and Guidelines: 1) Develop and deliver a consensus documentary framework and guidelines on cal/val for data quality control/assurance and best practices; 2) Develop a consolidated worldwide cal/val site database to be included in the CEOS cal/val portal. 3) Further expand the cal/val portal in both content and functionality	ESA	CEOS Working Group for Calibration and Validation (WGCV) initiative. NASA is an active participant in WGCV planning and activities.



NASA "Participating" Actions (2 of 2)

17 total actions

Action Number	SBA Area	Action Description	Lead Agency	NASA Status and Comments
DA-07-01_3	Transverse	Global DEM interoperability: 1) Submit draft Guidelines on "Global DEM interoperability (GDI)". 2) Request NASA provide details on global validation Web Processing Service based on NASA-GSFC ICESAT/GLAS. 3) Request JAXA to provide list of validated ALOS-PRISM DEMs for regions in Africa, Asia, South America, Antarctica for future test sites. 4) Recommendation to CEOS Plenary to invite CNES/SPOT, DLR and ESA to contribute DEM height pixels to Global DEM. 5) Develop plan with USGS for validation of global ASTER DEM in association with NASA and JAXA. 6) Hold workshop on "Practical aspects of GDI" in Beijing, 7/08.	BNSC/UCL	CEOS Working Group for Calibration and Validation (WGCV) Terrain Mapping (TM) Subgroup initiative. NASA GSFC (ICESAT/GLAS) will provide details on the global validation Web Processing Service for Digital Elevation Models (DEM).
DA-07-03_5	Transverse	In support of the Land Surface Imaging (LSI) Constellation, provide a demonstration of prototype of an LSI Constellation Portal	USGS	WGISS (led by NASA, Martha Maiden) created an LSI Portal Project at the WGISS-25 in Sanya, China in February. Lyndon Oleson (USGS, WGISS) is leading the effort. The project will develop a prototype of an LSI Constellation Portal, providing single source access to information on LSI instruments and imagery from member data centers. The prototype portal will be demonstrated at the September 2008 WGISS meeting. WGISS (Maiden) identified this action to be highlighted at the next GEO Plenary in response to a call by Ivan Petiteville, CEOS Executive Officer.
DI-06-03_1	Disaster	Develop an action plan for the improved integration of InSAR (Interferometric Synthetic Aperture Radar) technology for disaster warning and prediction	ESA	NASA has a co-lead on CEOS Disaster SBA Team (Dobson). Dobson and others (Fryberger, LaBrecque, Ambrose) have been supporting IGOS Geohazards/GEO workshops promoting this approach. NASA is already working to demonstrate this approach through US interagency activities (EarthScope) and assembly of international SAR data sets for other regions (notably SE Asia and S. America). There will be a planning meeting on this topic at ESA/ESRIN in May.
DI-06-09_1	Disaster	Develop requirements for a virtual constellation for risk management from UN-SPIDER users requirements inputs and others disaster related tasks and propose an gradual implementation plan based on existing and planned satellites.	CSA	NASA has a co-lead on CEOS Disaster SBA Team (Dobson). Team is conducting a multi-hazard gap analysis of current spaceborne assets. Next meeting at CSA in Montreal, April 2008. NASA DESDynI Mission would be an important element of such a proposed constellation.
DI-06-09_2	Disaster	Improve access to disaster charter data.	ESA	NASA already provides ready access to data. Possible exceptions may be related to tasking of EO-1 and/or ASTER.
DI-06-09_3	Disaster	Promote demonstration of the four phases of disaster management. (mitigation, warning, response & recovery)	CSA	NASA missions contribute to disaster management: EO-1 rapid tasking for fires, UAV wildfire monitoring, MODIS global fire detection. NASA R&A supports international flood mapping activities at Dartmouth and EarthScope. Interagency collaborations with USGS on volcano, earthquake and potentially landslides.
EC-06-01_1	Ecosystems	Installation of additional flux towers in areas covered by South African Environmental Observation Network (SAEON) nodes thus expanding the CarboAfrica flux station network.	CSIR	CSIR initiative with NASA science support.
EC-07-01_1	Ecosystems	ESA to release GlobCover data.	ESA	ESA initiative with NASA science support. Turner (NASA) part of Ecosystems SBA team.