
November 2002 Monthly Progress Report

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Task Assignment 99-001-00 November 2002

MANAGEMENT

GSFC ATR - Dr. J. Green

Raytheon ITSS Task Leader - L. Mayo

Raytheon ITSS Group Manager - L. Mayo

TASK OBJECTIVE: The non-personal services required under this task include performing all necessary functions to manage Raytheon ITSS contract staff supporting the Space Science Data Operations Office (SSDOO). The Raytheon ITSS management team will meet with the SSDOO management team to discuss significant events and contract highlights to be presented to upper management and Headquarters, and current contract issues and concerns.

SIGNIFICANT EVENTS:

- Staff held monthly senior staff meetings.
 - Staff worked with Raytheon corporate managers to improve research grant process.
 - Staff began work on May 2003 Science Data Centers Symposium.
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Task Assignment 99-003-00 November 2002

ASTROPHYSICS MISSION SUPPORT SERVICES GSFC ATR - Dr. N. Gehrels Raytheon ITSS Task Leader - Dr. J. F. Cooper Raytheon ITSS Group Manager -

TASK OBJECTIVE: This task provides support and consultation services for the Compton Gamma Ray Observatory (CGRO) project scientist in areas of data management, analysis, and archiving for CGRP and for the HIC experiment on the Galileo spacecraft. This support includes attending GRO Science Working Group meetings, aiding target-of-opportunity decisions, monitoring the health of the spacecraft, and presenting GRO papers at scientific meetings. In addition, this task will provide consultation on data products from the HIC.

SIGNIFICANT EVENTS:

1. Work continued in construction of empirical models for the magnetic field environment around the Galilean satellite Io from measurements of the Galileo Orbiter magnetometer. Reasonable fits are found from equatorial flyby data for divergence of magnetospheric field lines around Io in the Y (upstream-downstream) and X (jovian-antijovian) directions at altitudes above 600 km from the J0 and I24 flybys. An additional component appeared in the X direction during the I27 flyby to 200 km altitude and is still under investigation.
2. The Galileo Orbiter spacecraft successfully recorded data from Amalthea and Jupiter's Gossamer Ring during the November 5, 2002 flyby, but the data have not yet been returned to Earth due to a mechanical problem with the tape recorder. A spacecraft saving event induced by radiation precluded recording of data near perijove in the inner part of the Gossamer Ring.
3. The Europa impactor mission is to be called Roemer in honor of the Danish astronomer Ole Roemer who in 1676 made the first accurate measurement of the speed of light using predicted times for eclipses of Jupiter's moons by Jupiter and the known variation in distance between Earth and Jupiter during each year.
4. The plan of the Principal Investigator, R. W. Carlson (JPL), for a Discovery proposal on the Roemer mission is presently under review by JPL management. The Task Leader provided information on potential fields and particles experiments that could supplement the presently envisaged science payload for studies of the Jovian magnetosphere and its interaction with Europa.
5. Task staff supported the EGRET team on miscellaneous tasks not requiring usage of the Tektronix workstation which has not yet been repaired.

UPCOMING MILESTONES/EVENTS: Presentations on task-related research will be given at the December 2002 Fall AGU meeting in San Francisco and the 2002 General Meeting of the NASA Astrobiology Institute in Tempe, Arizona during February 10-12, 2003. The Task Leader will co-host a special session on space weathering at the AGU meeting.

PROBLEMS OR AREAS OF CONCERN: Task funding for EGRET-related work beyond December 2002 continues to be uncertain. Task support for this activity will need to be ended if no other funding is available.

RELATIONS TO OTHER TASKS: Work on this task is being supplemented by support from the SSDOO project and the two active Jovian System Data Analysis Program contracts with Raytheon ITSS. Funding from another contract on radiolytic chemistry modeling for Europa from the NASA Planetary Atmospheres Program will begin shortly.

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<http://nssdc.gsfc.nasa.gov/internal/monthly/nov02/003-00.html>

Task Assignment 99-101-00 November 2002

AMASE-MOCHA-CONCAT DEVELOPMENT
GSFC ATR - Dr. C. Cheung
Raytheon ITSS Task Leader - E. Shava
Raytheon ITSS Group Manager

TASK OBJECTIVE: This task provides support for the development of the object-oriented data base multispectral astrophysics data catalog, AMASE (Astrophysics Multimission Archive Search Engine) as an interface to NASA's astrophysics data holdings. This effort is a collaborative one with the University of Maryland (UMD) Computer Science Department, and frequent interactions with UMD counterparts are expected. The general goal for this performance period is to develop the AMASE prototype into an astronomical search and discovery engine by expanding the data contents and augmenting the search capabilities. Work includes incorporating astrophysics data from other wavelength bands to complete the electromagnetic spectrum and developing procedures to access remote relational data bases.

SIGNIFICANT EVENTS:

A. DSA:

1. Staff worked on XML telemetry language for OMG RFP.
2. Staff is writing white paper summarizing this year's work.

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Task Assignment 99-110-00 November 2002

AUTONOMOUS TECHNOLOGY
GSFC ATR - Dr. M. E. Van Steenberg
Raytheon ITSS Task Leader - R. Dunlan
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objective of this task is to support the development of a simulation environment that supports autonomous distributed spacecraft control and test science collection techniques using artificial intelligence (AI) technologies. This work is in collaboration with the GSFC's Guidance, Navigation and Control Center and JPL's Automation and Control group. The contractor shall support the following activities and contribute to reports and white papers as appropriate: (a) evaluate Science Quick-Look Analysis Tools (e.g., HEASARC) for use as on-board analysis tools, (b) define Typical Science-Driven Maneuver Automation Requirements, (c) define Typical Science Automation Requirements, (d) define Basic System Architecture, and (e) develop rapidly a prototype to demonstrate key capabilities.

SIGNIFICANT EVENTS: No work was performed on this task during the reporting period.

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Task Assignment 99-113-00 November 2002

GLAST
GSFC ATR - R. Fink
Raytheon ITSS Task Leader - J. Palencia
Raytheon ITSS Group Manager

TASK OBJECTIVE: GLAST is a multipartner gamma-ray survey mission with a GO observation component. The ADF will provide a prototype public archive design using Beowulf and other related technology. The prototype will implement the archive design using the Compton Gamma Ray Observatory EGRET data set. The contractor shall provide personnel to support the following tasks: (1) systems administration support of the Beowulf cluster and (2) programming support as requested for implementing the archive prototype.

SIGNIFICANT EVENTS:

- Staff implemented PVFS on the HPC's Beowulf Cluster, Okra0.
- Staff implemented TOPCAT4/Oscar on one of MEDUSA's workstations.
- Staff provided system administration support for HPC's Beowulf Clusters (MEDUSA& ORKA).
- Staff provided system administration support for MEDUSA Workstations.
- Staff provided system administration support and developmental work on the BLISS Beowulf Cluster.
- Staff provided system administration support for the Glast Beowulf Cluster.
- Staff provided system administration support for the SIMDOG Beowulf Cluster.
- Staff attended the Supercomputing Conference SC2002 in Baltimore, Maryland from November 17-22, 2002.

UPCOMING MILESTONES/EVENTS:

- Staff is to assist in the system administration/setup of HPC's Beowulf Cluster, THUNDERHEAD.
- Staff is to implement lm_sensors on Thunderhead.
- Staff is to implement PVFS on the Bliss Beowulf Cluster.
- Staff continues to write and work on her thesis.

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Task Assignment 99-115-00 November 2002

SWIFT

GSFC ATR - Dr. R. Fink

Raytheon ITSS Task Leader - Dr. E. Pier

Raytheon ITSS Group Manager

TASK OBJECTIVE: Swift is a multipartner gamma-ray burst detection and follow-up observation mission. The Astrophysics Data Facility (ADF) will provide science data processing pipeline design, development, and operations. In addition, the ADF will be responsible for providing Quicklook processing to the Swift Mission Operations Center (MOC) at Pennsylvania State University (PSU). The final outputs of the pipeline processing will be delivered to the HEASARC at GSFC and to project partners in England and Italy.

SIGNIFICANT EVENTS:

- Staff continued working with XRT team to correct problems with their Panter telemetry.
- Staff began testing MOC to SDC data transfers.
- Staff began working on the BAT portion of the processing script.
- Staff ingested UVOT ground test data to be used for testing the uvot2fits program.

UPCOMING MILESTONES/EVENTS:

- Staff will participate in data transfer tests with UKDC when they are ready.
 - Staff will continue testing the processing pipeline with new versions of the FITS converters and as new input data become available from the instrument teams.
 - Staff will continue development of the processing script as working software tools become available.
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Task Assignment 99-201-00 November 2002

IMAGE

GSFC ATR - R. Burley

Raytheon ITSS Task Leader - C. Klipsch

Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objectives of the IMAGE Mission Data System task are to develop, test, and maintain the IMAGE Web data access and display system, the IMAGE data processing system, and the IMAGE data distribution system.

SIGNIFICANT EVENTS: Staff continued to maintain IMAGE SMOC Data Delivery website, as per customer requests.

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Task Assignment 99-202-00 November 2002

MAGNETOSPHERIC MODELING AND ANALYSIS

GSFC ATR - Dr. S. Fung

Raytheon ITSS Task Leader - Dr. L. Tan

Raytheon ITSS Group Manager -

TASK OBJECTIVE: This task calls for (1) the performance of analysis supporting the development of a new generation of trapped radiation, (2) the documentation and analysis support in an ongoing SSDOO research program on the outer magnetosphere, and (3) ISTP campaign coordination.

SIGNIFICANT EVENTS:

1. Task staff revised the HTML front-end script to satisfy the user requirement in querying magnetospheric state index database. A java program was then created to download trapped particle data within multiple time intervals as stored in CDAweb.
 2. From the NOAA trapped particle data collected in given magnetospheric state index range, task staff developed a program to calculate the omnidirectional flux and anisotropic index of both trapped protons and electrons. Significant difference was observed when the deduced proton spectrum was compared with the NASA AP-8 model.
 3. Task staff completed the revision of a paper entitled "Can cusp-originated relativistic electrons be identified in the radiation belt" and prepared to re-submit it to *Geophysics Research Letters* soon.
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Task Assignment 99-203-00 November 2002

SPACE SCIENCE VISUALIZATION FACILITY GSFC ATR - Dr. R. Kessel Raytheon ITSS Task Leader - J. Friedlander Raytheon ITSS Group Manager -

TASK OBJECTIVE: The task of the Space Science Visualization Facility within the SSDOO is to support the SSDOO education and outreach activities, scientific analyses, and IMAGE mission activities. Members of the facility will need to work closely with the space science community in order to create appropriate space science videos, illustrations, and displays and to develop overall approaches and procedures for the maintenance of the task.

SIGNIFICANT EVENTS:

1. Staff began modifications to the scripts in the Task Request system to support the needs of the Visualization Lab task. Filed a Task Request (TR 1192) to have the system personnel create an e-mail alias to be used by the modified Task Request system for Vislab requests.
2. Staff Illustrated 14 figures for the Space Science Data Operations Office (SSDOO) Chief for an upcoming presentation to be given at the Fall American Geophysical Union (AGU) meeting held December 6-10, 2002, in San Francisco, California.
3. Staff created two posters for the Space Physics Data Facility (SPDF) Head:
 - 1) Services and Perspectives Towards the Future Sun-Earth Connection Data Environment; and
 - 2) SSCWeb 3D Orbit Graphics and Animation with XML Web Services Interface to be presented at the Fall AGU meeting. Illustrated two figures depicting WIND and GEOTAIL satellite orbits for SPDF personnel to be included in this years AGU publication.
4. Staff initiated this years SSDOO Overview. Sent out mail messages to SSDOO personnel soliciting publications. Updated charts and graphs to reflect 2001 data.
5. Staff designed this years Holiday party flyer and tickets for both SSD and SSDOO. Printed the flyers for display and the tickets for distribution .
6. Staff continued work with Dr. Pontus Brandt of APL on ring current simulation 3-D model.
7. Staff wrote a program on convolution image manipulation.
8. Staff began partnership with Dr. Xi Shang on new field line model for future animations.
9. Staff completed and printed four other posters for AGU presentation. All were 36 x 60 inches.
10. Staff completed four power point slides for Dr, Steve Maran of GSFC SSD for use in monthly Science Nugget report to NASA HQ.

UPCOMING MILESTONES/EVENTS:

1. Staff will begin planning space utilization for newly expanded Vislab room 209-215 in building 26.
2. Staff will provide support for upcoming meeting of the AAS.
3. Staff will complete series of ring current simulations for upcoming Space Science update.

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Task Assignment 99-204-00 November 2002

SPACE PHYSICS SOFTWARE DEVELOPMENT, SYSTEM MAINTENANCE, AND SPECIAL PROJECTS

GSFC ATR - Dr. R. McGuire
Raytheon ITSS Task Leader - T. Kovalick
Raytheon ITSS Group Manager

TASK OBJECTIVE: The objectives of the space physics development task are to design, develop, document, support, and promote the re-engineering of the SSC Software Systems and the CDAW Graphics Systems. These software systems will support Satellite Situation Center (SSC) Operations, ISTP SPOF, SPDS, STEP, other NASA projects, and the space physics community in general. Accomplishing this objective requires maintenance of the software in both a UNIX and VMS environment, use of appropriate software development tools and methods, development of concise documentation, definition of new magnetospheric field and region models, and communication with scientists and end users both at the NSSDC and in the larger space physics community to ensure that their needs and requirements are being met. This task will work closely with the CDF/graphics task to fulfill its responsibilities. CRUSO in particular will play an important user support role for both SSC and the CDAW Graphics System. It will serve as the first point of contact for users, distribute documentation, answer simple questions, and forward software and science questions to this task and to SSC Operations.

SIGNIFICANT EVENTS:

1. Work on CDAWeb Software: Staff completed work on implementing error bars for time series plots. Staff reviewed IMAGE RPI_K2 instrument data and made corrections to the master cdf; a virtual variable and associated software still need to be implemented in order to complete the display options for this dataset. Staff began cleanup work on the CDFX suite of software and began work on some requested enhancements. Staff continued working on the overall system architecture documentation, which should help in determining the appropriate software evolution path. Staff continued investigating the geographic registration problem long suspected by staff and recently reported by a user of the Polar UVI/VIS image data. Staff began developing the requirements for a cdf merge/subset capability in the system. Staff continued working with the ACE data provider to facilitate the production of their high resolution datasets. Staff also reconfigured the meta-database nightly job to run as many concurrent processes as possible, so that the overall running time was reduced by approximately two hours.
2. CDAWeb Design work: Staff developed a design for how to merge/combine the structures for datasets so that the variables from more than one dataset can be used when setting up virtual variables.
3. Work on SSCWeb Software: Staff is working on incorporating science staff suggestions into the new calculator web interface. Staff worked with B. Harris to test the TIPSOD application on more platforms and helped with the layout of the operational environment for the software. The main SSCWeb page was modified to include a link to the new TIPSOD (just in time for the fall/winter AGU).
4. CDAWeb Statistics: The statistics include GSFC, RAL, ISAS and EDC: CDAWeb fulfilled 8,817 plotting requests, 3,472 ASCII listing requests and 220 CDF delivery requests, where each request can contain more than one plot/listing/file; (RAL: 98, 9, 0), (EDC: 6, 3, 0) and (ISAS: 127, 38, 7); there were 73,345 total accesses (13.59Gb) to the rumba CDAWeb HTTP Server. The anonymous ftp site delivered 9 Gb of data; 41,682 CDF files and 200 software/document files to non-staff users. The "overall" ftp statistics file was updated and can be found at http://cdaweb/cdaweb/logs/FTPaccumulative_record.html. The monthly web server and ftp statistics files can be found at <http://cdaweb/cdaweb/logs>.
5. SSC Statistics: Usage statistics from ubatuba, are as follows: There were 39 accesses of the SSC Version 3.0 Main Menu; Locator was executed 3 times; Query was executed once; the Data Base listing was not accessed; the Calculator was not accessed; the File Output option of the system was executed 41 times and the FTP option was executed 33 times.
6. Usage statistics for the Web-based versions of SSC Query and SSC Locator programs are as follows: The query_server was executed a total of 92 times; the tabular_server was executed a total of 636 times; the graphical_server was executed 1,330 times for a total of 2,058 accesses, excluding developers. In addition, the SPOF accessed the systems 15 times; SSC Operations staff accessed the systems 47 times. The SSC Web pages

(main page as well as any GIF, user's guide, etc.) were accessed 9,355 times, with 45 accesses by SPOF staff and 153 accesses by SSC Operations staff. The new TIPSOD application was accessed 1,469 times.

7. Mirror Sites: RAL, ISAS and EDC are retrieving their provided data and software updates on a regular basis through their FTP accounts. Usage statistics were received from RAL and ISAS this month; these numbers were incorporated into the CDAWeb statistics listed above.
8. Ingest/operational activities: The CDAWeb metadata generator and inventory plot generation software are being executed nightly. As part of this process, any new MAP, IMAGE, LANL, GOES, ACE, FAST, Polar, ISIS, Cluster and PWG (the new Polar/Wind/Geotail replacement for the CDHF) files are being "ingested" as well. The process of copying and compressing all of the ISIS2 CDFs from nssdcftp to rumba was completed (268,500 files)! In addition, the master cdf "notes" web pages were updated each week.
9. SPDAC support: Staff began working on requested enhancements to the database and associated web interface to meet a new, Living with a Star; call for data.

UPCOMING MILESTONES/EVENTS:

1. A new RAID disk tower for the rumba machine is expected soon; plans are being made for its optimal configuration.
2. Staff will assist the ATR with providing documentation and the appropriate level of information to help define meaningful assignments for a new co-op. student.
3. Staff will continue to work with the IMAGE project personnel to validate the CDAWeb displays of the IMAGE data.
4. Staff will continue testing and maintenance on CDAWeb and testing/enhancing all of the plotting and listing software.
5. Staff will continue testing, modifying, and documenting the CDAWlib software and associated Web pages.
6. Staff will continue testing and maintenance of the SSCWEB system.

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Task Assignment 99-205-00 November 2002

SPACE PHYSICS DATA ACQUISITION AND VALUE-ADDED SERVICES

GSFC ATR - Dr. R. McGuire
Raytheon ITSS Task Leader - Dr. H. Hills
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are four-fold: 1. to support space physics and information acquisition for NSSDC, including support for ingest to the near-line/on-line archive and/or for distribution as CD-ROMs; 2. to support value-added space physics services, including operation of the SSC, creation of new composite space physics data/model products, definition of science user requirements for SSDOO systems and other NSSDC data and information systems, and science-expert support for other efforts such as IACG and SPDS as appropriate; 3. to carry out selected archival research and mission planning activities, including publication of results; and 4. to provide logistics support as directed for working meetings related to SPDS, including travel reimbursement.

SIGNIFICANT EVENTS:

1. DIONAS INGEST:

- a. ISIS: Routine ingest continued, but only for 1,612 files (0.9 GBytes), after which the data inflow from Benson's group stopped temporarily.
- b. SAMPEX: Routine ingest of all four datasets continued; also the creation of two CDFs for ingest into CDAWeb.
- c. Wind/WAVES: Ingest of the composite CDF from three datasets continued normally. The PS files were moved to nssdcftp, but are corrupted and not printable. The matter is under rectification.

2. OTHER DATA INGEST:

- a. From ACE, new NMC entries were created for HDF- and ASCII-formatted data sets from the EPAM and SEPICA experiments. Updates for all ACE data sets are in progress. The Level-1 CD data set was updated for September - October 2002.
- b. Ulysses solar wind ion and electron data sets from the SWOOPS experiment were updated for October 2002. One-minute magnetometer data were extended for July to December 2001. The COSPIN and HISCALE data sets were updated for the first half of 2001 and 2002 respectively. Level-1 and spacecraft ephemeris data sets were updated for July 2002.

3. Data Set Contacts:

- a. Communication problems still persist with respect to the digital VLF file samples from University of Iowa. Bob Brechwald has just a few days ago supplied clarification of part of the data and its format. The matter is being pursued.
- b. The APL website for AMPTE/CCE was revisited. Their online resource are just the B-field data and the digital spectrograms; the latter are held by us as 35 mm slides.
- c. Corrections were made to the ISEE1 CDF generation code for Fitzenreiter's data. Still waiting for Fitzenreiter's comments.
- d. An acqsci met with Bryant Heikkila regarding Helios orbit tapes, and got documentation plus a sample tape so Ops can dump a few records of it for identification. The data were originally in Univac 1108 format, but then were converted to IBM360 doublewords (R*8). Which version we have is unknown yet.

4. AMPTE Conversions to ASCII:

Work began on modifying old software originally written by D. Guell to convert AMPTE/CHEM data from binary to ASCII. The old software was for processing from tape to tape, but now it needs to be a disk program. A problem: some of

the subroutines used have not been found. Maybe a total rewrite will be needed.

5. ISIS-1 and -2:

- a. The process of copying all ISIS2 CDFs from nssdcftp to CDAWeb was completed. Each day 4000 CDFs were moved; the total was approximately 268,500.
- b. Work continued on modifying Bob Benson's ISIS2 search web page for ISIS1, awaiting additional software and data base from Bill Schar. Schar is having some health problem so this process is also on hold.

6. ACE Value-Added Work

Long term averages for flux spectra near 1 AU of helium, oxygen, and iron ions measured by plasma and energetic particle experiments on the ACE satellite were compiled from published fluences for these ions during 1997 to 2000 in the rise from solar minimum to maximum conditions. Depth profiles of radiation effects on exposed surfaces were then computed from these spectra and scaled with heliocentric distance for applications to space weathering of interplanetary bodies in the solar system. Results are to be presented at the Fall AGU Meeting in the space weathering session.

7. Maintenance of NSSDC Information Databases:

- a. Only one GRL journal was circulated and reviewed (for usage of data sets and models from NSSDC's archives) this month because of the continuing problems AGU is having in bringing out printed versions on time.
- b. A chart showing the archival status of data from the various Ulysses instruments was updated for J. Cooper (Raytheon ITSS).
- c. The ISEE 3 directory in nssdcftp was streamlined, eliminating one directory level. An overview file was generated for the /plasma/ directory. It is in html and contains links to the documentation and other information.
- d. Various other new entries and updates were added to the information system.

8. SSC Ephemeris

- a. Ephemeris information was created and updated into the SSC's UNIX data base for 29 spacecraft. Files for five spacecraft were updated for the [ACTIVE.IACG.ELEMENTS] directory.
- b. M. Desch (Code 600) informed us that the Wind s/c will be moved in 2003 to the L-1 point again directly, avoiding an intermediate phase in L-2 that had been planned before.
- c. The CALCULATOR option in SSCWEB still needs more improvements. Suggestions were provided to the Development staff. Files online at nssdcftp.gsfc.nasa.gov/miscellaneous/orbits and its counterpart in VMS DECAAlpha were updated as warranted.

9. The draft and final versions of SPX 588 were made available via WWW and FTP. SPX 589 was drafted and loaded online. It carries stories on five launches. As usual, a copy of that was emailed to COSPAR. Three WDC SI announcements regarding the launch and assignment of IDs to three missions were sent by e-mail and posted to the Usenet News. Four CCSDS IDs were assigned for future mission/simulation telecommunications, all for ESA s/c.

10. At the request of J. King, a set of files providing essentially the mutual perpendicular distances between the spacecraft-Sun lines from IMP8, ACE and WIND were produced and put online at nssdcftp.gsfc.nasa.gov/miscellaneous/orbits/impact_parameters. King has alerted the community to the availability of this dataset. The set covers the common years through 2002; it will be extended after the FDF in Code 500 provide better position data for IMP8, hopefully by year end.

11. MAINTENANCE AND UPDATING ON THE VARIOUS WWW PAGES:

a. Algorithms and Models on WEB:

1. The solar and magnetic indices files were updated for IRIWeb and MSISWeb and in the model software directories on nssdcftp.

Accesses for this month:
CGM 6439

IRI model 1573
 MSIS model 1382
 IGRF model 717
 TRAP particle model 466
 T89 model 25
 T96 model 922
 Heliospheric Ephemerides 853
 IMP-8 daily position ... 1

b. COHOWEB and OMNIWEB systems (data and software)

1. Built software and excluded solar wind hours from OMNI data using bowshock data base

Accesses for OMNIWEB: plots/list/scatter: 1866 / 714 / 51 = 2631
 Accesses for COHOWEB: plots/list: 110 / 13 = 123

c. ATMOWEB system and FTPHelper (graphical browsing & retrieve FTP data)

1. Added impact parameters data base to FTPBrowser

FTPBrowsering and ATMOWeb accesses for this month (plotting/listing): 180 / 38 = 218

d. FTP site (System software, data ingest, creation of CD-Rs)

1. Built data base of Impact parameters between Earth, IMP8, ACE and Wind; loaded these data into our FTP site
2. Added these parameters to merged plasma IMP/WIND/ACE data files for FTPBrowser, and ANON/FTP site, and rebuilt corresponding home pages, script files, etc

e. Cosmic and Heliospheric pages and services

f. Geomagnetic and Magnetospheric Models through network

g. Space Physics home page

1. Updated several Space Physics pages

h. Special Tasks for Joe King:

1. Built software and excluded s/w hours from merged IMP/WIND/ACE plasma data (for IMP-8) using bowshock data base
2. More statistics, plotting, etc for OMNI-2

12. Support for SPDAC

- a. Work began on modifying the SPDAC web pages as requested by R. McGuire after recent meetings with C. Holmes. New columns in the SPDAC schema are needed, which requires many changes to the scripts that create the web pages.
- b. New mission entries for RHESSI and TIMED were inserted into SPDAC. The PI's Polar TIMAS update (change in his address) was also entered and he was sent a verification notice.

13. Miscellaneous

- a. Staff members reviewed and discarded a significant volume of old paper, and also of old electronic files.

14. Support for Moving Offline Tapes to Online

- a. A task scientist will co-host a special session on space weathering at the Fall 2002 AGU Meeting in San Francisco on December 6-10, 2002. He will also give a review on heliospheric missions and measurements related to space weathering for solar system bodies.

- b. D. Bilitza attended the Living With a Star Workshop at APL/JHU and discussed TIMED data archiving with APL and GSFC TIMED scientists.
- c. An overview slide was prepared for the HQ report, describing the older ITM data that have been made available online through FTPBrowser. A slightly revised version was accepted by Steve Maran for his monthly nuggets.
- d. An invited paper describing the TOPIST processing and data was prepared and submitted to Radio Science (authors: Bilitza, Huang, Reinisch, Benson, Hills)
- e. A summary of the IRI session and discussions during the World Space Congress in Houston in October was prepared and submitted for publication in the IRI Newsletter and the COSPAR and URSI Bulletins.
- f. A paper was reviewed for radio science.
- g. A few paragraphs were written for a CAN proposal submitted by K. Tobiska (PI) entitled "Enabling Space Environment Standardization". The CAN would provide travel support for D. Bilitza to attend ISO meetings as an ionospheric expert.

REQUEST HIGHLIGHTS:

- a. J. Nolan of ESA was provided the orbital parameters of the recently launched INTEGRAL s/c. They are in SPX.588, but were not yet in NMC.
- b. S. Kane (University of California, Berkeley) desired the Earth-Sun-Ulysses angles. He was advised to go to our website where he can work out that data, and also that such data are indeed available at 30-day resolution in the online NSSDC Report (Book 3), published in 1997.
- c. Several requesters were assisted with inquiries regarding ITM data and models: R. Daniell (CPI, Boston) - ISIS topside sounder data; J. Titheridge (New Zealand) - IRI papers and software; R. Shroll (Spectral Sciences Inc.) - NRLMSISE-00; M. Chamua (India) - IRI papers; S. Ge (Ohio state University) - ap update; A. Diekmann (MSFC) - ITM data; R. Moses (LANL) - IRI report.

ACTIVITY LOG:

The NSSDC models sites on anonymous ftp and on the Web continue to be very popular:
 ftpWWW

| | 2001 | RAID | Model | atm | geom | ion | rad | solar | CGM | IRI | MSIS | IGRF | TRAP | hpage |
|-------|--------|-------|-------|------|------|------|------|----------|------|-------|------|-------|-------|-------|
| Nov | 49425 | 4175 | 854 | 627 | 2076 | 260 | 202 | 977 | 2333 | 13066 | 612 | 366 | 66026 | |
| Dec | 36022 | 3736 | 701 | 613 | 1874 | 257 | 175 | 6485 | 1001 | 3599 | 304 | 125 | 61423 | |
| Jan02 | 154622 | 4926 | 968 | 819 | 2377 | 324 | 273 | 1505 | 3399 | 8270 | 454 | 244 | 69610 | |
| Feb | 116199 | 7092 | 1078 | 659 | 3651 | 619 | 525 | 1106 | 2322 | 41633 | 475 | 621 | 71078 | |
| Mar | 164875 | 10177 | 1869 | 1462 | 4682 | 640 | 740 | 717 | 1659 | 5257 | 528 | 161 | 73074 | |
| Apr | 245162 | 6863 | 1134 | 884 | 3665 | 353 | 319 | 899 | 2220 | 1162 | 1266 | 122 | 74803 | |
| May | 275487 | 4426 | 754 | 537 | 2208 | 305 | 261 | 1050 | 8238 | 944 | 1346 | 93 | 76584 | |
| Jun | 133327 | 6892 | 891 | 709 | 3693 | 388 | 371 | 47412641 | 1055 | 702 | 84 | 78218 | | |
| Jul | 230906 | 8669 | 1559 | 993 | 4133 | 538 | 499 | 645 | 4486 | 570 | 491 | 42 | | |
| Aug | 229827 | 6819 | 1234 | 934 | 2869 | 521 | 485 | 701 | 1953 | 983 | 510 | 65 | | |
| Sep | 184116 | 10238 | 2034 | 1123 | 4441 | 691 | 754 | 587 | 1832 | 811 | 449 | 543 | | |
| Oct | 252019 | 8551 | 1664 | 1209 | 3327 | 744 | 609 | 996 | 4055 | 1075 | 917 | 330 | | |
| Nov | | | | | 6439 | 1573 | 1382 | 717 | 466 | | | | | |

----- ISIS -----

| Month | Files | GBy | Total | WWW | IAE | Aer | DE | Exp | Hin | I/A | OGO | SM | SNOE |
|-------|-------|-----|-------|-------|-----|------|----|-----|-----|-----|-----|----|------|
| Oct | 3,485 | 2.0 | 516.5 | 5178 | I | | | | | | | | |
| Nov | | | 5339 | I 886 | 12 | 1389 | 5 | 9 | 16 | 6 | | | 48 |
| Dec | | | I 18 | 7 | 61 | 6 | 41 | 64 | 1 | | | | 1937 |

Jan02 26,410 15.1 531.6 5640 I1396 4 3154 11 44 13 47 379 29035
 Feb 10,342 6.1 537.7 5736 I 25 5 371 3 22 836 8 29 4176
 Mar 20,492 12.0 549.7 5917 I 179 18 48 99 83 78 27 17 14263
 Apr 17,460 9.2 558.9 6057 I 50 215 15 5 22 1 5 16365
 May 19,126 15.4 574.3 6257 I 52 9 271K 34 30 15 19 213 2

-----I-----
 Month Files GBy Total WWW I AS A2 DE EX I1 O6 ATW I AE DE EX HI IA O6 SM SO

-----I-----I-----
 Jun 16,552 9.5 583.8 6451 I 2 0 1 0 0 0 48 I 25 182 622 25 32 7 1 26

Month Files GBy Total WWW I ITM TOPIST ATMOWeb

Jun 16,552 9.5 583.8 6451 I 1954 0
 July 17,192 14.9 598.7 I 1908 65255
 Aug 21,077 12.3 611.0 2594 58241
 Sep 15,419 8.3 619.3 1805 928
 Oct 21,969 10.1 629.4 32249 16586 DE2/LAPI:11371, ISIS:19950
 Nov 1,612 0.9 630.3

 WWW file and plot accesses during October 2002 (and the yearly totals)
 for interplanetary COHO-related data from COHOWeb, CDAWeb, and NSSDCFTP:
 Deep Space (Ulysses, Voyager, Pioneer, etc.): 5,459 {2002 Total: 47,957}
 Geospace (IMP-8, Prognoz, ACE, WIND, SOHO): 16,697 {2002 Total: 257,386}
 (November numbers not yet available.)

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Task Assignment 99-301-00 November 2002

COMPUTER SYSTEMS MANAGEMENT TASK

GSFC ATR - C. Barrett

Raytheon ITSS Task Leader - J. Jacobi

Raytheon ITSS Group Manager ·

TASK OBJECTIVE: The objectives of this task are to provide systems analysis and technical support to the operational computer activities of the NSSDC; to maintain existing hardware and system-level software to ensure the optimal performance and utilization of its resources and connectivity to its computing sites; to integrate new hardware and system-level software into existing systems to achieve upgraded capabilities and state-of-the-art facilities; to administer specialized software such as data base and optical disk management systems; and to provide users with the necessary documentation, training, and assistance so that NCF resources are fully utilized.

SIGNIFICANT EVENTS:

- Staff began the process of upgrading the Tru64 operating system used on our Alpha platforms.
 - a. Dublin has been successfully upgraded to version 5.0a of Tru64 Unix. The CDROM drive on dublin was also activated at this time.
 - b. Bolero was upgraded to version 4.0g of Tru64 Unix, and people were notified that they should retrieve any data that they had on this machine as it will most likely be decommissioned within the next few months.
 - c. An upgrade of Delphi was started, but a hardware failure was encountered part way through the upgrade process, so the remainder of this upgrade has been postponed.
 - The iPlanet secure web server on nssdc was upgraded to version 4.01, Service Pack 8.
 - Continued to work with vendors to correct problems noted with the LTO tape drive. As a result of these efforts, we have now found a configuration which operates reliably. Further work is in progress to find the cause of two remaining performance problems.
 - Installed and connected a new UPS to ubatuba. Installed monitoring software and tested this configuration.
 - Staff made several configuration changes to improve the operation of several services:
 - a. Diagnosed and fixed error messages coming from httpd on decaf.
 - b. Optimized some sendmail configuration options.
 - c. Tightened security on Kelly Gyax's PC when she connects to any UNIX box using Exceed.
 - d. Added printing work around for the Oce printer/copier by using the new mail630 machine as the print server.
 - Staff continued to perform routine system administrative duties, including backups, application of stupid and confusing software upgrades and patches, providing assistance to users, and maintaining the IP spreadsheets and equipment database.
-

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Task Assignment 99-302-00 November 2002

SYSTEMS NETWORKING AND SMALL SYSTEMS

GSFC ATR - G. Goucher

Raytheon ITSS Task Leader - R. Dunlap

Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objective of this task is to provide network engineering support to Code 600.

SIGNIFICANT EVENTS:

Staff continued work on access through the ROSAT router.

Staff continues resolving vulnerability issues stemming from the latest scan.

Staff continues work to develop the Code 630 Web-based equipment data base.

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Task Assignment 99-303-00 November 2002

NSSDC COMMON DATA FORMAT (CDF)

GSFC ATR - D. Han

Raytheon ITSS Task Leader - M. Liu

Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are to carry out computer science research, develop computer software and provide user support for the NSSDC Common Data Format (CDF).

SIGNIFICANT EVENTS:

1. After thorough investigation and some hints from a Sun Java development member, it was determined that the problem with .cdf extension under Java 1.4 running on Windows 2000 is better to dis-associate the .cdf with the existing definition as a Window's Channel Definition File during the run of the CDF's Java-based programs. With that, everything appears to be normal as others.
2. A commercial packaging software is being evaluated on Windows for installing our CDF distribution. The same software will be tested later for Mac.
3. A new port is being added for the CDF distribution for the Solaris Sparc machine running 64-bit mode. Both core library and Java Native Interface need to be modified/checked.
4. Four user requests/questions were handled this month.

CONCERNS AND PROBLEM AREAS:

1. The GZIP compression/decompression option is turned off for 16-bit DOS/Windows 3.x due to its memory constraint.
 2. A unusual problem occurs with the older Microsoft C 7.00 compiler in one of the EPOCH parsing routines on DOS/Windows 3.x. It occurs while using the floating point functions and type casting. It is suspected that the Microsoft executables may be getting too large and will require memory overlaying.
-

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Task Assignment 99-304-00 November 2002

PLES

GSFC ATR - N. James

Raytheon ITSS Task Leader - Dr. D. Williams

Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are to maintain data bases and metadata (NMC, WWW) for planetary, Earth sciences, and selected astrophysics data (HEASARC, EUVE, HST), provide request support and coordinate updates of user interfaces, coordinate WWW activities, support internal and external data base users, assure data set quality, coordinate planetary data acquisition and Earth science data transition, support educational activities, and coordinate publications.

SIGNIFICANT EVENTS:

The NSSDC WWW server had a total of 12,845,594 error-free accesses logged for November 2002, a decrease of 7% compared to October 2002.

Task staff responded to over 230 e-mail queries and telephone calls from external users and the Request Office.

Task member opened new NEAR MSI raw (level 1B) image data set.

Task personnel updated the Galilean satellite fact sheet.

Task staff wrote an NSSDC Newsletter article on acknowledgements to NSSDC.

Task member made extensive updates of the Radio Jove website.

Task personnel continued to make numerous updates to the Moon Tree pages as a result of information received due to the renewed interest in the Moon Trees.

Task staff took part in transition from Raytheon ITSS to QSS.

Task personnel updated links of the pages of the Catalog of Spaceborne Imaging.

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Task Assignment 99-305-00 November 2002

NASA SCIENCE OFFICE OF STANDARDS AND TECHNOLOGY (NOST) GSFC ATR - D. Sawyer Raytheon ITSS Task Leader - J. Garrett Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objective of this task is to maintain and expand the NOST so that it can effectively respond to the standards needs of the NSSDC community.

SIGNIFICANT EVENTS:

NOST Archiving Tools Suite - Staff has

- continued coding the first version of the Multifile Package Group Analyzer (MPGA) tape packaging software. Redesigned and began re-implementing the IO interface of the Module Library. Once this Interface is complete, the MPGA should be completed soon thereafter.
- Participated in meetings regarding the upcoming tape migrations. Discussion centered on determining needed attributes and sources of the attributes.

ISO Data Archiving - Staff has

- been reviewing the draft Producer-Archive Interface document.
- Updating the ISO Archiving web site with some few new materials.

CCSDS On-Line Information System - Staff has

- Switched DNS entries to redirect WWW.CCSDS.ORG to point the prototype web site that is located on machine at GST. Old site now responds to WWWCLASSIC.CCSDS.ORG. Old site will be maintained for the immediate future to provide a backup and transition capability for the new site. CCSDS Chairs were notified of the change and asked to pass the information on to all members of their CCSDS groups
- Began setup of the web pages supporting the CCSDS 2003 spring meetings.
- Continued updates to the 2002 fall set of CCSDS meetings web site. Up to the meeting date, this included updates to registrants lists and several updates to agendas and logistics information.
- Made several updates to the CCSDS Members lists.
- Participated in the NASA Webmasters meetings.
- Set up a new area in the Docushare area of the web site for use by the CCSDS Reorganization Team. Team members were informed of the area and provided with brief instructions and a contact point in case the encounter any problems. Also began setup of additional areas for use by panels. Awaiting new subcontract so that work can continue.
- Added the following new documents and any associated supporting materials to the CCSDS.ORG web site and cleaned up associated files for any previous versions.
 - CCSDS 727.0-B-2. CCSDS File Delivery Protocol (CFDP). Blue Book. Issue 2. October 2002.
- Until web site was transferred to the GST machines, monitored the log files for the WWW.CCSDS.ORG WWW-server for any indications of problems or security incidents and continued generating the required data to develop monthly statistics. Now monitoring the WWWCLASSIC.CCSDS.ORG WWW-server.

CCSDS Standards - Staff has

- Participated in the joint CCSDS and Object Management Group (OMG) meeting.
- Participated in the NASA Data Systems Standards Council meeting.

Goddard Technical Standards Coordination - Staff has

- Updated the web site to detail a number of completed and upcoming GSFC reviews of standards.

STATISTICS: CAOIS: As of 30 November 2002, there were 440 Data Description registration numbers assigned. Of

these about 30 of the Data Description registration numbers are reserved for NSSDC use during the Cygnet migration, 45 are reserved for IMAGE ingest, and 26 for ISIS ingest. Data Description Packages for these must be generated.

UPCOMING MILESTONES/EVENTS:

NOST Archiving Tool Suite: Staff will

- Complete coding the first version of the Multifile Package Group Analyzer (MPGA) tape packaging software. This includes coding the main parts of the "VMS-By-Directory", "AIP-Generator", and "VMS-File Getter" Modules.
- Begin coding the multi-file version of the AIP Extractor.

ISO Archiving Standards: Staff will

- Update the web site to provide information on new archiving thrusts.
- Update web site with information for the spring international meeting.

CCSDS XML Group: Staff will

- Continue low level of support for possible CCSDS XML prototype effort.
- Participate in upcoming joint CCSDS and OMG meeting, when convenient.
- Assist as needed in presentations for Metadata Registries Open Forum.

CCSDS Standards: Staff will

- Review the new draft of the Orbit Data Messages standard and propose updates using PVL and XML for the syntax.

Goddard Technical Standards Participation: Staff will

- Participate as needed in the GSFC Standards Working Group, the NASA Data System Standards Council and the GSFC Standards Review Boards.
- Continue updates for the web site for GSFC Standards Coordination. Update web site to reflect updated standards management.

OLIS: Staff will

- Once new contract is in place, update Docushare by defining areas to support panel work and update public areas to publish public documents.
- Continue setup of the CCSDS 2003 Spring meeting web site.
- Participate in upcoming CCSDS.ORG web site redesign meetings as requested. Develop additional proposals for improving the CCSDS Web site as required.
- Add additional documents to the CCSDS Web site as they become available from the CCSDS editor.

CAOIS: Staff will

- Register new data description packages as they are submitted. Note that Cygnet migration, IMAGE ingest and ISIS ingest descriptions still need to be submitted.

Formats Evolution Process - Staff will

- Updating the FEP Web site if any new material is submitted.

ISSUES:

OLIS: Staff will

- The contract to GST for CCSDS Secretariat Support for December 2002 to November 2003 has not yet been completed. Therefore the follow on Web Support Subcontract from them has not been completed. Until it is completed, there is no funding for the OLIS activities.
- Since the new web site has a different layout and different naming conventions, pointing www.ccsds.org to the new site has resulted in most links from search engines, portals, previous technical papers, etc. to become broken. Since we are maintaining the old site during some transition period, the links can be made workable again by substituting

wwwclassic.ccsds.org for www.ccsds.org in broken links.

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Task Assignment 99-306-00 November 2002

INFORMATION (METADATA) SYSTEMS DEVELOPMENT AND UPGRADES

GSFC ATR - Dr. J. Thieman
Raytheon ITSS Task Leader
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are to define and develop information systems and the interfaces thereto, maintain these systems and interfaces and support the generation of reports therefrom, and recommend and participate in the planning of upgrades to necessary support systems and software as appropriate.

SIGNIFICANT EVENTS:

- The SignIn and SignOut sequence diagrams were finished.
- The UML design for Media Range and Dataset reports was completed and the coding for each of these incorporated into JIN.
- The database design for tables used in the SignIn and SignOut procedures were discussed and determined.
- The validation software which had been used in a "trial" mode was replaced with a licensed copy.
- A problem with SATX that caused duplicate datasets to be printed out was fixed.
- The NIMSDEV database was reimported and various tables for JIN reconstructed.
- Columns were added to the med_dataset table and the script that loads it was modified accordingly.
- Staff fixed a trivial problem with the date format of messages emitted by the Task Request system wherein the time offset of the "Date" field in the e-mail header was not preceded by a zero. (Task Request 1178)
- Placed recently modified scripts of the Task Request system back into the CVS system.
- Staff responded on behalf of J. King (Code 633) to a message from a group at the New Jersey Institute of Technology regarding the consistency of output from the MasterCatalog servlet.
- Task staff worked with System personnel reconfigure one desktop system to make connections to the mainframe systems more secure and to reinstall software on another desktop system following an operating system upgrade.

UPCOMING MILESTONES/EVENTS: Work will continue on JIN.

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Task Assignment 99-307-00 November 2002

SUN-EARTH CONNECTION EDUCATION FORUM (SECEF)

GSFC ATR - Dr. J. Thieman

Raytheon ITSS Task Leader - Dr. S. Odenwald

Raytheon ITSS Group Manager - L. Mayo

TASK OBJECTIVE: The objective of this task is to provide administrative support of the SECEF managers and assistance in preparing for educational outreach events, seek opportunities to leverage SECEF activities for broad national impact, and assist in publicity for the SECEF by developing content for a Web site and publications.

SIGNIFICANT EVENTS:

- Staff continued with SECEF web site redesign.
- Staff is coordinating the next Sun Earth Day, March 20, 2002 Visions: by the Sun.
- Staff designed and submitted SECEF postcard to the printer.
- Staff chaired the December 2002 EPC team meeting, collected and distributed ideas for future formats of the meeting.

UPCOMING MILESTONES/EVENTS:

- Staff will continue with scheduled EPC meetings.
 - Staff will support SECEF teleconferences.
-

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Task Assignment 99-312-00 November 2002

ANALYSIS SUPPORT FOR THE IMAGE MISSION GSFC ATR - Dr. J. Green Raytheon ITSS Task Leader - L. Garcia Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of the Analysis support for the IMAGE Mission task are to maintain and update local copies of the IMAGE software suite, create RPI data analysis software, and to create software to be used in correlative studies between IMAGE detectors and between IMAGE and other missions. This task will also support the synthesis of data and theory in the study of Earth's magnetosphere through creation of unique data products and services. This task will make available appropriate documentation for all of these objectives and will support the IMAGE Science Center Web site.

SIGNIFICANT EVENTS:

- Staff made spectrograms for the RPI instrument for October 2002 available on the IMAGE Science Center (SC) site.
- Staff posted to the IMAGE SC site agendas and information for the following meetings: the EUV meeting in November, the IMAGE Science Team meeting at Berkeley in March 2003, and the December FUV meeting at Berkeley.
- Staff split the IMAGE SC publication page into two pages, one pre-2002, one 2002 on, updated three publications and added 15 text and 18 PDF versions of COSPAR abstracts and references.
- Staff updated the IMAGE main page and added the "Best Project" award and Group Achievement award to the Awards page.
- Staff continued making revisions to paper on the correlation of IMAGE RPI and EUV observations.
- Staff processed RPI spectrogram data from 2000, 2001, and 2002 for inclusion in a presentation on Auroral Kilometric Radiation to be given at the Fall 2002 AGU meeting.

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Task Assignment 99-313-00 November 2002

COMMUNITY COORDINATED MODELING CENTER
GSFC ATR - Dr. M. Hesse
Raytheon ITSS Task Leader - M. Kuznetsova
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: This task will provide science and software support for Community Coordinated Modeling Center (CCMC). Specific support includes developing and testing of simulation codes for space weather models, performing simulations of realistic space weather events, providing visualization and analysis software, performing comparison of modeling results to satellite measurements, performing research in space plasma physics.

SIGNIFICANT EVENTS:

Staff published Web interface for online submission of CTIP model for Runs on Request at CCMC public Web site.

Staff conducted research on effects of ionospheric conductance in different Global MHD models.

Staff conducted research on effects of magnetically neutral points in magnetospheric dynamics.

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