



STP Quarterly Review

09 August 2010

3QFY10



**Dr. William F. Denig, Chief
Solar & Terrestrial Physics Division**

NOAA/NESDIS/NGDC

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OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures

Awards & Personal Achievements

Accomplishments

Special Interest Items

Issues & Summary



Solar & Terrestrial Physics Division Personnel



Solar & Terrestrial Physics Division

William Denig/F, Chief

Janet Brown/F, Secretary

Karen Horan/F, Physical Science Tech

Craig Clark/F, Scientific Data Tech

Earth Observation Group (EOG)

Chris Elvidge/F, Team Lead

- Kim Baugh/C
- Tilottama Ghosh/C
- Daniel Ziskin/C

Space Environment Group (SEG)

Eric Kihn/F, Team Lead

- Terry Bullett/C
- Ray Conkright/C
- Ed Erwin/F
- Rob Redmon/F
- Dan Wilkinson/F
- Kelly Prendergast*/F
- Jim Manley/C
- Pat Purcell/C
- Paul Meade/CPI @ NGDC
- Peter Elespuru/C
- Anu Sundaravel/C
- Janet Machol/C @ SWPC
- John Schminky/S
- Preeti Bhaneja/C
- Dominic Fuller-Rowell/S
- Gebregiorgis Fikade/G

Earth Geophysics Group (EGG)

Vacant/F, Team Lead

- Patrick Alken/C
- Rob Prentice/C
- Fran Coloma/C
- Justin Mabie/C
- Don Herzog/C
- Sara Crepinsek/Temp

Key

F – Federal

C – CIRES/CIRA

S – Student

G – Guest Scientist

*On temporary assignment



STP Division Overview

Personnel Changes



- **Gains**

- Dominic Fuller-Rowell, Student – USTEC implementation
- Gebregiorgis Fikade, Visiting Scientist (Ethiopia) – Ionosondes
- Sara Crepinsek, Temporary – Geomag Archive Database
- Anu Sundaravel, Transition to CIRES – GOES-R³

- **Losses**

- Ben Tuttle – Off to a federal position within the DoD

- **Re-Assignments**

- Kelly Prendergast – Temporary assignment to ISD

- **Vacancies**

- *tbd*

- **Inbound**

- None

- **Outbound**

- Eric Kihn – Promotion to Deputy Director, NGDC
- Don Herzog – Retiring & Transitioning to Visiting Scientist, MGG



STP Division Overview

External Funding – FY10



STP Funding Sources				
Agency	Program	Group	Amount (\$K)	Status
NOAA	Climate Database Modernization Program (CDMP)	EOG	75	Received
USAF	National Air & Space Information Center (NASIC)	EOG	100	Received
NOAA	Coral Reefs	EOG	45	Received
World Bank	World Bank (Incrementally Billed)	EOG	92	Invoiced
JAPAN	Ministry of Agriculture, Forestry and Fisheries (MAFF)	EOG	22	Received
KOREA	National Fisheries Research and Development Institute (NFRDI)	EOG	8	Received
CIA	Central Intelligence Agency	EOG	100	Invoiced
NOAA	Comprehensive Large Array-data Stewardship System (CLASS)	SEG	451	Received
NOAA	NPOESS SEM-N Algorithm Development	SEG	266	Received
NOAA	NPOESS Advisory	SEG	80	Received
NOAA	NOAA Virtual Data System (NVDS)	SEG	90	Received
NOAA	Geosynchronous Operational Environmental Satellite (GOES-R) - Risk Reduction	SEG	120	Received
NOAA	Climate Database Modernization Program (CDMP)	SEG	24	Received
NOAA	Continuously Operating Reference Stations (CORS) West Operations	EGG	286	Received
NOAA	Climate Database Modernization Program (CDMP)	EGG	6	Received
			1,765	
Status Key:			As of:	09-Aug-10
Received	Monies have been received in-house			
Confirmed	Funding agency has identified funds			
Planned	Identified funding amounts either proposed or planned			
Invoiced	Invoice sent or in process			

Does not include: Forward-funded obligations for SEM-N (~\$2M)
Direct CIRES support to Terry Bullett (~\$800K)



STP Division Overview

Agreements – Status



STATUS

Scope	Team	Type	Partner	NOAA Legal	DOC Legal	NGDC Signed	Partner Signed	Start	End	Status	
CORS Support	EGG	AGR	NGS	n/a	n/a	X	X	01-Oct-03	30-Sep-09	G	In place - nothing to report
SWx Climatology	SEG	MOU	AFCCC	X	X	X	X	27-May-04	01-Oct-14	G	In place - no FY10 activity
GPS Data (CORS)	EGG	MOA	Multi	n/a	n/a	X	X	20-Sep-04	30-Sep-10	G	In place - new MOA in process
NASIC	EOG	MOU	NASIC	X	X	X	X	09-Mar-06	01-Jan-11	G	In place - new MOU in process
NASIC	EOG	MOU	NASIC					TBD	TBD	G	New MOA in process
Ionospheric Data	SEG	MOU	AFWA	X	X	X	X	21-Aug-06	21-Aug-11	G	In place - no FY10 activity
DMSP Archive	SEG	MOA	DMSP	X	X	X	X	30-May-07	30-Sep-09	Y	Expired - Renewal on hold
ViRBO	SEG	MOA	NASA	X	X	X	X	15-Apr-09	n/a	G	In place - no FY10 activity
Ionosonde Sites	SEG	IA	USGS	X	X	X	X	03-Apr-09	03-Apr-14	G	In place - nothing to report
SEM-N - AFRL	SEG	MOA	AFRL	X	X	X	X	11-May-09	11-May-14	G	In place - nothing to report
Nighttime Lights	EOG	MOU	DOE	X	X	X	X	12-Aug-09	12-Aug-13	G	In place - nothing to report
Gas Flaring	EOG	SA	WBank	X	X	X	X	4/6/2010	31-Dec-14	G	In place - nothing to report
SEM-N Algorithms	SEG	MOU	SMC					TBD	TBD	G	New MOA - initial draft at Legal

As of: 08 Aug 10



STP Division Overview

CDMP – Status



STATUS

Dataset	Funded in FY09	Funder in FY10	POC	Contractor (\$K) - FY10	Contractor (\$K) - Expended YTD	NGDC - FY10 (\$K)
DMSP Film Scanning (L3)	√	√	Elvidge	425.0	389.3	42.5
Historical Ionosonde Records (L7)	√	√	Redmon	90.0	18.4	9.0
Historical Solar Observations (L18)	√	√	Horan	30.0	28.5	3.0
Cosmic rays - Forbush archives (L42)	√	√	Denig	80.0	87.2	8.0
Heat Capacity Mapping Mission (L44)	√	√	Elvidge	50.0	0.2	5.0
NGS Multi-Lens (L50)	√	√	Elvidge	275.0	1.0	27.5
Ionosonde Paper Record Project (L55)	–	√	Redmon	40.0	0.0	4.0
Geomagnetic Variation Digitization (L56)	–	√	Mabie	60.0	0.0	6.0
						As of: 31 May 2010

Note: T. Ross has added \$25K to L-18 and \$125K to L-42 (14 Jun 2010)



STP Division Overview

Request to Archive: NSO

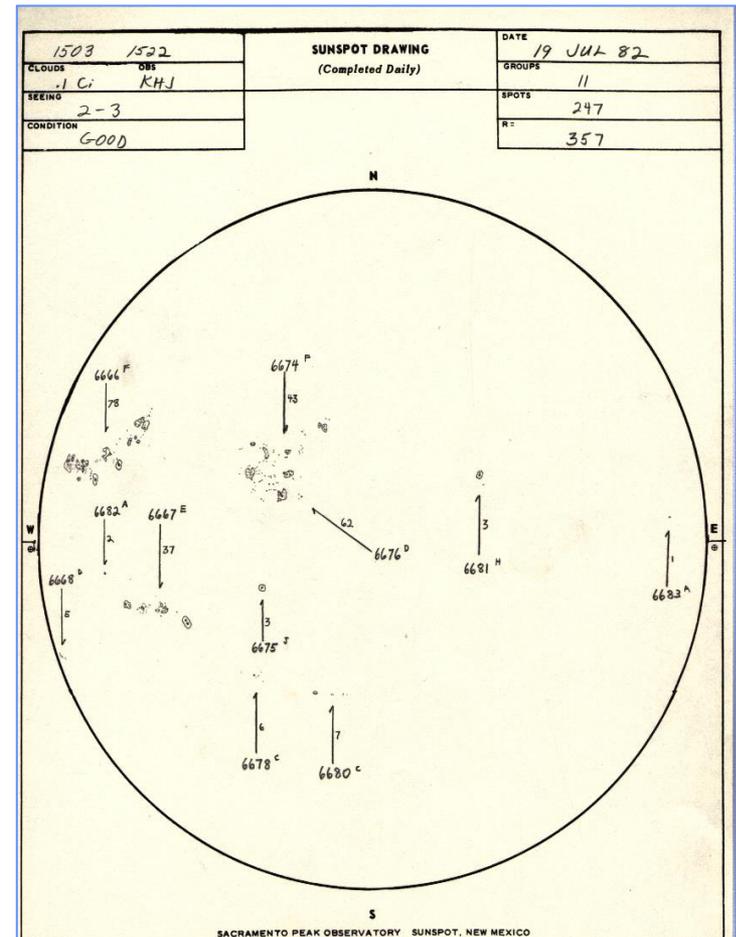


The National Solar Observatory (NSO) has requested that daily solar sunspot drawings from the Sacramento Peak (Sac Peak) Solar Observatory currently available only as hardcopy be digitized, archived and made publicly available through the STP website. *NSO is funded by the NSF's Division of Astronomical Sciences.*

The dataset under consideration is a set of daily sunspot drawings produced at the Sac Peak Solar Observatory (Sunspot, NM) from 1949 to May 2004. Each daily drawing provides the locations and associated information on sunspots and sunspot groups.

STP data holdings include a variety of solar observations and drawings that nicely complement the NSO sunspot drawings.

Sunspot Drawings:	Observatory Location	Time Span
Haynald Observatory	Kalocsa, Hungary	1880 to 1990
Charles Anthony Schott (?)	Unknown – U.S.A.	1859 to 1860
Boulder Solar Observatory	Boulder, Colorado, U.S.A.	1966 to 1992
USAF SOON	Global Network – SEON	1979 to Present
Sac Peak/USAF ISOON	Sunspot, New Mexico, U.S.A.	2003 to Present
Full Solar Drawings (Composites):		
Boulder – SEC/SWPC	Boulder, Colorado, U.S.A.	1972 to Present
Fraunhofer Institute	Capri, Italy	1956 to 1973
Wendelstein Observatory	Bayrischzell, Germany	1947 to 1987
Northwest Observatory	Spokane, Washington, U.S.A.	1958 to 1970





STP Division Overview

GOES Spacecraft/Instrument Status



Spacecraft	Series	Operational Status	Status	Magnet1	Magnet2	Magnetometer 1	Magnetometer 2	MAG	XRS	XRS-EUV	EXIS	EPS	HEPAD	SEISS	XRP	SXI	SUVI
GOES 8	GOES I-M	Decommissioned	Red	Green	Green				Green			Green	Green		Green		
GOES 9	GOES I-M	Decommissioned	Red	Green	Green				Green			Green	Green		Green		
GOES 10	GOES I-M	Decommissioned	Red	Green	Green				Green			Yellow	Green		Green		
GOES 11	GOES I-M	Operational West	Green	Green	Green				Red			Green	Green		Red		
GOES 12	GOES I-M	South America	Green	Green	Green				Red			Yellow	Green		Red	Red	
GOES 13	GOES N-O-P	Operational East	Green			Green	Green			Orange		Green	Green			Orange	
GOES 14	GOES N-O-P	Standby	Green			Green	Green			Green		Green	Green			Green	
GOES 15	GOES N-O-P	PLT	TBD			TBD	TBD			TBD		TBD	TBD			TBD	
GOES R	GOES R	Acquisition						TBD			TBD			TBD			TBD
GOES S	GOES R	Acquisition						TBD			TBD			TBD			TBD

As of: 07 Aug 10

Operational (or capable of)	Green
Operational with limitations (or Standby)	Yellow
Operational with Degraded Performance	Orange
Not Operational	Red
Status Unknown	TBD

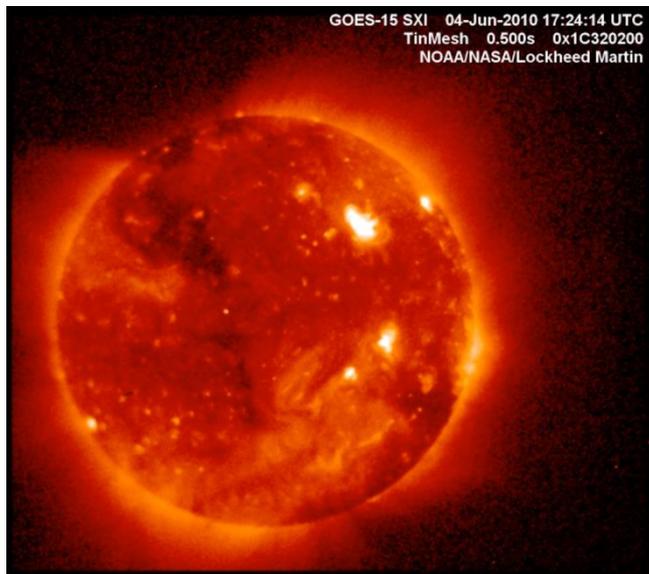


Note: GOES-14 XRS-EUV is currently used for SWPC Operations



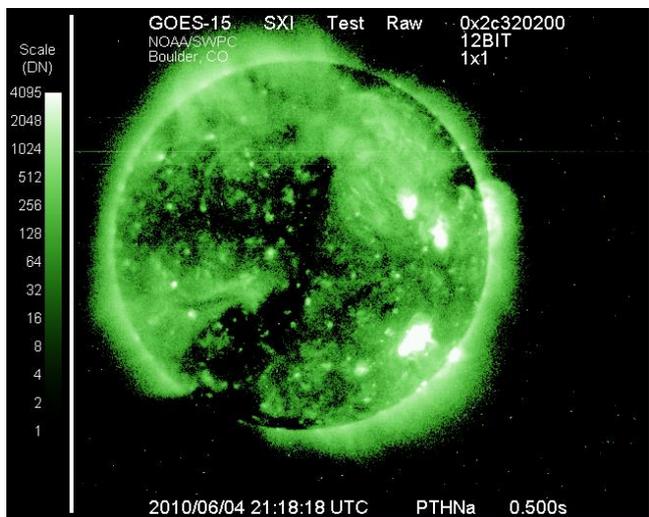
Special Interest Item

GOES-15 SXI Returns to Life



GOES-15 Solar X-Ray Imager's Miraculous First Light

The GOES-15 Solar X-Ray Imager (SXI) has returned to full functionality following a “last ditch” effort to revive the sensor which failed during initial turn-on. The SXI instrument was designed and built by Lockheed Martin Space Systems Company’s Advanced Technology Center (ATC), Palo Alto, CA. The GOES-15 (P) spacecraft was successfully launched on 04 March 2010 and is currently undergoing Post-Launch Tests (PLT) after which it will be placed in on-orbit storage.





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Solar & Terrestrial Physics Division



STP Program Overview



Milestones & Performance Measures

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Milestones & Performance Measures

FY10 Milestones



PPBES Program	STP FY10 Milestones (Proposed)	Status	Planned Completion Date	Actual Completion Date	Responsible Person
Space Weather	Provide archive and access for the Space Weather Prediction Center (SWPC) operational D-Region Absorption Prediction (D-RAP) product	C	(Q1) 12/31/2009	(Q1) 12/8/2009	Prendergast
Space Weather	Conduct an Algorithm Requirements Review (ARR) for the Space Environment Monitor on the National Polar-orbiting Operational Environmental Satellite System (NPOESS).	C	(Q1) 12/31/2009	(Q1) 11/17/2009	Manley
Marine Transportation Systems	Develop a satellite-derived global map of economic activity for 2006 using nighttime earth imagery data from the Defense Meteorological Satellite Program (DMSP).	C	(Q2) 3/31/2010	(Q2) 3/31/2010	Ghosh
AOP → Space Weather	Ingest into the official archives "out of cycle" operational X-Ray Sensor (XRS) data when available for the Geostationary Operational Environmental Satellite number 14 (GOES 14)	C	(Q2) 3/31/2010	(Q2) 3/31/2010	Wilkinson
Geodesy	Reconcile the Global Positioning System (GPS) data holdings between the Continuously Operating Reference Stations (CORS) East and CORS West mirror sites.	Y	(Q3) 6/30/2010	Pending NGS Coordination	Coloma
Marine Transportation Systems	Complete version 4 of the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS) annual stable nighttime lights covering the period 1992 to 2009.	C	(Q3) 6/30/2010	(Q3) 6/5/2010	Elvidge
Space Weather	Develop a workflow client for the Space Physics Interactive Data Resource (SPIDR) to streamline user delivery of NOAA's space environmental data.	C	(Q3) 6/30/2010	(Q3) 6/30/2010	Elespuru
AOP → Space Weather	Develop a comprehensive plan for porting Space Weather Prediction Center (SWPC) data holdings to NGDC including maintaining current Frodo access capabilities.	G	(Q4) 9/30/2010		Prendergast
Space Weather	Develop a public interface to the complete Ionosonde data catalog within the NGDC Official Archives.	G	(Q4) 9/30/2010		Redmon
Space Weather	Develop a prototype system for the NOAA Enterprise Archive Access Tool (NEAAT) for the Comprehensive Large Array-data Stewardship System (CLASS).	G	(Q4) 9/30/2010		Kihn
AOP → Space Weather	Complete the metadata records using available data for the solar and space environmental sensors on the Geostationary Operational Environmental Satellite (GOES) N-O-P spacecraft	G	(Q4) 9/30/2010		Wilkinson

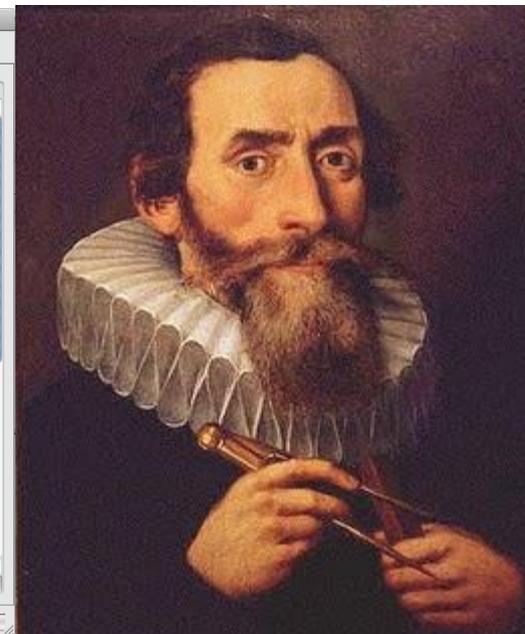
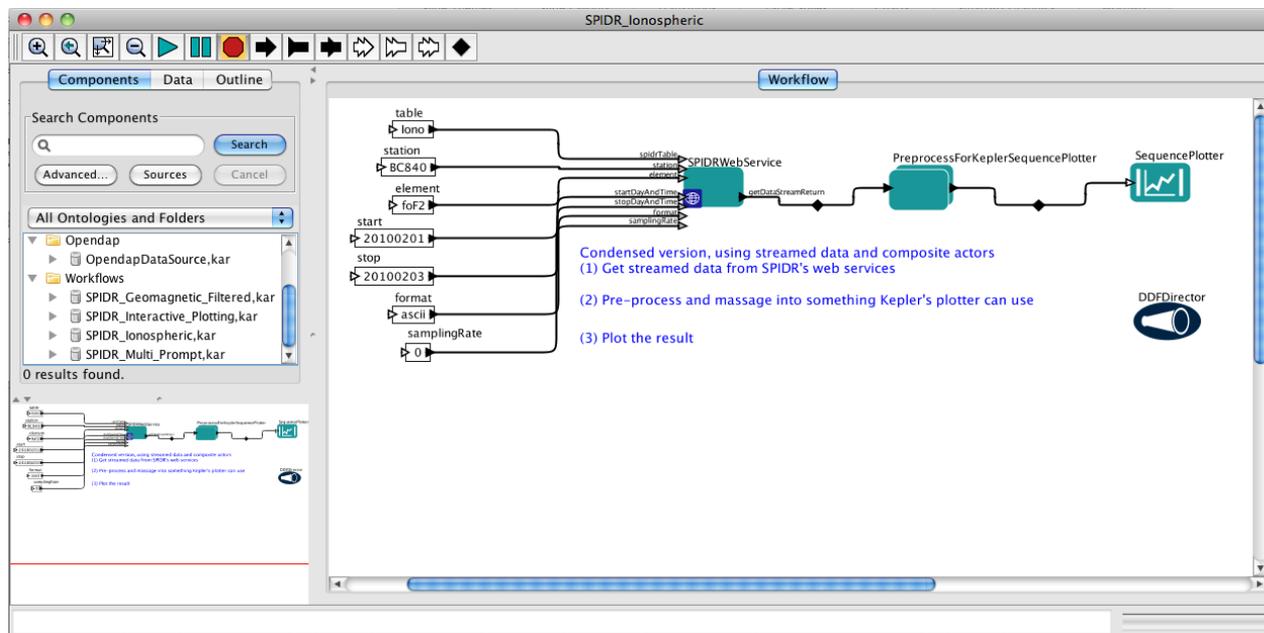
As of 07 Aug 10

AOP → AOP milestone

C Complete
G On-track

Y Watch Item
R Issue

Milestone (Internal) Workflow Client for SPIDR



Milestone: Develop a workflow client for the Space Physics Interactive Data Resource (SPIDR) to streamline user delivery of NOAA's space environmental data.

Background: Commercial Off The Shelf (COTS) software tools (i.e., Kepler) are available to rapidly develop efficient workflow engines for delivering NOAA environmental datasets.

Completion Date:

Planned (FY10-3Q) 30Jun10

Actual (FY10-3Q) 30Jun10

Significance: Kepler workflows developed for SPIDR will significantly enhance data manager productivity through the use of standardized and documented approaches.



Milestone (Internal)

OLS Nighttime Lights – Version 4



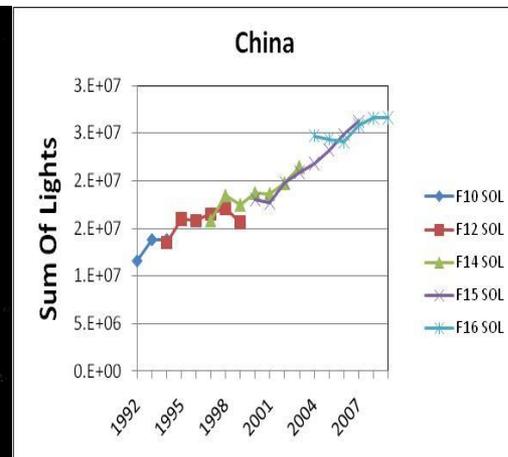
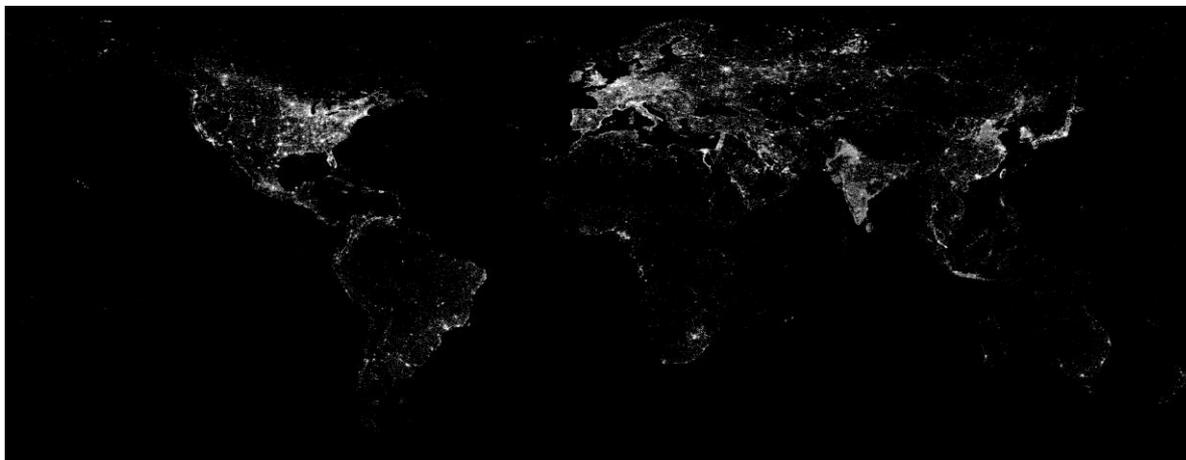
Milestone: Complete version 4 of the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS) annual stable nighttime lights covering the period 1992 to 2009.

Background: Nighttime Lights cloud-free composites are made using all available OLS smooth-resolution data for the respective year (1 per satellite). The products are 30 arc second grids, spanning -180° to 180° longitude and -65° to 75° latitude. 31 annual products, spanning 1992-2009, are available from NGDC.

Completion Date:

Planned:(FY10-3Q) 30Jun10 Actual: (FY10-3Q) 05Jun10

Significance: Data can be used to reveal national trends in lighting & locations of urban expansion. These composites were responsible for an apparent daily download of 64 TB.





Milestone (Internal)

Reconcile GPS Data Holdings



Milestone: Reconcile the Global Positioning System (GPS) data holdings between the Continuously Operating Reference Stations (CORS) East and CORS West

Background: GPS receiver data holdings maintained by CORS-East (NGS) and CORS-West (NGDC) need to be reconciled to meet COOP objectives.

Completion Date:

Planned: (FY10-3Q) 30Jun10

Actual : Pending NGS coordination

Status: CORS-West Project Plan specifies that “achieving these milestones requires collaboration between personnel at CORS-East and CORS-West.” NGDC is awaiting NGS review on the status of their holdings.





Milestones & Performance Measures

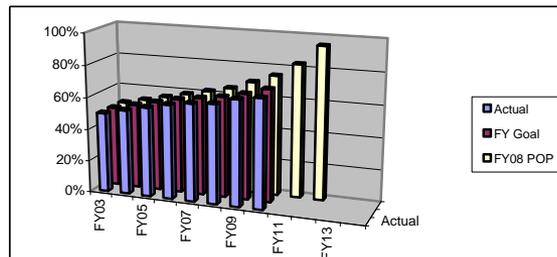
FY10 Performance Measures



Performance Measures

1 - Percentage of archived SWx data available to the public on-line

	Actual	FY Goal	FY08 POP
FY03	50%	50%	50%
FY04	53%	53%	53%
FY05	56%	56%	56%
FY06	59%	59%	59%
FY07	61%	61%	62%
FY08	62%	63%	65%
FY09	66%	66%	70%
FY10	68%	70%	75%
FY11			83%
FY12			95%
FY13			
FY14			

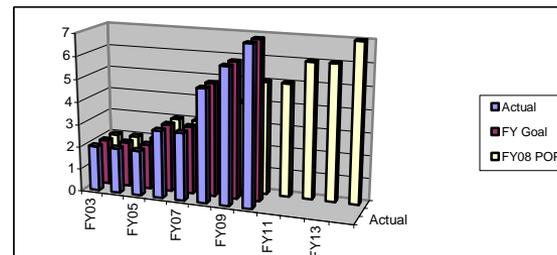


Current Month: June 2010

This Q Planned	Actual This Q/Total	FY10 Target
69%	69%	70%

2 - Improved retrospective products for understanding the space environment

	Actual	FY Goal	FY08 POP
FY03	2	2	2
FY04	2	2	2
FY05	2	2	2
FY06	3	3	3
FY07	3	3	3
FY08	5	5	4
FY09	6	6	4
FY10	7	7	5
FY11			5
FY12			6
FY13			6
FY14			7



Current Month: June 2010

This Q Planned	Actual This Q/Total	FY10 Target
7	7	7

As of: 29 June 10

The FY2008 Program Baseline Assessment (FY08 PBA) was released 08 June 2005.



OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

Milestones & Performance Measures



Awards & Personal Achievements

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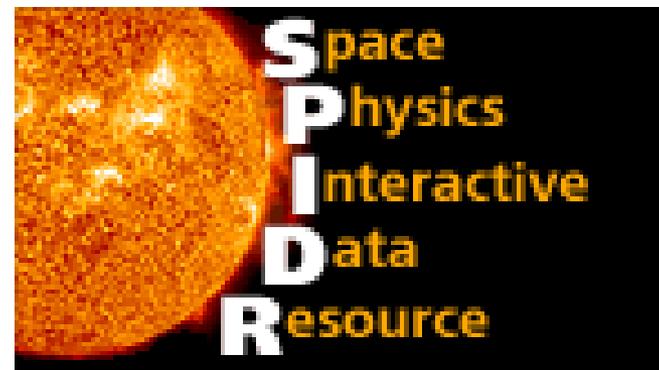
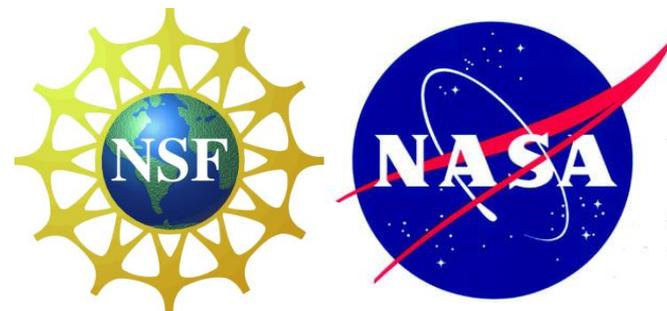
Awards & Personal Achievements

Customer Service Award: SPIDR Team



SPIDR Team – Customer Service Award

Peter Elespuru, Rob Redmon, & Misha Zhizhin won the 2010 NGDC Customer Service Award for the new SPIDR ReST web service, implementing cutting edge virtual observatory technologies that facilitate machine-to-machine access to NOAA's environmental data using single-line programming interfaces. This feature has won kudos and envy from NSF, NASA, universities and other customers of NGDC.





Awards & Personal Achievements

Dr. Eric Kihn – Deputy Director, NGDC



Congratulations

Eric Kihn has been selected to become the NGDC Deputy Director. STP congratulates Eric on this fine achievement and wish him the best of luck in his new position.

Eric was previously selected for the NOAA LCDP and just recently returned to STP from a 2-month rotational assignment to the NOAA Technology, Planning and Integration Office.

Way to go Eric!!



NOAA Leadership Competencies Development Program (LCDP)

Developing NOAA's Future Leaders



OUTLINE

Solar & Terrestrial Physics Division



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Accomplishment

CORS-West COOP (Real World Event)



At approximately 04:30 MST on 18 Jun, NGS Silver Spring unexpectedly went down due to a hardware failure in their Local Area Network. NGS was subsequently returned to normal operations several hours later at about 7:20. During the NGS down time Boulder provided uninterrupted CORS service for users including CORS Near Real-Time products for SWPC's US-TEC and GSD's GPS-Met.

CORS
National Geodetic Survey

NGS Home | About NGS | Data & Imagery | Tools | Surveys | Science & Education | Search

Help

Zoom to CORS:
SiteID: Go

Cursor Lat/Lon:
56.94497, -58.88672

Three Nearest Sites:
YR1 418.72 km
YFB1 919.09 km
YQX1 934.39 km

Enter a location Go

Place X

Sampling Rate (clickable legend icons):
 1 sec (blue pin) 5 sec (green pin) 10 sec (yellow pin) 15 sec (orange pin) 30 sec (red pin) All Active (grey pin) Decom (black pin)

Non-Operational (grey pin) 250 km radius (blue circle)

Map | Satellite | Hybrid | Terrain

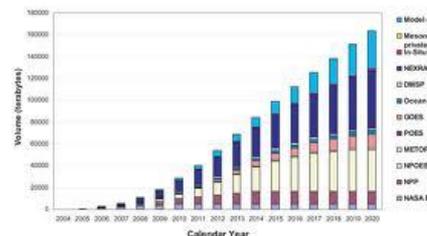
Map showing CORS sites across North America. A blue circle highlights a specific site in the Pacific Northwest region.

Website Owner: National Geodetic Survey / Last modified by NGS.webmaster May 06 2010

NGS Home | NGS Employees | Privacy Policy | Disclaimer | USA.gov | Ready.gov | Site Map | Contact Webmaster

Related News:

Fran Coloma is continuing to work with the CLASS team to plan for the ingest of CORS data. ISD has made available a virtual machine as the NGDC CLASS ingest system. Peter Elespru is developing the generic technologies needed to ingest CORS and other NGDC datasets into CLASS.





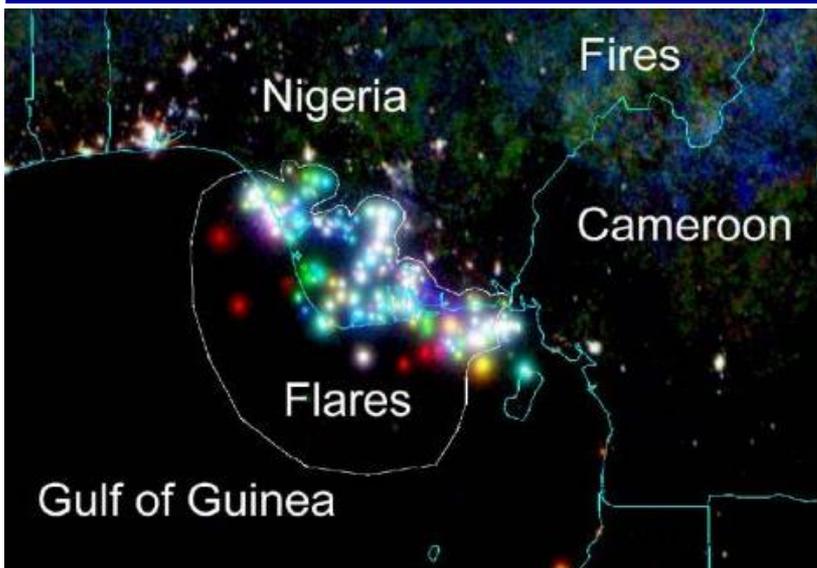
Accomplishment

VIIRS Fire Detection Algorithm



Dr Chris Elvidge briefed the Visible Infrared Imaging Radiometer Suite (VIIRS) Operational Algorithm Team (VOAT) on the benefits of extending the current fire detection algorithm to offshore monitoring of global gas flares. Approximately 25% of the total 140 BCM of flared natural gas occurs offshore. The VOAT concurred with Dr. Elvidge's request and is preparing to submit the appropriate change request within the NPOESS Preparatory Program.

This effort supports the **World Bank's Global Gas Flaring Reduction Initiative.**



BCM = Billion Cubic Meters

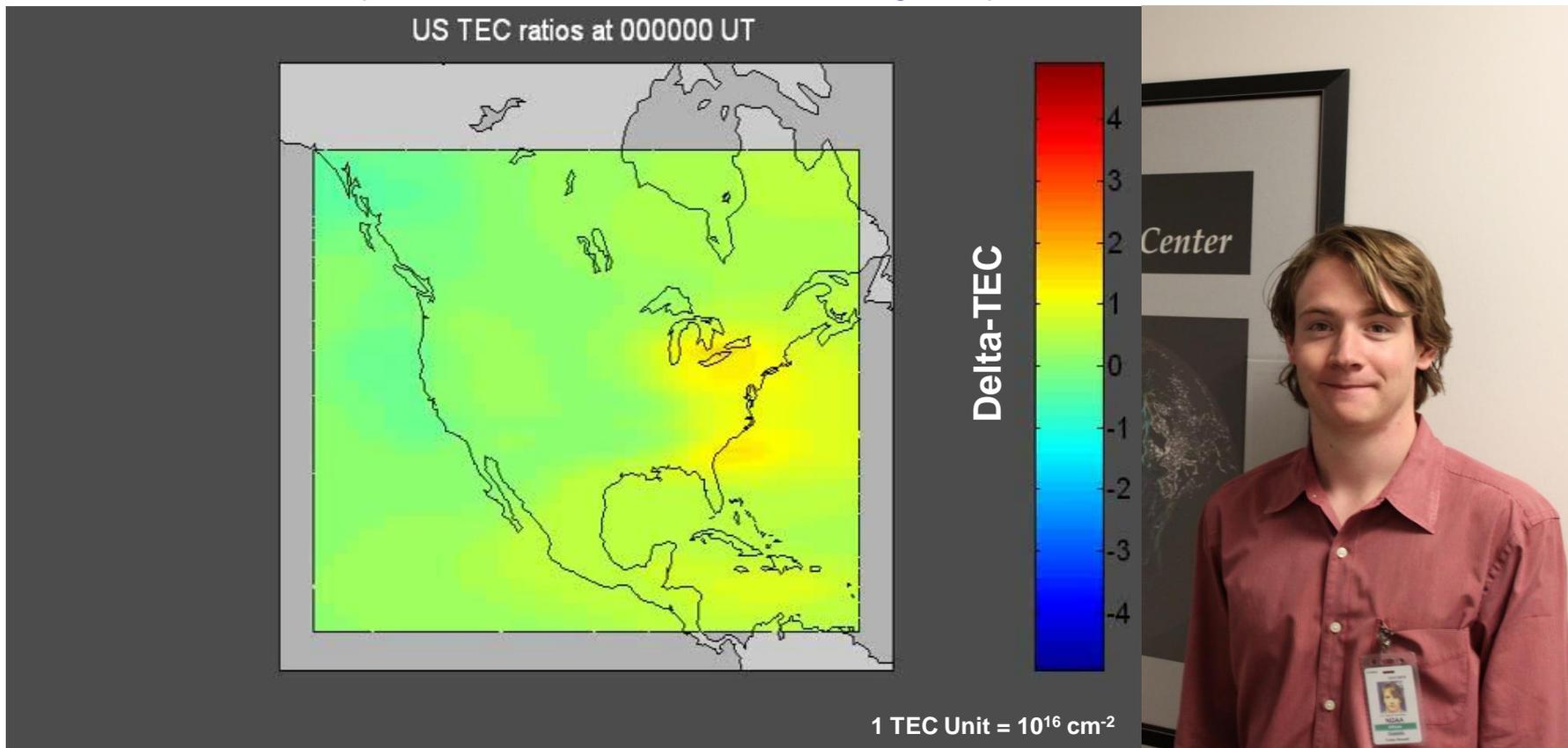


Accomplishment

Running US-TEC on Demand



Dominic Fuller-Rowell (student) has ported the US-Total Electron Content (US-TEC) model to local machines (his) with the eventual goal of running this application on demand through the US-TEC website. The below animation, prepared by Dominic, is a ratio comparison in TEC of the first 10 days of October 1996 to the average day for that month.



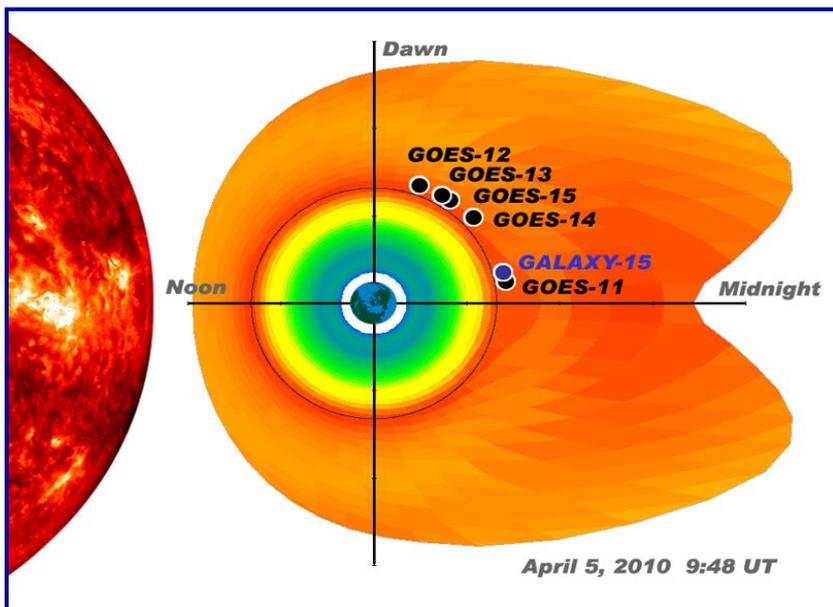
Accomplishment

Galaxy 15 – Environmental Assessment

STP co-chaired the environmental assessment Tiger Team for the Galaxy 15 failure.

Timeline: (Published Reports – non-NOAA)

- 08 Apr 2010 – Intelsat reports that the Galaxy 15 stopped responding to ground commands (Anomaly time: 05 April @ 09:48 UTC)
- 10 Apr 2010 – FAA predicts erosion of WAAS capability due to Galaxy 15 failure
- 20 Apr 2010 – Orbital attributes the loss of Galaxy 15 to space weather



SPACE NEWS 29th Annual International Space Dev Chicago May 27 - 31 2010 National Space Society

Home Launch Contracts Civil Military **Satellite Telecom** Earth Observation Venture Space Policy

Advertisement: CASBAA Singapore Satellite Industry Forum 2010 14 June 2010

04/20/10 02:05 PM ET

Orbital Blames Galaxy 15 Failure on Solar Storm

By Peter B. de Selging

PARIS — The in-orbit failure of the Orbital Sciences-built Intelsat Galaxy 15 telecommunications satellite April 5 was likely caused by unusually violent solar activity that week that damaged the spacecraft's ability to communicate with ground controllers, Orbital officials said April 20.

Similar events have occurred, if less severely, on other Orbital spacecraft

Galaxy 15 satellite. Credit: Orbital Sciences' photo

Analysis: (NOAA report dated 01 June 2010)

At the time of the Galaxy 15 anomaly, this GEO COMM satellite was well positioned among the GOES 11-15 spacecraft each of which includes a Space Environment Monitor package. The NOAA Tiger Team found that that the space weather conditions at the time of the anomaly were consistent with increased risk factors for spacecraft surface charging and internal charging in the local geospace due to large fluxes of energetic electrons.



Accomplishment A Solar Tsunami? (1 of 2)



Solar Tsunami to Strike Earth!

Published August 03, 2010

FoxNews.com

MailOnline Science & Tech

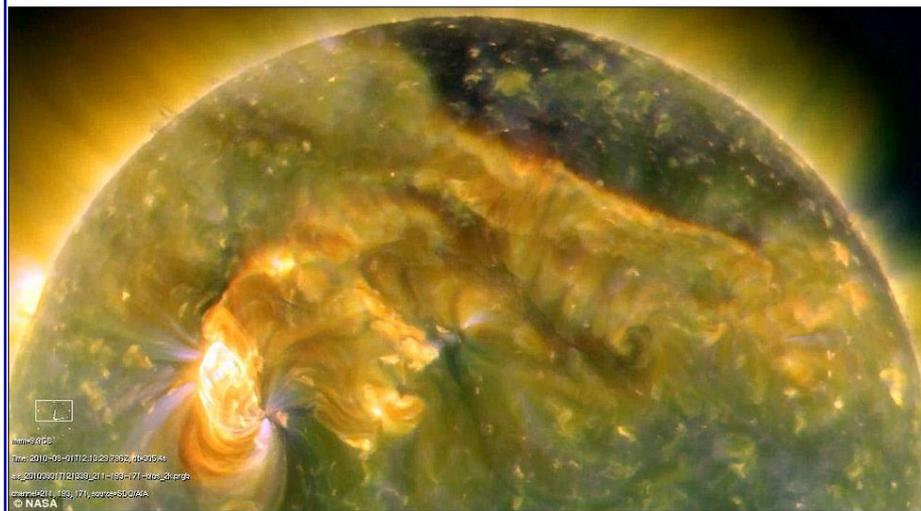
Home News Sport U.S. Showbiz Femail Health **Science&Tech** Money Debate Coffee Break Property Motoring Travel

First picture of the Sun erupting in 'solar tsunami' which sparked incredible Northern Lights displays

By DAILY MAIL REPORTER
Last updated at 2:40 PM on 6th August 2010

[Comments \(0\)](#) [Add to My Stories](#)

Erupting in dazzling whorls of fire, this is the spectacular first image of the sun in the middle of a solar storm. An ultraviolet camera was able to capture the intergalactic display - which sparked incredible skies around the world this week - in all its glory. The solar 'tsunami', which sent waves of supercharged gas hurtling 93million miles towards the Earth, prompted mesmerising displays of the Northern Lights.



MTV Movies Blog



Solar Tsunami Heads To Earth, Heralding The Arrival Of Aliens, Terminators And Super Powers!

Posted 8/4/10 11:23 am ET by Josh Wigler in Commentary, Humor



SEARCH POSTS

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Birthday Bash
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Box Office Poll

Telegraph.co.uk

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UK World Politics Celebrities Obituaries Weird Earth **Science** Health News Educat
Science News Space Roger Highfield Dinosaurs Evolution Steve Jones Science Pic

HOME > SCIENCE > SPACE

Nasa scientists braced for 'solar tsunami' to hit earth

The earth could be hit by a wave of violent space weather as early as Tuesday after a massive explosion on the sun, scientists have warned.

By Andrew Hough
Published: 9:00PM BST 02 Aug 2010

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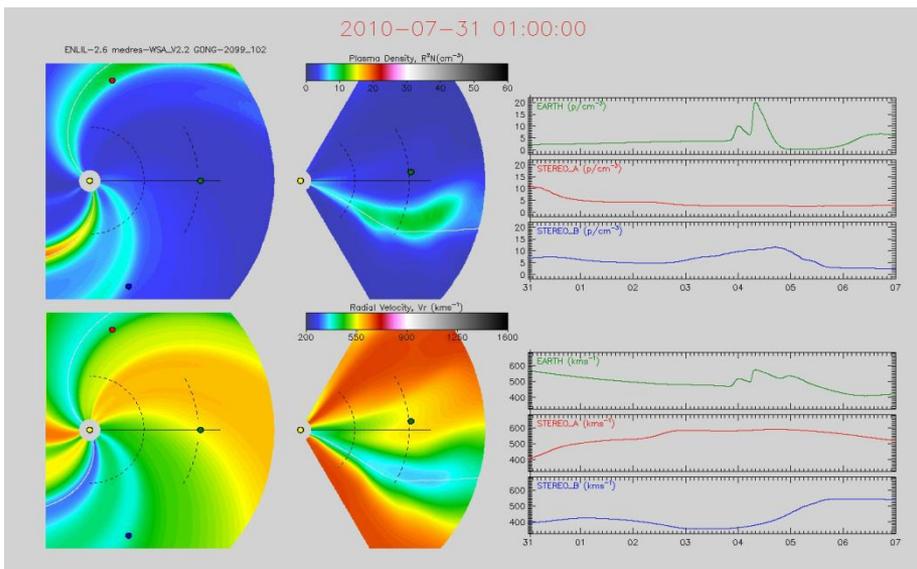
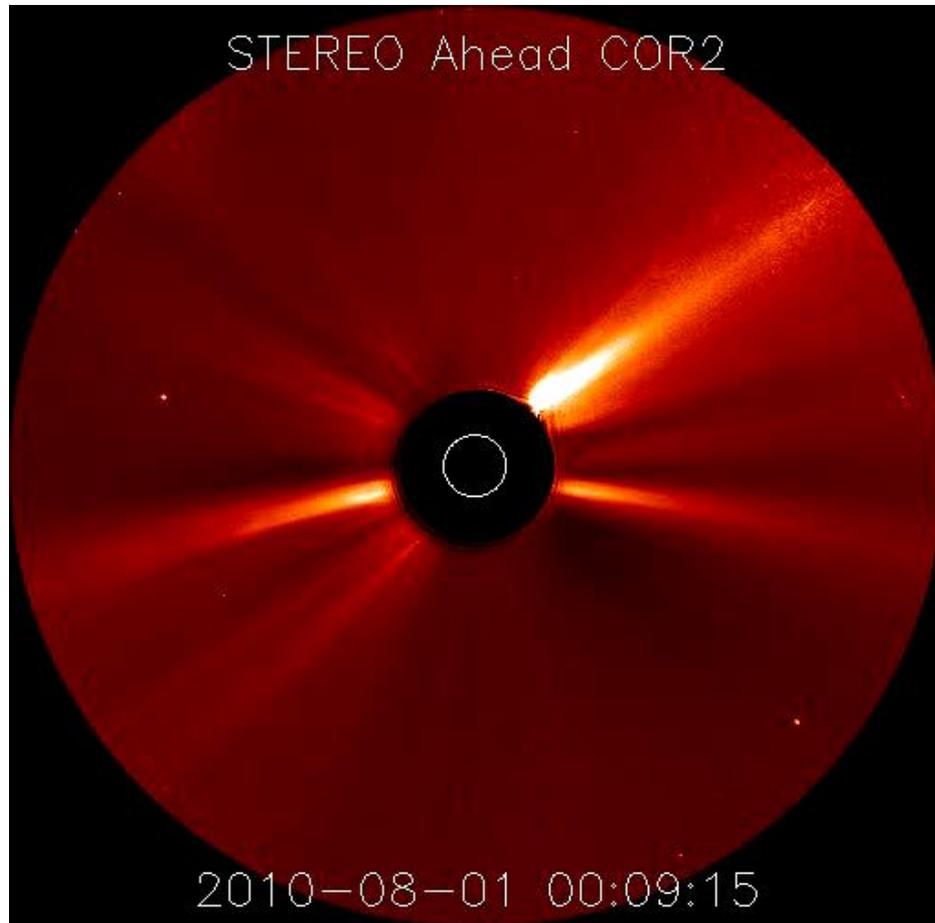
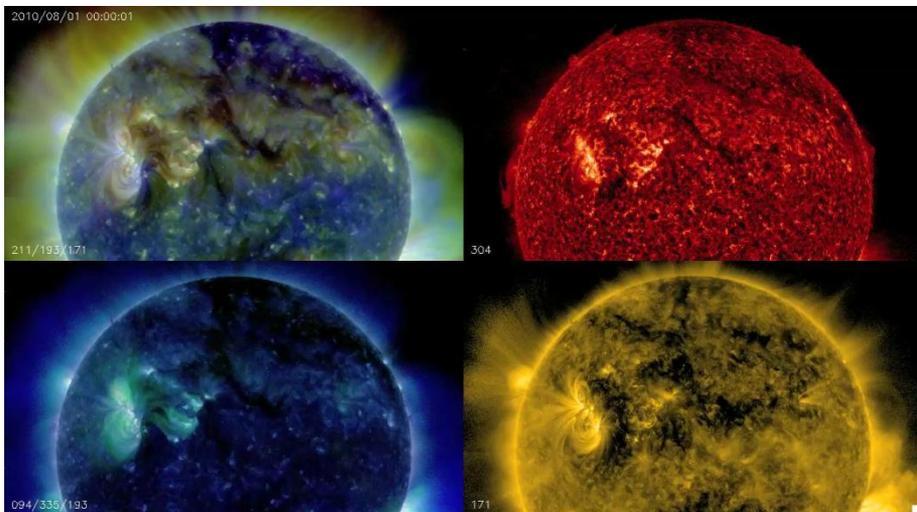
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Accomplishment

A Solar Tsunami? (2 of 2)



SWPC: Moderate Solar Weather Storm August 3

A moderate space weather storm began August 3 at about 12:41pm EDT, reaching the G2 level on the geomagnetic storm scale which measures storms on a scale from G1 (minor) to G5 (extreme). No significant customer impacts have been reported, though aurora sightings were reported from Michigan, Wisconsin, and Minnesota. Elevated activity is forecast to continue through Friday as additional solar storms impact the Earth.



OUTLINE

Solar & Terrestrial Physics Division



STP Program Overview

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Special Interest Items

Issues & Summary



Special Interest Item

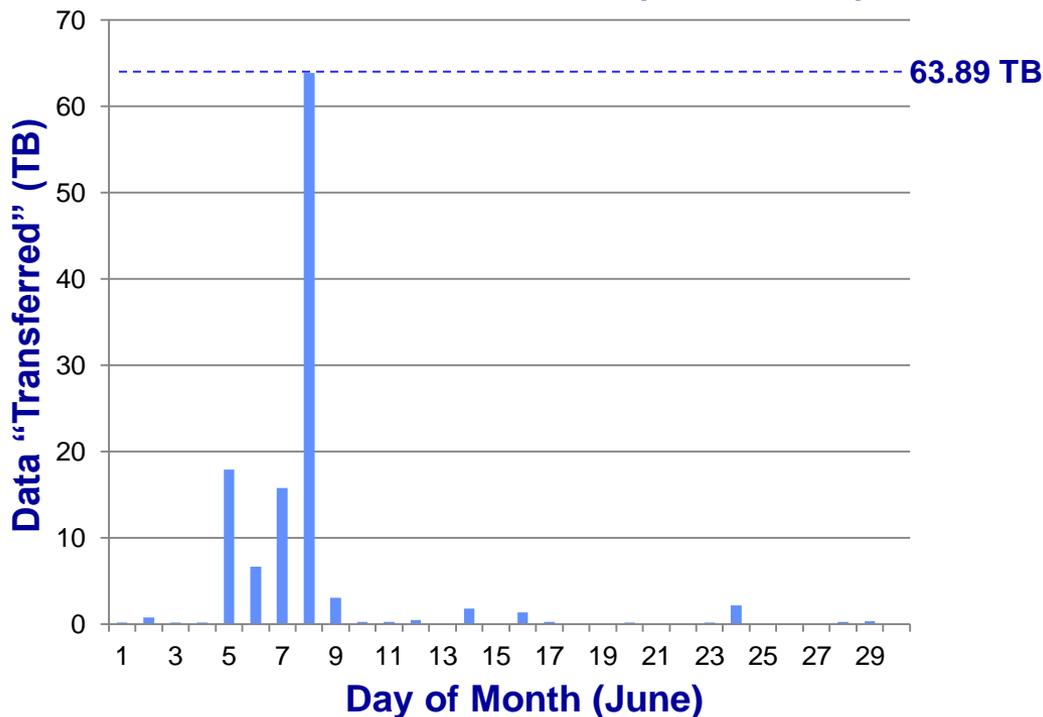
Now, That's A Lot of Data



Incident: Between 05-to-09 June 2010 NGDC experienced a tremendous increase in the reported amount of data transferred. The apparent increase was entirely due to numerous requested downloads of the Nighttime Lights Version 4 Composite (3QFY10 milestone) tar files. 64 TB were requested on the peak day of 08 June having an equivalent data rate of 4.77 GB/s. Rich Fozzard found that the large number of requests were from 4 IPs in China doing “range requests” and that the actual amount of data transferred was far less than indicated in the web server statistics. *Something of which to be aware.*



Web Server Statistics (June 2010)





Special Interest Item

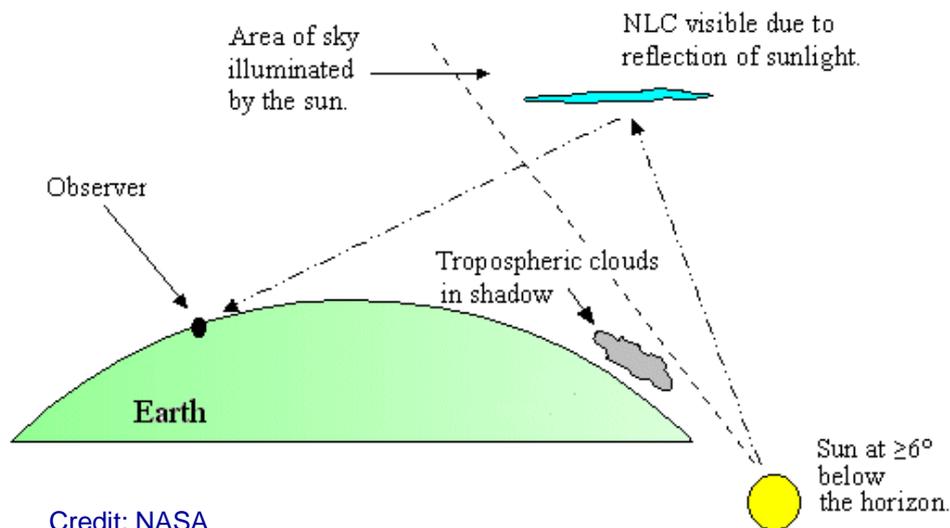
Noculescent Clouds



Credit: Pekka Parviainen

NGDC paper archives include a number of reports and original paper records of noculescent cloud (NLC) observations from the late 1970's and early 1980's. Drs. Matt Deland (SSAI), Gary Thomas (LASP) and John Olivero (Embry-Riddle) met with center personnel to review a subset of the full record and to consider the status and value of the NGDC NLC dataset. Initial discussions indicated moderate interest in the NGDC data and reports. Dr Thomas has reviewed the NGDC collection and identified numerous reports of interest.

NLCs are high-altitude wispy-like clouds formed from ice crystals within the mesosphere at ~80 km. Sometimes referred to as polar mesospheric clouds, NLCs are observed on the horizon at mid latitudes around dusk when solar illuminated from below. No observations of NLCs exist prior to 1885 – NLCs are considered harbingers of climate change resulting from the presence of increased atmospheric methane.

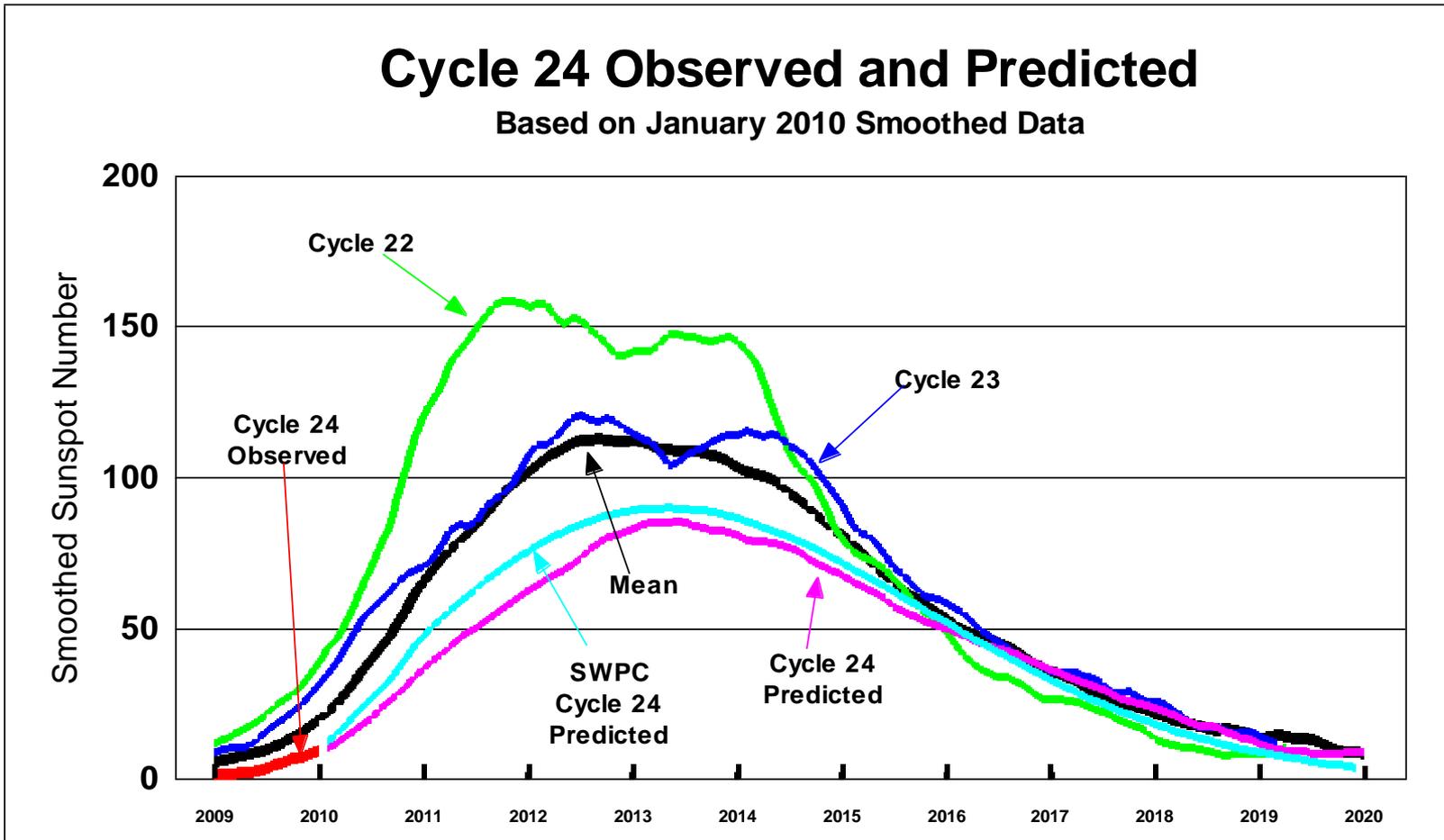


Credit: NASA



Special Interest Item

Sunspot Predictions – NGDC & SWPC



NGDC & SWPC each independently produce a sunspot prediction

NGDC predictions are based on the McNish-Lincoln Technique
SWPC uses the consensus of the Solar Cycle 24 Prediction Panel



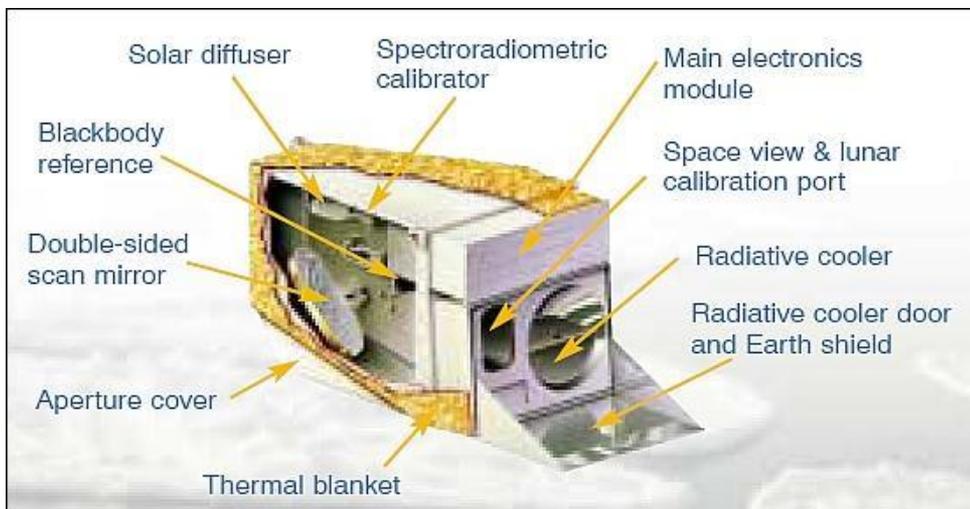
Special Interest Item

MODIS Fire Detection



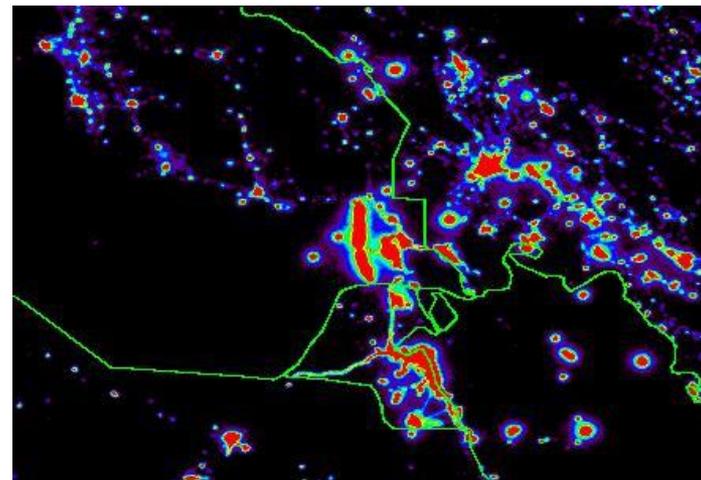
20 TB of data from the Moderate Resolution Imaging Spectroradiometer (MODIS) is being used to improve the identification & characterization of gas flares seen in DMSP Operational Linescan System (OLS) imagery.

MODIS (1 km) has better spatial resolution than OLS (5 km) and provides year-round data versus OLS' seasonal coverage. MODIS does not, however, process data over water where many OLS gas flares are detected. On the other hand, the MODIS data are not saturated by bright flare sources albeit at the expense of detecting smaller flares that can be seen in OLS observations.



MODIS Sensor

F16 2009 Avg Lights Product



MODIS 2009 Fire Radiative Power (AQUA)



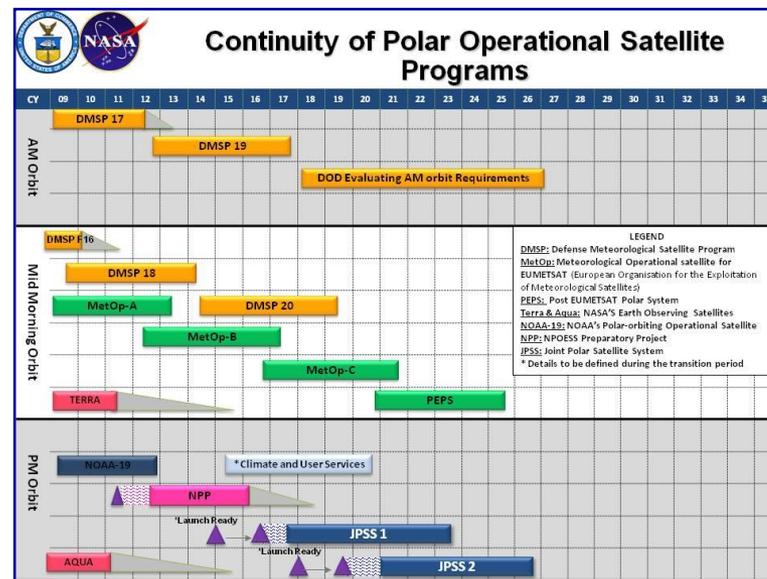
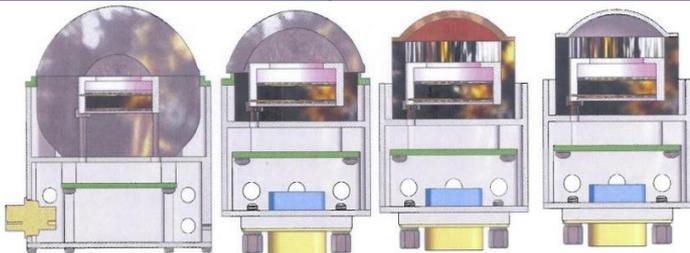


Special Interest Item

Space Environment Monitor for NPOESS



1. An algorithm Preliminary Design Review (PDR) for the SEM-N is scheduled for 18-19 August at NGDC. The PDR assesses program readiness to proceed towards final design. Elements of the PDR include presentations and documentation on the initial algorithm theoretical basis for each assigned NPOESS Environmental Data Record (EDR) plus the overall software architecture for the research-grade algorithms.
2. In the aftermath of the NPOESS cancellation STP has been supporting the development of the Level 1 Requirements Document (L1RD) for the NOAA Joint Polar Satellite System (JPSS) and participated in planning meetings for the USAF Defense Weather Satellite System (DWSS). The SEM-N is now included in the DWSS but SEM-N is not manifested for JPSS-1 – SEM-N remains an objective for JPSS-2. After FY10, the SEM-N program (H/W and S/W) will transition to the USAF Space and Missiles Systems Center, Los Angeles, CA.





Special Interest Item

Subcommittee on Disaster Reduction



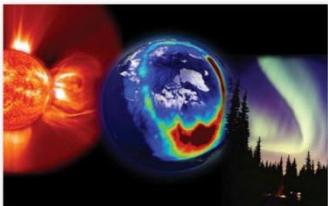
The *Grand Challenges for Disaster Reduction* is a ten-year strategy crafted by the National Science and Technology Council's Subcommittee on Disaster Reduction (SDR). It sets forth six Grand Challenges that, when addressed, will enhance community resilience to disasters and thus create a more disaster-resilient Nation. These Grand Challenges require sustained Federal investment as well as collaborations with state and local governments, professional societies and trade associations, the private sector, academia, and the international community to successfully transfer disaster reduction science and technology into common use.

To meet these Challenges, the SDR has identified priority science and technology interagency implementation actions by hazard that build upon ongoing efforts. Addressing these implementation actions will improve America's capacity to prevent and recover from disasters, thus fulfilling our Nation's commitment to reducing the impacts of all hazards and enhancing the safety and economic well-being of every individual and community. This is the space weather-specific implementation plan. See also sdr.gov for other hazard-specific implementation plans.

What is at Stake?

DEFINITION AND BACKGROUND. Space weather refers to dynamic conditions on the Sun and in the space environment that can influence the performance and reliability of space-borne and ground-based technological systems, and can endanger human life or health of astronaut crews outside the magnetosphere, as well as aviation flight crews and passengers on trans-polar flights. Adverse conditions in the space environment can cause disruption of satellite operations, communications, navigation, and electric power distribution grids, leading to severe socio-economic losses. The growing importance of space to security and economic well-being requires that the United States Government develop and maintain capabilities to mitigate the deleterious effects of severe space weather.

Space weather forecasts are issued by the NOAA Space Weather Prediction Center (SWPC) and the Air Force Weather Agency (AFWA) Space Weather Flight (SWF) based on data from ground and satellite monitoring systems operated by DOD, NASA (through missions involving research spacecraft), NOAA, USGS and other partners. Space weather specification and forecast services are based on four strategic elements: observations, data access and display, predictions and product dissemination. All of these activities in turn are supported by research and technology advancements communicated through a comprehensive education program which facilitates the transfer of knowledge to operations. The Office of the Federal Coordinator for Meteorology (OFCM) works with the Office of Science and Technology Policy (OSTP), the Office of Management and Budget (OMB), and other U.S. Government departments and agencies to advance the interagency National Space Weather Program (NSWP). Established in 1995, the program provides coordination and oversight in support of space environmental forecasting, research, data acquisition, model development, technology transition, operations, education, and public outreach.



SPACE WEATHER

A report of the Subcommittee on Disaster Reduction www.sdr.gov

An element of the National Science and Technology Council



subcommittee on disaster reduction



The President's Subcommittee on Disaster Reduction has identified Space Weather as a considered risk to the Nation – *"The growing importance of space to security and economic well-being requires that the USG develop and maintain capabilities to mitigate the deleterious effects of severe space weather."*

Grand challenges for Disaster Reduction:

- Provide hazard and disaster information where and when it is needed
- Understand the natural processes that produce hazards
- Develop hazard mitigation strategies and technologies
- Reduce the vulnerability of infrastructure
- Promote risk-wise behavior

This action was coordinated through the Office of the Federal Coordinator for Meteorology's *Committee for Space Weather.*

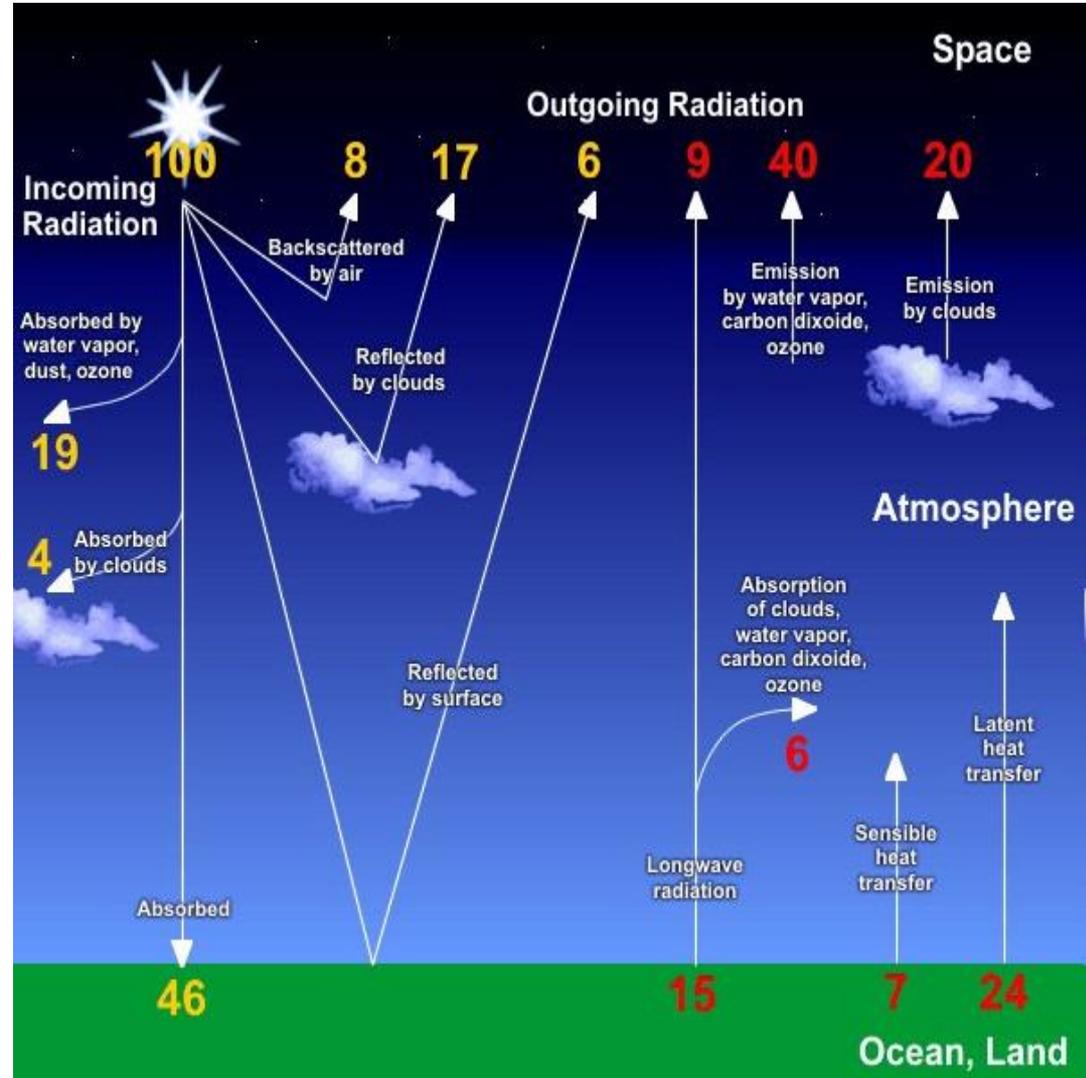


Special Interest Item

Assisting High School Science



Bill Denig was asked to provide some expert guidance in verifying the partitioning of solar energy inputs to the earth. Information is being used for the high school textbook, *Global Science*, written by Mr John Christensen for the Global Science Curriculum Project





OUTLINE

Solar & Terrestrial Physics Division



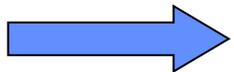
STP Program Overview

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Issues & Summary



Issues & Summary

Meetings – 3QFY10



Supported Meetings (3QFY10):

- NASA Jet Propulsion Laboratory, 01 Apr 2010, Los Angeles, CA (*W. Denig*) – Technical Meeting
- National Space Symposium (NSS) – 11-14 Apr 2010, Colorado Springs, CO (*E. Erwin/Outreach*)
- American Society for Photogrammetry and Remote Sensing (ASPRS) – 26-30 Apr 2010, San Diego, CA (*C. Elvidge*)
- Space Weather Workshop (SWW) – 27-30 Apr 2010, Boulder, CO (*Multiple*)
- VIIRS Operational Algorithm Team – 04 May 2010, Madison, WI (*C. Elvidge*)
- Communications/Navigation Outage Forecast System (C/NOFS) Science Workshop – 18-20 May 2010, Beaver Creek, CO (*R. Redmon*)
- National Geodetic Survey (NGS) Convocation – 18-19 May 2010, Silver Spring, MD (*F. Coloma*)
- Solar Radiation and Climate Experiment (*SORCE*) Science Meeting – 19-21 May 2010, Keystone, CO (*W. Denig*)
- Government 2.0 Computing Expo – 25-27 May 2010, Washington, D.C. (*P. Elespru*)
- Space Weather Enterprise Forum – 08 Jun 2010, Washington, D.C. (*W. Denig*)
- DMSP Program Review – 10 Jun 2010, Baltimore, MD (*W. Denig*)
- U.S. Egypt Joint Workshop – 14-17 Jun 2010, Cairo, Egypt (*C. Elvidge*)
- Coupling, Energetics, and Dynamics of Atmospheric Regions (CEDAR) Workshop – 20-25 Jun 2010, Boulder, CO (*R. Redmon, W. Denig, P. Alken, T. Bullett*)



Issues & Summary

Meetings – 4QFY10



Upcoming Meetings (4QFY10):

- Air Force Research Laboratory – 22 July 2010, Boston, MA (*C. Elvidge*) – Technical Meeting
- Meeting of the Americas – 08-12 Aug 2010, Foz do Iguaçu, Brazil (*D. Wilkinson, P. Alken*)
- Asia-Pacific Advanced Network (APAN) – 09-13 Aug 2010, Hanoi, Vietnam (*C. Elvidge*)
- SEM-N Preliminary Design Review (PDR) – 18-19 Aug 2010, Boulder, CO (*Multiple*)
- Russian Academy of Sciences (RAS) – 05-17 Sep 2010, Moscow, Russia (*P. Elespru*) – Technical Meeting
- Spacecraft Charging Technology Conference – 20-24 Sep 2010, Albuquerque, NM (*W. Denig, J. Allen*)
- Institute of Navigation (ION) Global Navigation Satellite Systems (GNSS) Meeting – 20-21 Sep 2010, Portland, OR (*F. Coloma*) – Fran will also participate in 2010 CORS User Forum

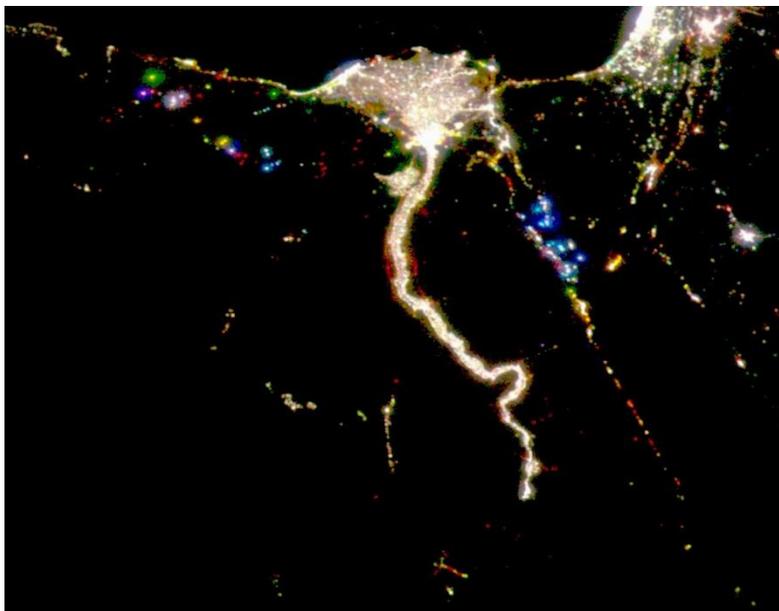


Special Interest Item

Nighttime Lights in Egypt



Chris Elvidge participated in the U.S.-Egypt Joint Workshop on “Space Technology & Geo-information for Sustainable Development” held in Cairo, Egypt, 14-17 Jun 2010. The workshop was organized by the U.S. State Department and hosted locally by the Egypt National Authority for Remote Sensing and Space Science (NARSS). Dr Elvidge presented a paper on measurements of nighttime lights imagery of Egypt for the period 1992 to present. These data show the steady growth in satellite-observed lighting of Egypt which has occurred over the past nineteen years covered by the available DMSP archive.



Nighttime Lights Color Composite: 1992 = Blue,
2000 = Green, 2009 = Red



Polo Anyone???



Issues & Summary

STP Publications – Page 1 – YTD: 22



- Alken, P.** and S. Maus (2010), "Relationship Between the Ionospheric Eastward Electric Field and the Equatorial Electrojet", *Geophys. Res. Lett.*, 37, doi: 10.1029/2009GL041989.
- Alken, P.** and S. Maus (2010) "Electric Fields in the Equatorial Ionosphere Derived from CHAMP Satellite Magnetic Field Measurements", *J. Atmos. Sol. Terr. Phys.*, 72, 319–326, doi: 10.1016/j.jastp.2009.02.006.
- Alken, P.** (2009), "A Quiet Time Empirical Model of Equatorial Vertical Plasma Drift in the Peruvian Sector Based on 150 km Echoes", *J. Geophys. Res.*, 114, doi: 10.1029/2008JA013751.
- Allen, J.** (2010), "The Galaxy 15 Anomaly: Another Satellite in the Wrong Place at a Critical Time", *Space Weather*, 8, 10.1029/2010SW000588
- Bhaneja, P.**, G.D. Earle, R.L. Bishop, **T.W. Bullett**, **J. Mabie**, and **R. Redmon** (2009), "A Statistical Study of Midlatitude Spread F at Wallops Island, Virginia", *J. Geophys. Res.*, 114, A04301, doi:10.1029/2008JA013212.
- Buaba, R., **E. Kihn**, M. Gebril, A. Homaifar, and M. Zhizhin (2009), "Locality Sensitive Hashing For Satellite Images Using Texture Feature Vectors", *IEEE Aerospace Conference Proceedings*, Nov 2009.
- Earle, G., R. Roddy, C. Swenson, A. Barjatya, R. Bishop, **T. Bullett**, G. Crowley, **R. Redmon**, K. Groves, R. Cosgrove, and S. Vadas (2010), "A Comprehensive Rocket and Radar Study of Midlatitude Spread F", *J. Geophys. Res.* (In Press)
- Elvidge, C.D.**, **K.E. Baugh**, P.C. Sutton, B. Bhaduri, **B.T. Tuttle**, **T. Ghosh**, **D. Ziskin** and **E.H. Erwin** (2010), "Who's In The Dark: Satellite Based Estimates Of Electrification Rates", *Urban Remote Sensing: Monitoring, Synthesis and Modeling in the Urban Environment*, ed. X. Yang, Wiley-Blackwell, Chichester, UK. (In Press)
- Elvidge, C.D.**, **K. Baugh**, **B. Tuttle**, **D. Ziskin** and **T. Ghosh** (2009), "Satellite Observation of Heavily Lit Fishing Boat Activity in the Coral Triangle Region", *Proc. 30th Asian Conference on Remote Sensing*, 18-23 Oct 2009, Beijing, China.
- Elvidge, C.D.**, D.M. Keith, **B.T. Tuttle** and **K.E. Baugh** (2010), "Spectral Identification of Lighting Type and Character", *Sensors 2010*, 10, 3961-3988; doi:10.3390/s100403961.
- Fischman, D., **W.F. Denig** and **D. Herzog** (2009), "A Proposed Metadata Implementation for Magnetic Observatories", *Proceedings of the XIIIth IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing*, Ed. J. Love, U.S. Geological Survey Open-File Report 2009-1226, 82-85.
- Gebriel, M., **E. Kihn**, R. Buaba, A. Homaifar and M. Zhizhin (2009), "Structural Indexing of Satellite Images using Texture Feature Extraction for Retrieval", *IEEE Aerospace Conference Proceedings*, Nov 2009.
- Ghosh, T.**, R.L. Powell, S. Anderson, P.C. Sutton and **C.D. Elvidge** (2010), "Informal Economy And Remittance Estimates of India Using Nighttime Imagery", *International Journal of Ecological Economics & Statistics*, 17, pp. 16-50.



Issues & Summary

STP Publications – Page 2 – YTD: 22



- Herzog, D.C.** (2009), "The Effects of Missing Data on Mean Hourly Values", Proceedings of the XIIIth IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing, Ed. J. Love, U.S. Geological Survey Open-File Report 2009-1226, 116-126.
- Matsumura, K., R.J. Hijmans, Y. Chemin, **C.D. Elvidge**, K. Sugimoto, W.B. Wu, Y.W. Lee and R. Shibasaki (2009), "Mapping the Global Supply and Demand Structure of Rice", *Sustainability Science*, 4, pp. 301-313, doi: 10.1007/s11625-009-0077-1.
- Nghiem, S.V., D. Balk, E. Rodriguez, G. Neumanna, A. Sorichetta, C. Small and **C.D. Elvidge** (2009), "Observations of Urban and Suburban Environments with Global Satellite Scatterometer Data", *ISPRS Journal of Photogrammetry and Remote Sensing*, 64, pp. 367-380.
- Redmon, R.**, W.K. Peterson, L. Andersson, **E. Kihn**, **W. Denig**, M. Hairston and R. Coley, R. (2010), "Vertical Plasma Flows at 850 km in Dynamic Auroral Boundary Coordinates", *Journal Geophys Res.* (In press)
- Soloviev, A. A., Sh. R. Bogoutdinov, S. M. Agayan, A. D. Gvishiani, and **E. Kihn** (2009), "Detection of Hardware Failures at INTERMAGNET Observatories: Application of Artificial Intelligence Techniques to Geomagnetic Records Study", *Russ. J. Earth Sci.*, 11, ES2006, doi:10.2205/2009ES000387.
- Sutton, P. C., A. Goetz, S. Fildes, C. Forster and **T. Ghosh** (2009), "Darkness on the Edge of Town: Mapping Urban and Periurban Australia Using Nighttime Satellite Imagery", *The Professional Geographer*, 62, pp. 119-133.
- Sutton, P. C., S.A. Anderson, **C.D. Elvidge**, **B.T. Tuttle** and **T. Ghosh** (2009), "Paving the Planet: Impervious Surface as Proxy Measure of the Human Ecological Footprint", *Progress in Physical Geography*, 33, pp. 510-527, doi: 10.1177/0309133309346649.
- Sutton, P.C., M.J. Taylor and **C.D. Elvidge** (2010), "Using DMSP OLS Imagery to Characterize Urban Populations in Developed and Developing Countries" in *Remote Sensing of Urban and Suburban Areas*, Eds. T. Rashed and C. Jürgens, Springer, pp. 329-348.
- Ziskin D.**, **C. Elvidge**, **K. Baugh**, **B. Tuttle** and **T. Ghosh** (2010), "The Night Time Lights of Urban Areas", *MEGAPOLI Project News Letter*, 6, pp. 32.



Issues & Summary

Solar & Terrestrial Physics Division



- Loss of key personnel has a severe mission impact (3QFY10) – NEW
- **Satellite processing transition from SWPC (4QFY09) – active**
- **Continuity of solar data services (1QFY09) – STP re-org needed**
- ✓ *Refocus of NWS/SWPC Objectives (2QFY08) – NLAI*
- **NightSat Mission Concept (1QFY08) – active**
- ✓ *NGS Aerial Photography (1QFY08) – NLAI*
- *DMSP Data in CLASS (1QFY08) – planned*

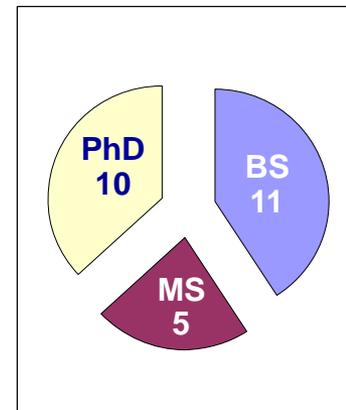
Metrics (FY10 YTD)

Papers published: 22

Papers presented: 40

Professional Societies:17

STP
Highest
Degree



NLAI = No Longer an Issue



QUESTIONS?



Issues & Summary

STP Presentations – Pg 1 – YTD: 40



30th Asian Conference on Remote Sensing, 18-23 October 2009, Beijing, China

- Remote Sensing in the Cause of a Sustainable Society (Keynote), **C.E. Elvidge**.
- Satellite Observation of Heavily Lit Fishing Boat Activity in the Coral Triangle Region (Oral), **C.E. Elvidge, K. Baugh, B. Tuttle, D. Ziskin and T. Ghosh**.

3rd Annual RASEI Research Symposium, 21 October 2009, Boulder, CO

- Lighting the Sky (Poster), **D. Ziskin, C. Elvidge, K. Baugh, B. Tuttle, T. Ghosh and E Erwin**.

Workshop on Monitoring North American Geoid Change, 21-23 October 2009, Boulder, CO

- NGS Continuously Operating Reference Stations (CORS) West Facility (Oral), **F. Coloma, F., G. Sella, E. Joynt, R. Prentice and W. Denig**.

American Geophysical Union (AGU) Fall Meeting, 14-18 December 2009, San Francisco, CA

- An Absence of Equatorial Scintillation Activity Prior to Large Geomagnetic Storms (Oral), SA13B-07, D.N. Anderson and **R.J. Redmon**.
- GNSS Absolute Antenna Calibration at the National Geodetic Survey (Poster), G11B-0645, **A.L. Bilich** and G.L. Mader.
- The Impact of the Virtual Observatories on Space Weather Science, Modeling, and Predictions (Invited), SH54A-04, J.C. Green, R.S. Weigel, **E.A. Kihn** and D. Baker.
- The Intercalibration of the Night Lights Dataset (Poster), IN43B-1157, **D.C. Ziskin, C. Elvidge, K. Baugh, B. Tuttle and T. Ghosh**.
- Ionosphere Scientific Data Stewardship at NGDC (Poster), SA43A-1607, **T.W. Bullett, R.J. Redmon, J. Manley, R. Conkright, E.A. Kihn, K. Prendergast, P. Elespuru, K. Horan, J. Schminky and W.F. Denig**.
- New Observations of Ionospheric Instabilities in the Equatorial Electrojet (Poster), SA23B-1481, **P. Alken** and S. Maus.
- The NOAA Archives of the 21st Century (Oral), IN44A-05, K.S. Casey, J. Relph, **E. Kihn**, J.J. Bates, L. McCulloch, K.R. McDonald and R. Vizbulis.
- A Prototype User Interface for Space and Solar Data - What Will Be Relevant in 2015? (Poster), IN41A-1099, **D.C. Wilkinson** and **A. Sundaravel**.
- The Space Environmental Impact System (Oral), IN34A-04, **E.A. Kihn**.
- Tidal Signatures in Thermospheric and Ionospheric Quantities (Invited), SA41B-04, H. Luhr, M. Rother, B.G. Fejer, K. Haeusler and **P. Alken**.
- Vertical Plasma Flow in Auroral Boundary Coordinates for 1997 (Poster), SM41A-1681, **R.J. Redmon**, W.K. Peterson, L. Andersson, **E.A. Kihn** and **W.F. Denig**.

90th American Meteorological Society (AMS) Annual Meeting, 17-21 January 2010, Atlanta, GA

- Impacts of Extended Periods of Low Solar Activity on Climate (Poster), Seventh Symposium on Space Weather, **M.J. Niznik** and **W.F. Denig**.
- Status of the Space Environment Monitor for NPOESS (SEM-N) (Poster), 6th Annual Symposium on Future National Operational Environmental Satellite Systems-NPOESS and GOES-R, **W.F. Denig**, T. Sotirelis, V. Grano, R. Hamilton, K. Wolfram, C. Brann and **J. Manley**.



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NCAR Coffee, 10 March 2010, Boulder, CO

- Vertical Plasma Flow in Auroral Boundary Coordinates for 1997 (Oral), SM41A-1681, **R.J. Redmon**, W.K. Peterson, L. Andersson, **E.A. Kihn** and **W.F. Denig**

IDL Users Group, 17 March 2010, Boulder, CO

- IDL Driven Space Physics Modeling and Investigations (Oral), R. Redmon, E. Kihn, P. Elespuru, M. Zhizhin, D. Mishin, D. Medvedev, W.K. Peterson

HR GEO User Consultation Workshop (ESA), 14-15 April 2010, Frascati, Italy

- Nighttime lights from a geostationary orbit (Oral), **C.E. Elvidge**

Association of American Geographers Annual Meeting, 14-18 April 2010, Washington, DC

- Aladdin's Magic Lamp: Building an Active Calibration Target for the Defense Meteorological Satellite Program Operational Linescan System (Oral), **B. Tuttle**, S. Anderson, P. Sutton, **C. Elvidge**, R. Powell and **K. Baugh**

American Society for Photogrammetry (ASPRS), 26-30 April 2010, San Diego, CA

- Nighttime Lights: Current Capabilities and Future Possibilities (Oral), **C.D. Elvidge**

15th Annual Space Weather Workshop, 27-30 April 2010, Boulder, CO

- Space Weather Data Stewardship in NOAA (Invited), **W. Denig**
- Validation of the Operational D-Region Absorption Prediction (D-RAP) Model at NOAA SWPC (Poster), I-17, R.A. Akmaev, A. Newman, M.V. Codrescu, C. Schultz, E. Nerney and **H. Sauer**
- Operating Network of Phase Ionosondes (Poster), I-16, M. Rietveld, N. Zabolin, **T. Bullett**, R. Livingston and S. Kolesnik
- The Space Physics Interactive Data Resource – ReST Web Services (Poster), SW-4, **E. Kihn**, **M. Zhizhin**, **P. Elespuru** and **R. Redmon**
- A Forecasting Ionospheric Real-time Scintillation Tool (Poster), I-18, **R. Redmon**, D. Anderson, R. Canton and **T. Bullett**
- NGDC Ionosphere Program (Poster), I-19, **J. Schminky**, **R. Redmon**, **T. Bullett**, **E. Kihn**, **W. Denig**, **K. Prendergast**, **P. Elespuru**, **J. Manley**, **R. Conkright** and **K. Horan**
- NGDC Ionosphere Program (Invited), Workshop to Coordinate Ionospheric Services, **R. Redmon**, **T. Bullett**, **J. Manley**, **E. Kihn**, **P. Elespuru**, **R. Conkright** and **J. Schminky**

SWPC Coffee, 30 April 2010, Boulder, CO

- An introduction to new SPIDR features and a sampling of new client applications that use its data (Oral), **P. Elespuru**

ESRL Conference, NOAA/ESRL Global Monitoring Annual Conference, 18-19 May 2010, Boulder, CO

- Creating a Global CO₂ grid from Nighttime Lights Imagery (Poster) **Ghosh, T.**, **C. D. Elvidge**, P. C. Sutton, **K. Baugh**, **B.T. Tuttle** and **D. Ziskin**
- A Sixteen Year Record of Global Natural Gas Flaring Derived From Satellite Data (Oral), **C.D. Elvidge**, **D. Ziskin**, **K. Baugh**, **B. Tuttle** and **T. Ghosh**



Issues & Summary

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ESRL Conference, NOAA/ESRL Global Monitoring Annual Conference, 18-19 May 2010, Boulder, CO (continued)

- Radiance Calibrated Night Lights Products that Reveal Urban Cores and Gas Flares (Oral), **D. Ziskin, C. Elvidge, K. Baugh, B. Tuttle, T. Ghosh and E. Erwin**
- Hyperspectral Infrared Imager (HyspIRI) - A Sensor Optimized for Tracking Earth Surface Processes for Climate Analysis (Poster), **C. Elvidge**

Solar Radiation and Climate Experiment (SORCE) Science Meeting, 19-21 May 2010, Keystone, CO

- Implications of comparison of Physical Model Simulations and Data During the Last Solar Minimum (Oral), E. Araujo-Pradere, T. Fuller-Rowell, M. Fedrizzi, **R. Redmon**, M. Codrescu and R. Viereck

Beacon Satellite Symposium, 07-11 June 2010, Barcelona, Spain

- The Absence of Equatorial Scintillation Activity Prior to a Large Geomagnetic Storm (Oral), D. Anderson, **R. Redmon, T. Bullett**, R. Cayton and J. Retterer

Space Technology and Geoinformation for Sustainable Development, 14-17 Jun 2010, Cairo, Egypt

- Analysis of Urban Growth and Electrification in North Africa Using Satellite Observed Nighttime Lights Data (Oral), **C.D. Elvidge**

Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR) Workshop, 20-25 June 2010, Boulder, CO

- The Equatorial Electrojet (Invited), **P. Alken**

Scientific Assembly of the Committee on Space Research (COSPAR), 18-25 July 2010, Bremen, Germany

- Global View of O+ Outflow in Dynamic Auroral Boundary Coordinates (Invited), **R.J. Redmon**, W.K. Peterson, L. Andersson, **E. Kihn, W. Denig**, M. Hairston and R. Coley

Meeting of the Americas, 08-12 August 2010, Foz do Iguaçu, Brazil

- Public Access to NOAA's Historic POES and GOES Space Weather Data (Poster), SH33F-04, **D.C. Wilkinson**