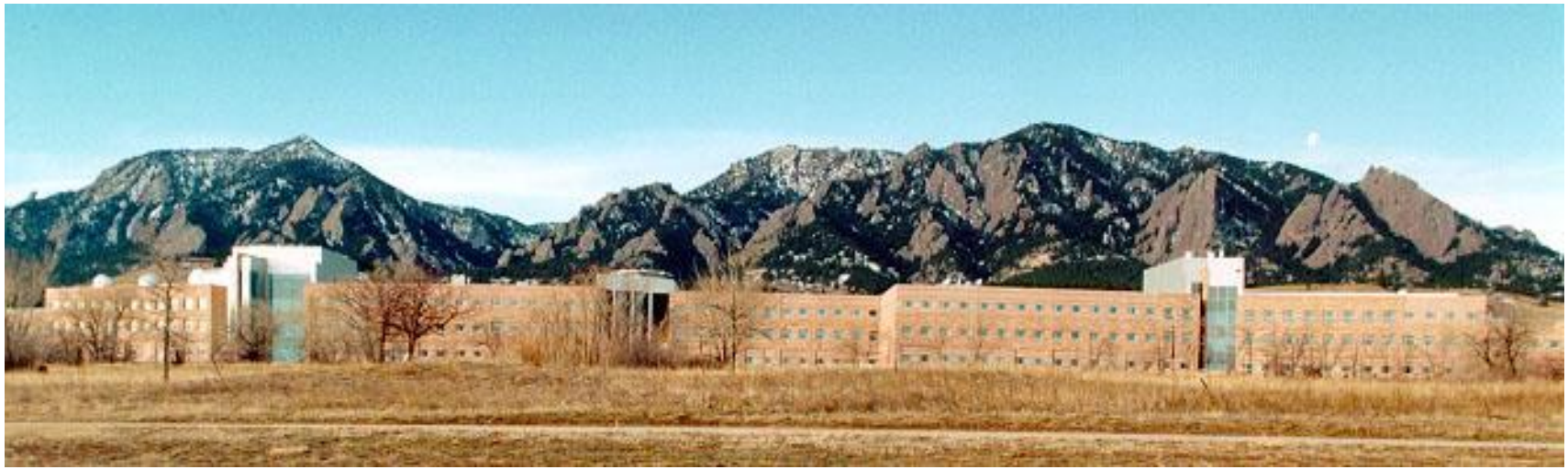


STP Quarterly Review

18 Jan 2012

1QFY12

William Denig

Solar & Terrestrial Physics Division

NOAA/NESDIS/NGDC

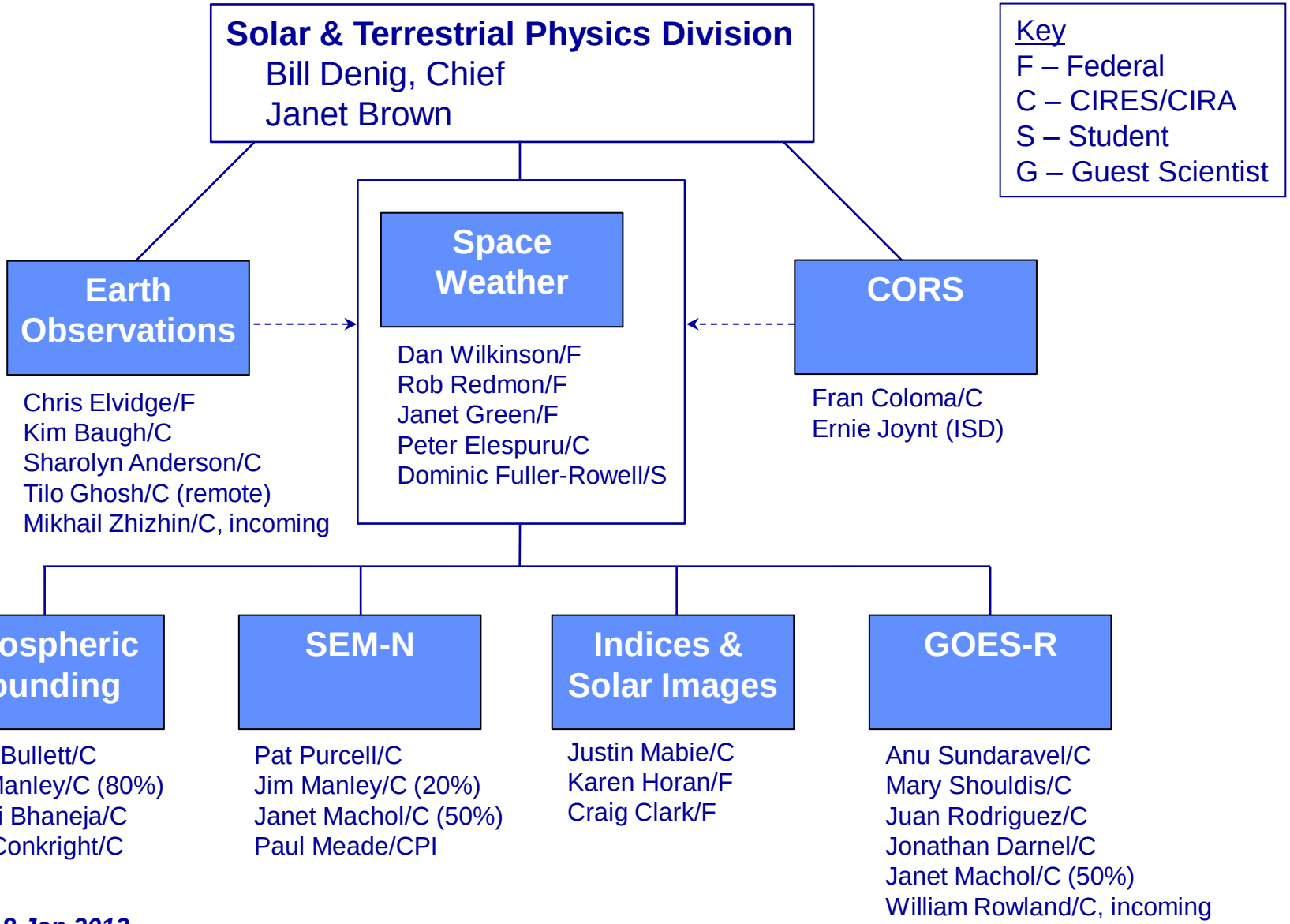
303 497-6323

William.Denig@noaa.gov

OUTLINE
Solar & Terrestrial Physics Division

- **STP Division Overview**
- **Milestones & Performance Measures**
- **Personnel Activities – *nothing to report***
- **Accomplishments & Updates**
- **Special Interest Items**
- **USAF Datasets At NGDC**
- **Issues & Summary**

STP Division Overview
Personnel



STP Division Overview
Personnel Changes

- **Gains**
  - None
- **Losses**
  - Pat Alken, transfer to MGG
- **Reassignments**
  - Janet Machol, transitioning to GOES-R algorithm development
  - Rob Redmon, GOES Space Environment Sensors (Magnetometer)
- **Inbound**
  - William Rowland, GOES-R Magnetometer Physicist (Algorithms)
  - Mikhail (Misha) Zhizhin – DMSP/VIIRS Nighttime Lights Developer
  - Jenny Mills (Northwestern University) – Hollings (Redmon) – Aurora
  - Ranjeetha Bharath (MIT) – Hollings (Rodriguez) – SEP Events
- **Vacancies**
  - Technology Manager (Fed) – Pending
  - Space Weather Physicist (Fed) – Solar Program/SXI-SUVI
- **Outbound**
  - None

STP Division Overview
Agreements – Status

Agreements

Scope	Team	Type	Partner	NOAA Legal	DOC Legal	NGDC Signed	Partner Signed	Start	End	Status	
CORS Support	CORS	AGR	NGS	n/a	n/a	X	X	10/01/2003	09/30/2013	G	*In place - wrapping up IC*
SWx Climatology	SWX	MOU	AFCCC	X	X	X	X	05/27/2004	10/01/2014	G	In place - no FY12 activity
GPS Data (CORS)	SWX	MOA	Multi	n/a	n/a	X	X	09/20/2004	TBD	G	*Biannual Review - waiting on NGS*
DMSP Archive	NTL	MOA	DMSP	X	X	X	X	05/30/2007	09-30/2009	G	*In process - Blanket MOA*
Ionosonde Sites	SWX	IA	USGS	X	X	X	X	04/03/2009	04/03/2014	G	*In place - FY12 site support*
ViRBO	SWX	MOA	NASA	X	X	X	X	04/15/2009	n/a	G	In place - no FY12 activity
SEM-N - AFRL	SWX	MOA	AFRL	X	X	X	X	05/11/2009	05/11/2014	G	*In place - DWSS cancelled*
Nighttime Lights	SWX	MOU	DOE	X	X	X	X	08/12/2009	08/12/2013	G	In place - nothing to report
NASIC	NTL	MOU	NASIC	X	X	X	X	03/09/2011	01/30/2015	G	In place - nothing to report
Gas Flaring	NTL	SA	WBank	X	X	X	X	05/13/2011	05/30/2012	G	*Awaiting funds*
Global CO2	NTL	AGR	NASA	n/a	n/a	n/a	n/a	07/29/2011	09/30/2012	G	In place - Space Act (1958)
SEM-N Algorithms	SEG	MOU	SMC	X	X	X		08/01/2011	07/31/2013	G	*In place - DWSS cancelled*
Outage Detection	NTL	MOU	NPS	X	X	X	X	10/28/2011	07/30/2012	G	In place - nothing to report

1/13/2012

G	No Action Needed
Y	Watch Item
R	Action Required

STP Division Overview
FY12 Funding [*YTD*]

STP Balance Sheet - FY12 (YTD)

	Income			Expenditures					
	FY11 Carryover	FY12 New	Sum	Salaries	Travel	Miscellaneous	OD overhead	Sum	Notes:
Base			**1,389,956**	**1,388,268**				**1,388,268**	
NGDC Base	0	1,389,956	1,389,956						Use FY11 base allotment for FY12 - see Connie Craig (24 Jun 11)
Space Weather			**110,000**	**115,971**		**19,489**	**2,500**	**137,960**	
POES Processing	85,000	25,000	110,000			19,489	2,500		$19,489 to ISD for K Tanaka
Nighttime Lights			**593,000**	**379,917**	**4,800**		**54,800**	**439,517**	
NPS (DHS)		198,000	198,000		4,800		19,800		
NASIC		100,000	100,000				10,000		
NASA - ASU	25,000	25,000	50,000				2,500		
NASA - Ames		25,000	25,000				2,500		
JPSS Cal Val		53,000	53,000				5,300		
World Bank		45,000	45,000				4,500		
Data Sales		30,000	30,000				3,000		
McMurdo	20,000	72,000	92,000				7,200		
Ionospheric Data Serv			**0**						
Northrop-Grumman		0	0						Terry Bullett - self-supporting
GOES-RRR			**833,792**	**734,814**		**10,250**	**83,379**	**828,444**	
GOES-R (PN76)		412,500	412,500			9,250	41,250		SWx Risk Reduction
GOES-R (PN77)		300,000	300,000			1,000	30,000		SWx Algorithm Readiness
GOES-R (Cal/Val)		121,292	121,292				12,129		GOES-R L1 Cal/Val
CORS			**198,000**	**111,189**	**10,000**	**78,000**	**15,840**	**215,029**	
CORS		198,000	198,000		10,000	78,000	15,840		OVHD is 8% of total; $78K for Ernie
SEM-N			**160,000**	**99,610**	**10,000**	**10,000**	**16,000**	**135,610**	
DWSD-NGDC MOA	160,000		160,000		10,000	10,000	16,000		Federal oversight - received in late FY11
			3,284,748					**3,144,827**	As of 13 Jan 12

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	Decommisioned	R	G	G				G			G	G		G		
GOES 9	GOES I-M	Decommisioned	R	G	G				G			G	G		G		
GOES 10	GOES I-M	Decommisioned	R	G	G				G			Y	G		G		
GOES 11	GOES I-M	Decommisioned	R	G	G				R			G	G		R		
GOES 12	GOES I-M	South America	G	G	G				R			Y	G		R	R	
GOES 13	GOES N-O-P	Operational East	G			G	R			Y		G	G			Y	
GOES 14	GOES N-O-P	On-orbit Storage	G			G	G			G		G	G			G	
GOES 15	GOES N-O-P	Operational West	G			G	G			G		G	G			G	
GOES R	GOES R	Acquisition						TBD			TBD			TBD			TBD
GOES S	GOES R	Acquisition						TBD			TBD			TBD			TBD

As of: 18 Jan 2012

Operational (or capable of)	G
Operational with limitations (or Standby)	Y
Operational with Degraded Performance	O
Not Operational	R
Status Unknown	TBD

Note: SWPC operations use GOES-15 SEM & SXI. GOES-13 SEM (no XRS) & SXI (sometimes) are also used for SWPC operations. All available GOES and POES Space Weather data flowing into NGDC.

STP Division Overvies

STP Annual Data Ingest[1] – 4QFY11

	CY10 GB	CY11 GB	CY12 TBD
GOES SEM	71	71	-
GOES SXI	870	1,731	-
POES SEM	30	29	-
DMSP OLS	5,000	5,760	-
CORS GPS	20,198	22,296	-
Ionosonde	1,400	900	-

[1]Uncompressed data volumes

OUTLINE
Solar & Terrestrial Physics Division

STP Division Overview

Milestones & Performance Measures

Personnel Activities – *nothing to report*

Accomplishments & Updates

Special Interest Items

USAF Datasets At NGDC

Issues & Summary

Milestones & Performance Measures

FY12 AOP Milestones

Primary NGSP Goal: Objective	Performance Measures / Milestones (NOTE: Do not report Measure or Milestone Targets in the same row)	Select any				Measure or Milestone Targets (NOTE: Do not report Measure or Milestone Targets in the same row)												Milestone Progress		
	Measures/Milestone	GPRA	NOAA BSC	LO/SO BSC	HPPG	10	11	12 Q1	12 Q2	12 Q3	12 Q4	13	14	15	16	17	18	Planned/ Actual Completion	Status	POC
Weather:Environmental Information	Complete the historical data rescue of daily H-alpha solar images from the NOAA Boulder Observatory (1967-1994)							X										31-Dec-11	C	K. Horan
Weather:Environmental Information	Archive interplanetary data simulation runs for the Enlil operational space weather model per NWS request								X									31-Mar-11	G	W. Denig
Coastal:Marine Transportation	Achieve Initial Operating capability (IOC) for disseminating in real-time satellite data received via McMurdo Station in compliance with the Antarctic Treaty									X								30-Jun-12	G	S. Anderson
Weather:Environmental Information	Develop in-house capability to process NOAA POES Space Enviroment Monitor (SEM) data for satellite operations										X							30-Sep-12	G	J. Green
Weather:Environmental Information	Complete Phase 3 Preliminary Design Reviews for GOES-R Level 2+ space weather algorithms										X							30-Sep-12	G	M. Shouldis
Weather:Environmental Information	Maintain > 95% of availability of Space Environment Monitor (SEM) satellite data archived on an annual basis					>95	100%	95	95	95	95	95	95	95	95	95	95	1QFY12 2QFY12 3QFY12 4QFY12	100% ' ' '	D. Wilkinson
Coastal:Marine Transportation	Acquire, process, and disseminate >95% of available real-time nighttime lights imagery within 3 hours of receipt					>95	100%	95	95	95	95	95	95	95	95	95	95	1QFY12 2QFY12 3QFY12 4QFY12	100% ' ' '	C. Elvidge
Weather:Environmental Information	Provide a > 95% availability for Continuously Operating Reference Station (CORS) near real-time data to to the NWS Space Weather Prediction Center					>95	100%	95	95	95	95	95	95	95	95	95	95	1QFY12 2QFY12 3QFY12 4QFY12	100% ' ' '	F. Coloma

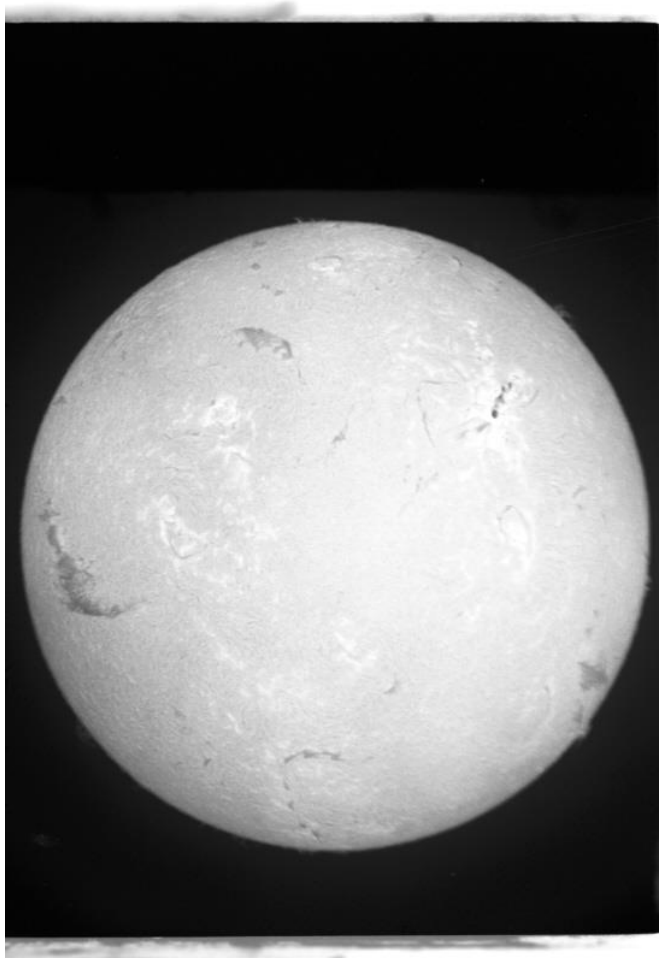
Milestones & Performance Measures

FY12 AOP Milestones

Primary NGSP Goal: Objective	Performance Measures / Milestones (NOTE: Do not report Measure or Milestone Targets in the same row)	Select any				Measure or Milestone Targets (NOTE: Do not report Measure or Milestone Targets in the same row)												Milestone Progress		
	Measures/Milestone	GPRA	NOAA BSC	LO/SO BSC	HPPG	10	11	12 Q1	12 Q2	12 Q3	12 Q4	13	14	15	16	17	18	Planned/ Actual Completion	Status	POC
Weather:Environmental Information	Complete the historical data rescue of daily H-alpha solar images from the NOAA Boulder Observatory (1967-1994)							X										31-Dec-11	C	K. Horan
Weather:Environmental Information	Archive interplanetary data simulation runs for the Enlil operational space weather model per NWS request								X									31-Mar-11	G	W. Denig
																				son
Weather:Environmental Information	Develop in-house capability to process NOAA POES Space Enviroment Monitor (SEM) data for satellite operations										X							30-Sep-12	G	J. Green
Weather:Environmental Information	Complete Phase 3 Preliminary Design Reviews for GOES-R Level 2+ space weather algorithms										X							30-Sep-12	G	M. Shouldis
Weather:Environmental Information	Maintain >95% of availability of Space Environment Monitor (SEM) satellite data archived on an annual basis					>95	100%	95	95	95	95	95	95	95	95	95	95	1QFY12 2QFY12 3QFY12 4QFY12	100%	D. Wilkinson
Coastal:Marine Transportation	Acquire, process, and disseminate >95% of available real-time nighttime lights imagery within 3 hours of receipt					>95	100%	95	95	95	95	95	95	95	95	95	95	1QFY12 2QFY12 3QFY12 4QFY12	100%	C. Elvidge
Weather:Environmental Information	Provide a >95% availability for Continuously Operating Reference Station (CORS) near real-time data to to the NWS Space Weather Prediction Center					>95	100%	95	95	95	95	95	95	95	95	95	95	1QFY12 2QFY12 3QFY12 4QFY12	100%	F. Coloma

1QFY12 Milestone: Complete the historical data rescue of daily H-alpha images from the NOAA Boulder Observatory (1967-1994)

Milestones & Performance Measures
Boulder Solar Observatory (BSO)



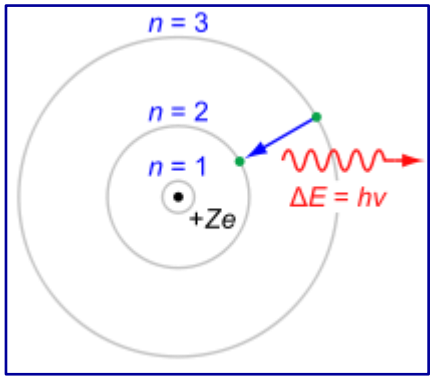
Solar H-alpha image for 12 March 1989

File: boul_halph_ff_19890312_1645_hffbo.jpg

Milestone: Complete the historical data rescue of daily H-alpha solar images from the NOAA Boulder Observatory (1967-1994)

- **Planned Completion:** 1QFY12 (31 Dec 11)
- **Actual Completion:** 1QFY12 (02 Dec 11)

Status: Between 15-Aug-67 and 22-Apr-94 the NOAA BSO photographed the sun in the H-alpha wavelength band (6563 Å). The over 88,000 digitized (jpg) solar H-alpha images available on-line have now been reconciled with the higher-resolution TIF images in the old and the new ADIC archive. A consistent file naming convention has been adopted. The old and new archives are ready for final merging (ISD).



Milestones & Performance Measures

FY12 Performance Measures

STP Annual Performance Measures								
Space Weather Metric								
LO	Goal	Objective	Performance Measure	POC	1QFY12	2QFY12	3QFY12	4QFY12
NWS	Weather-Ready Nation (NWS)	A More Productive and Eficient Economy Through Environmental Information Relevant to Key Sectors of the U.S. Economy	Greater than 95% (2 sigma) of available Space Environment Monitor satellite data are archived on an annual basis	Wilkinson	100%			
Nightime Lights Metric								
LO	Goal	Objective	Performance Measure	POC	1QFY11	2QFY11	3QFY11	4QFY11
CS	Climate Adaptation and Mitigation (CS)	Improved Scientific Understanding of the Changing Climate System and Its Impacts	Acquire, process and disseminate >2 sigma (95%) of available real-time nighttime lights imagery within 3 hours of receipt	Elvidge	100%			
CORS								
LO	Goal	Objective	Performance Measure	POC	1QFY11	2QFY11	3QFY11	4QFY11
NOS	Resilient Coastal Communities and Economics (NOS)	Resilient Coastal Communities That Can Adapt To The Impacts Of Hazards And Climate Change	Provide a >2 sigma (95%) availability for Continuously Operating Reference Station (CORS) near-real-time data to the NWS Space Weather Prediction Center as per the '4-way' Memorandum of Agreement and subject to normal business-hour response times.	Coloma	100%			

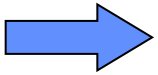
- Greater than 99% (3-sigma) Cumulative Distribution
- Greater than 97% (2-sigma) Cumulative Distribution
- Greater than 84% (1-sigma) Cumulative Distribution
- Below 84.1% (1-sigma) Cumulative Distribution

OUTLINE
Solar & Terrestrial Physics Division

STP Division Overview

Milestones & Performance Measures

Personnel Activities – *nothing to report*



Accomplishments & Updates

Special Interest Items

USAF Datasets At NGDC

Issues & Summary

Accomplishment & Updates
SWPC-NGDC Functional Transfer Plan

Space Weather

Functional Transition Plan

between the

NWS Space Weather Prediction Center

and the

National Geophysical Data Center

Space Weather Prediction Center

NATIONAL GEOPHYSICAL DATA CENTER

Prepared By: National Geophysical Data Center
Title: NOAA Space Weather Functional Transition Plan
Version No: 1 (16-Dec-2011)

1

The SWPC and NGDC support functions are now codified in the SWx Functional Transition Plan signed by the respective center directors. This plan provides the way-ahead for NOAA's space weather program. The transfer of function is scheduled for completion in 4QFY12.

SWPC-NGDC Re-Alignment

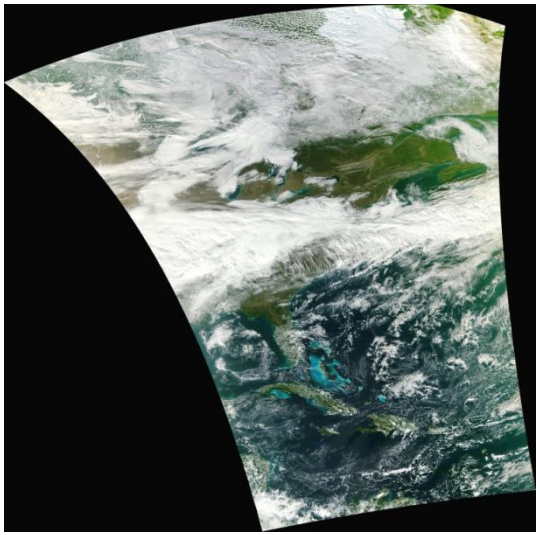
SWPC Focus Area R/T Operational Support	NGDC Focus Area Satellite Data Services
• Space Situational Awareness	• Scientific Data Stewardship
• Forecasting	• *Cal/Val Observation Systems*[1]
• Model Transition	• *Post Launch Testing*[1]
• Model Science	• *Algorithm Research*[1]
• Product Development	• *Post-Event Analysis*[1]
• Instrument Requirements	• *Instrument Science/Research*[1]
• Display Systems	• *Instrument Performance*[1]
• Customer Requirements	• *POES Processing*[1]
• Stakeholders	

[1]*Functional Realignment from SWPC to NGDC (Ongoing)*

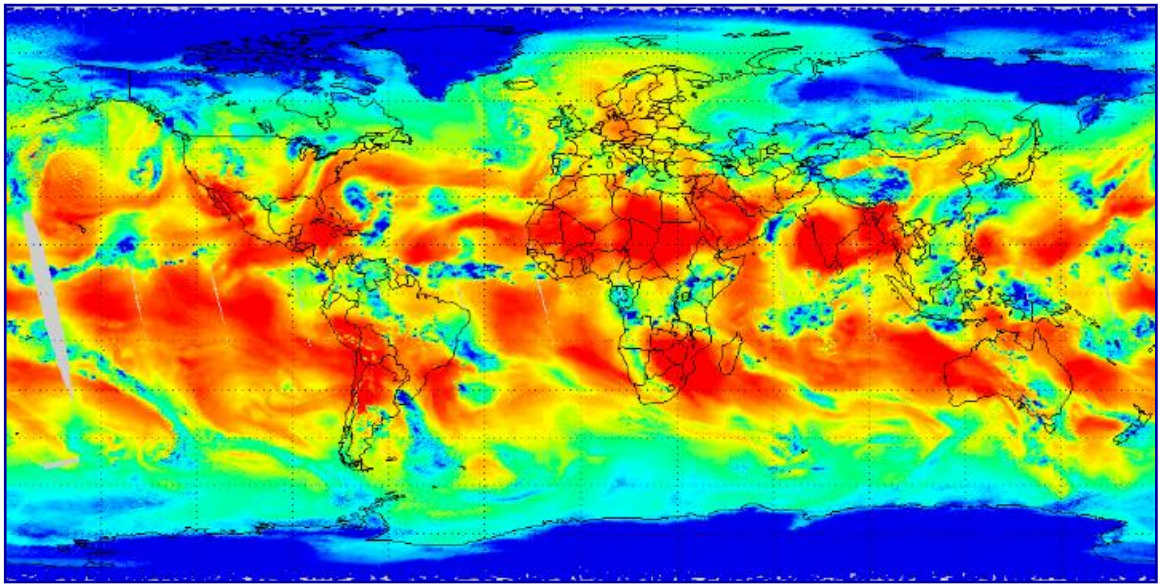
Extracted from T. Bogdan's State of the SWPC, 26 Apr 11

Accomplishments & Updates
NPOESS Preparatory Program Launch

After 13 years of planning NPP was successfully launched at 9:48 am UT on 28 October 2011. To date the satellite has been operating nominally with a few issues. The Virible Infrared Imaging Radiometer Suite (VIIRS) is experiencing premature loss of sensitivity.



VIIRS first light



ATMS daily water vapor map

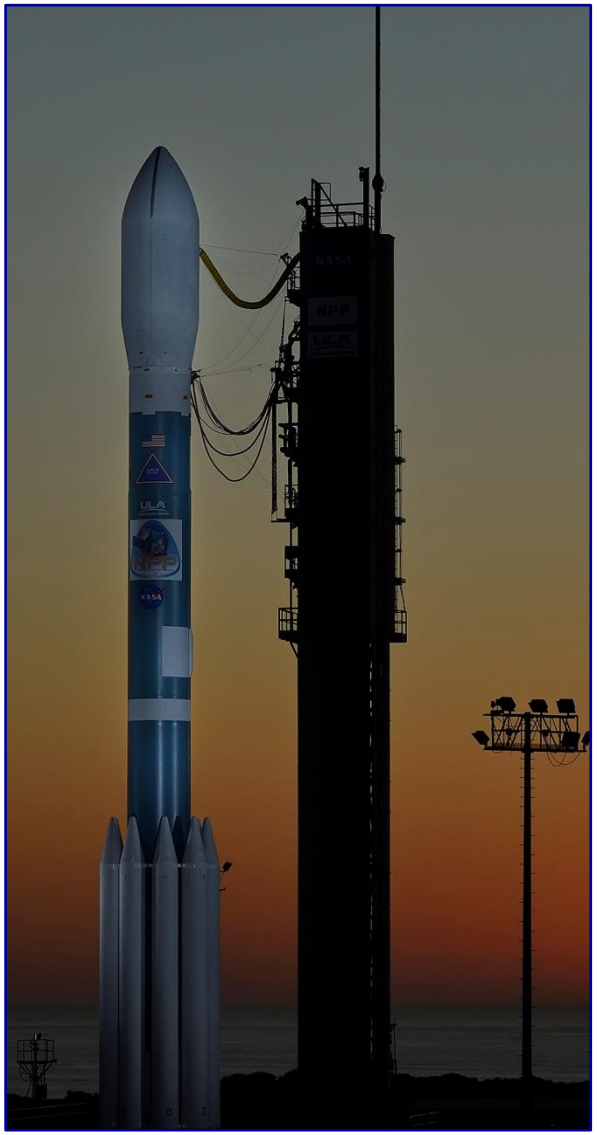
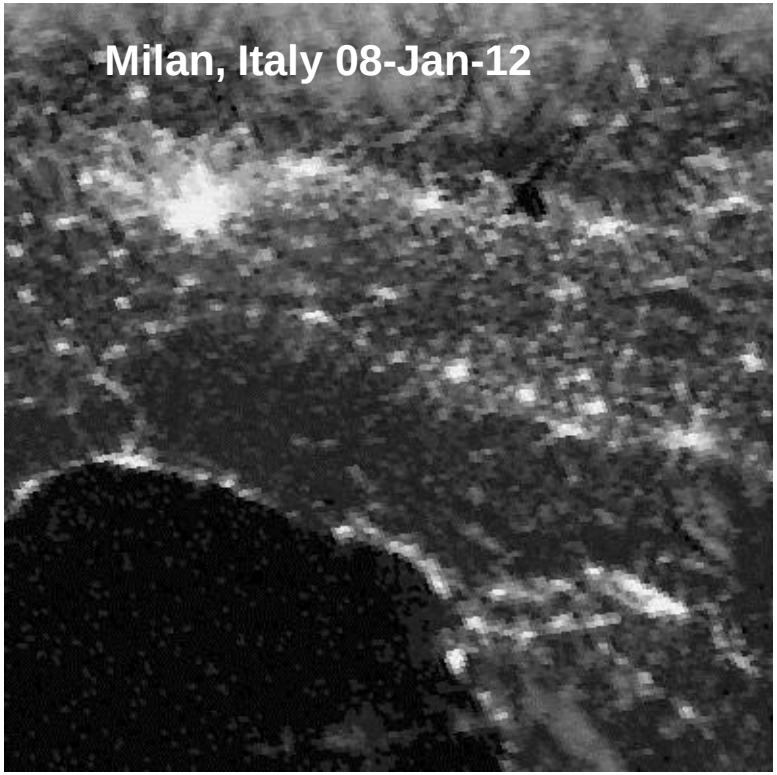
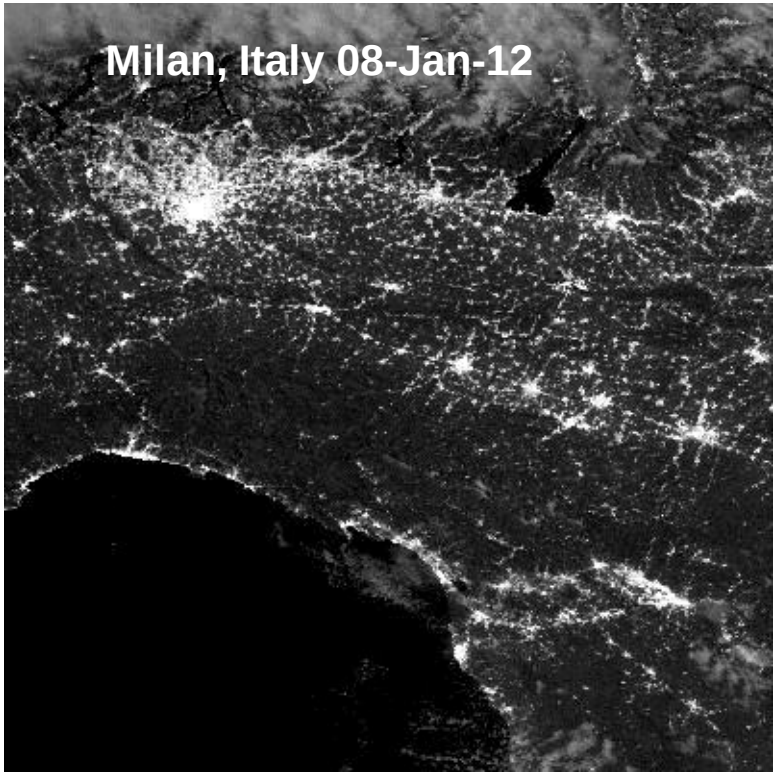


Photo Credit: Bob Murphy (NOAA)

Accomplishments & Updates

Improved Nighttime Lights with VIIRS DNB





DMSP OLS

- 6 bit quantization
- 2.7 km GSD
- 5 km+ GIFOV
- 8:00 pm overpass
- No in-flight calibration
- Urban lighting saturation

JPSS VIIRS

- 14 bit quantization
- 750 m GSD
- ~750 m GIFOV
- 1:30 am overpass
- Radiometric calibration
- No saturation

Accomplishments & Updates
JPSS Proving Ground Proposal

The Nighttime Lights group will submit a proposal to the JPSS Proving Ground program to provide an independent calibration of VIIRS gas flare monitoring using hot air balloon propane burners at night.

Previous assessments of gas flaring rates from DMSP relied on the availability of reported data. VIIRS has improved capabilities for gas flare detection and can detect major gas flares during the day in the thermal bands covering the 3-5 um atmospheric window (M12 / M13 / I4) and at night using the Day-Night Band (DNB) plus the short and near infrared bands M7, M8, and M10.

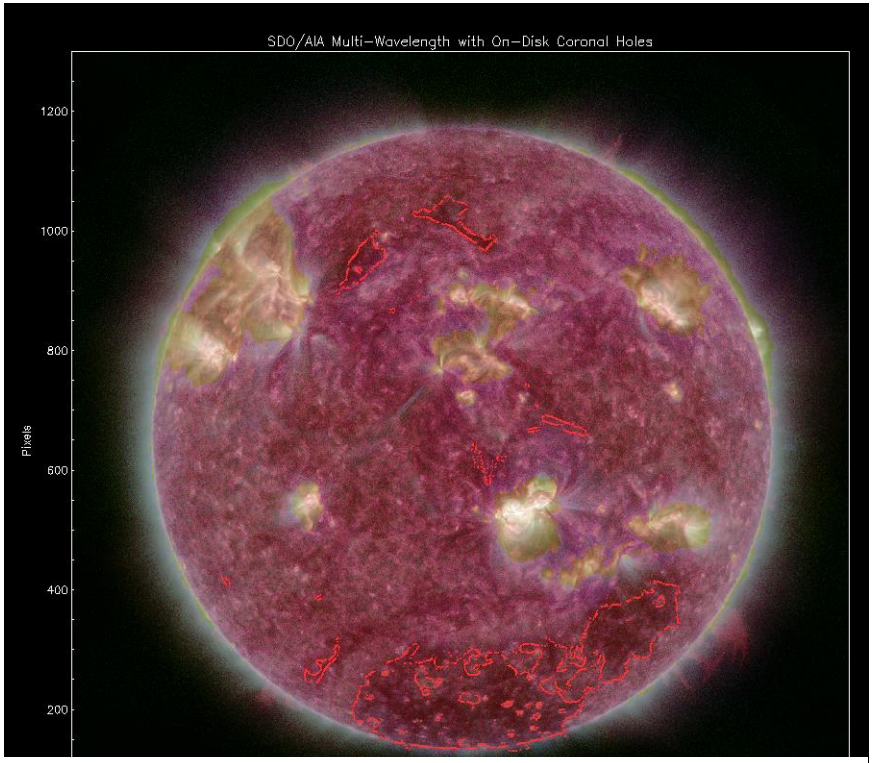
Accomplishments & Updates

VIIRS Wavelength Bands – 22 Channels

		Band No.	Wave-length (μm)	Horiz Sample Interval (km Downtrack x Crosstrack)		Driving EDRs	Radi-ance Range	Ltyp or Ttyp	Signal to Noise Ratio (dimensionless) or NEΔT (Kelvins)		
				Nadir	End of Scan				Required	Predicted	Margin
VIS/NIR FPA	Silicon PIN Diodes	M1	0.412	0.742 x 0.259	1.60 x 1.58	Ocean Color Aerosols	Low High	44.9 155	352 316	441 807	25% 155%
		M2	0.445	0.742 x 0.259	1.60 x 1.58	Ocean Color Aerosols	Low High	40 146	380 409	524 926	38% 126%
		M3	0.488	0.742 x 0.259	1.60 x 1.58	Ocean Color Aerosols	Low High	32 123	416 414	542 730	30% 76%
		M4	0.555	0.742 x 0.259	1.60 x 1.58	Ocean Color Aerosols	Low High	21 90	362 315	455 638	26% 102%
		I1	0.640	0.371 x 0.387	0.80 x 0.789	Imagery	Single	22	119	146	23%
		M5	0.672	0.742 x 0.259	1.60 x 1.58	Ocean Color Aerosols	Low High	10 68	242 360	298 522	23% 45%
		M6	0.746	0.742 x 0.776	1.60 x 1.58	Atmospheric Corr'n	Single	9.6	199	239	20%
		I2	0.865	0.371 x 0.387	0.80 x 0.789	NDVI	Single	25	150	225	50%
		M7	0.865	0.742 x 0.259	1.60 x 1.58	Ocean Color Aerosols	Low High	6.4 33.4	215 340	388 494	81% 45%
CCD		DNB	0.7	0.742 x 0.742	0.742 x 0.742	Imagery	Var.	6.70E-05	6	5.7	-5%
S/MWIR	PV HgCdTe (HCT)	M8	1.24	0.742 x 0.776	1.60 x 1.58	Cloud Particle Size	Single	5.4	74	98	32%
		M9	1.378	0.742 x 0.776	1.60 x 1.58	Cirrus/Cloud Cover	Single	6	83	155	88%
		I3	1.61	0.371 x 0.387	0.80 x 0.789	Binary Snow Map	Single	7.3	6.0	97	1523%
		M10	1.61	0.742 x 0.776	1.60 x 1.58	Snow Fraction	Single	7.3	342	439	28%
		M11	2.25	0.742 x 0.776	1.60 x 1.58	Clouds	Single	0.12	10	17	66%
		I4	3.74	0.371 x 0.387	0.80 x 0.789	Imagery Clouds	Single	270 K	2.500	0.486	415%
		M12	3.70	0.742 x 0.776	1.60 x 1.58	SST	Single	270 K	0.396	0.218	82%
		M13	4.05	0.742 x 0.259	1.60 x 1.58	SST Fires	Low High	300 K 380 K	0.107 0.423	0.063 0.334	69% 27%
LWIR	PV HCT	M14	8.55	0.742 x 0.776	1.60 x 1.58	Cloud Top Properties	Single	270 K	0.091	0.075	22%
		M15	10.763	0.742 x 0.776	1.60 x 1.58	SST	Single	300 K	0.070	0.038	85%
		I5	11.450	0.371 x 0.387	0.80 x 0.789	Cloud Imagery	Single	210 K	1.500	0.789	90%
		M16	12.013	0.742 x 0.776	1.60 x 1.58	SST	Single	300 K	0.072	0.051	42%

Accomplishments & Updates
GOES-R SWx Algorithm Development

Stating in February, STP will commence a series of Preliminary Requirements Reviews for the GOES-R Space Weather Data Products (Phase III). Completion of the PRR will allow for rapid development and testing of the GOES-R Risk Reduction Phase III algorithms. (4QFY12 Milestone)



Multi-wavelength composite SDO-AIA image used to demonstrate the GOES-R SUVI Coronal Hole Boundary product (Image provided by Jon Darnel).

Phase III Product Set

- **XRS.10: Flare Location**
- **EUVS.05: Multi-wavelength proxy**
- **SEISS.20: Event detection based on flux values**
- **MAG.12: Sudden Impulse (SI) detection**
- **SUVI.13: Bright Region Data**
- **SUVI.14: Flare Location (XFL) reports**
- **SUVI.15: Coronal Hole Boundaries**
- **SUVI.17: EUV Narrow Band Irradiance**

Legacy Product **New Product**

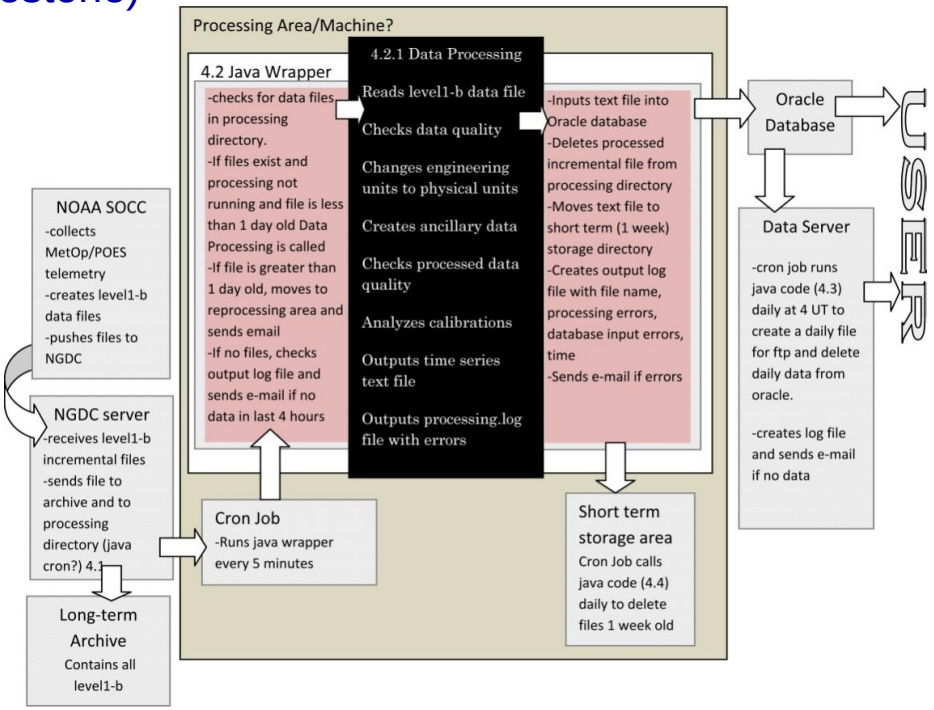
Accomplishments & Updates
POES/MetOp Processing Project

Goal: Transfer near real time processing of POES/MetOp SEM data from SWPC to NGDC

Status:

- NGDC now ingesting the L1b data files received directly from OSPO
- Anu completing code to transform raw data L1b data into higher-level products
- Ken Tanaka completing wrapper for running processing in real time

Target Completion: 4/2012 (3QFY12 milestone)



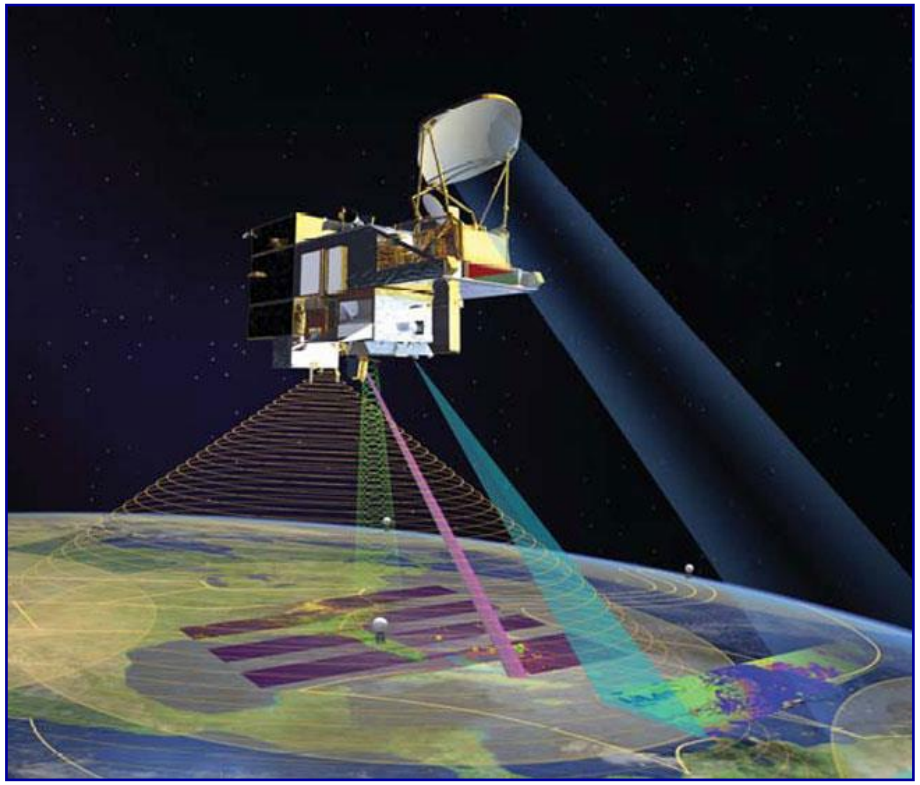
Accomplishments & Updates
Space Environment Monitor – Next (SEM-N)

H.R.1540.ENR

055	0305178F	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS).	444,900	43,000
		DWSS program termination		[–444,900]
		Termination liability		[43,000]

The FY2012 Defense Authorization Bill terminates the DWSS program after its first year. On 11 Jan the Defense Weather Systems Directorate (DWSD) notified STP that it was halting the development of the SEM-N. No FY12 funding under the existing DWSD-NGDC MOU is planned at this time for continued SEM-N algorithm development. STP personnel working SEM-N have been re-assigned to other programs.

Note: *Congress has apparently authorized ~125M for restarting the DWSS program but I cannot find any reference to this in H.R. 1540.*

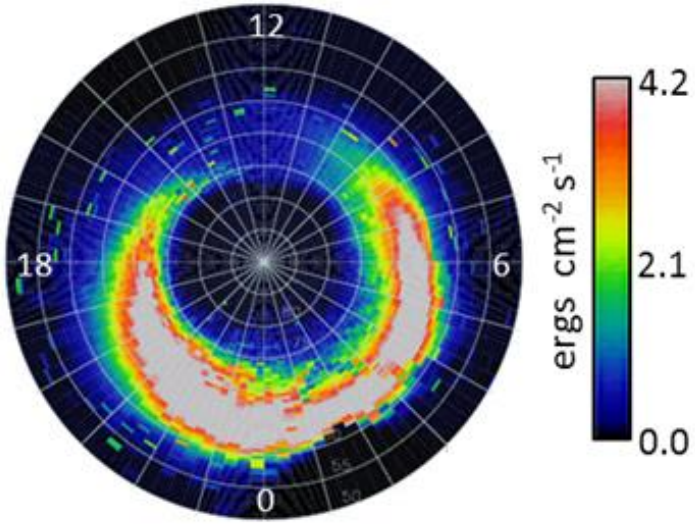


Credit: Northrop-Grumman Corp

Accomplishments & Updates

Ovation Prime – R2O Transition

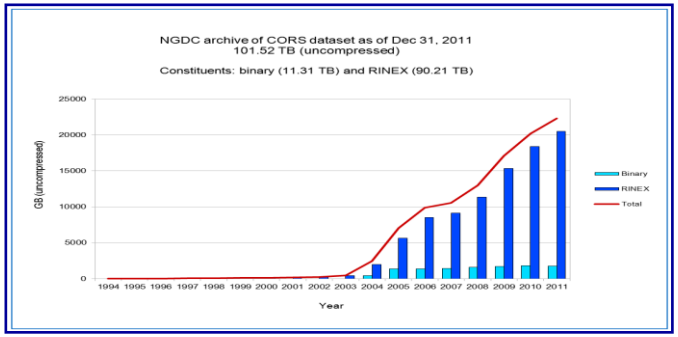
Ovation Prime is currently being transitioned to the SWPC. The paper, “Evaluation of OVATION Prime as a Forecast Model for Visible Aurorae” by Janet Machol et al. has been accepted for publication in Space Weather. The Ovation Prime code is currently available to developers via SourceForge. Within SWPC Rod Viereck’s group will be responsible for transitioning the code to operations.



Machol, J.L, **J.C Green**, **R.J. Redmon**, R.A Viereck and P.T. Newell (2011), Evaluation of OVATION Prime as a Forecast Model for Visible Aurorae, *Space Weather* [*Accepted*].

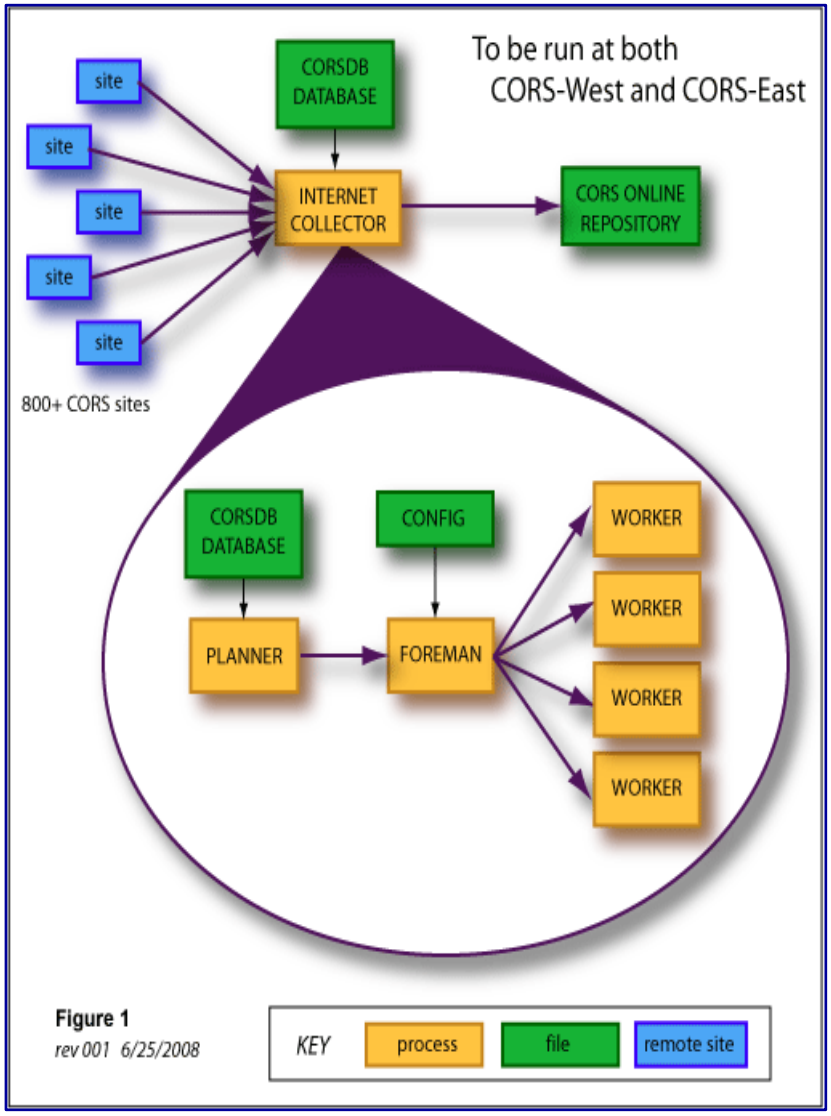
Accomplishments & Updates
CORS Status

- Operational ingest of CORS into CLASS initiated on 07-Oct-2011
- Archive volumes:
  - ADIC holdings: 101.52 TB (uncompressed)
    31.57 TB (gzip-compressed)
  - CORS-in-CLASS: 563.77 GB (gzip-compressed)
- CORS archive dataset testing, comparison between ADIC and CLASS on Nov 23 – Dec 2 with Tom Carey/Dan Kowal. Status: PASSED
- CORS-in-CLASS team drafted a "Standard Operational Procedure" document for the ingest of NGDC data into CLASS. Awaiting final review by Kelly Predergast before dissemination to Senior Staff for comment.
- CORS Internet Collector – nearing completion (separate slide)



Praise and glory reaped upon the CORS-to-CLASS team during the 4QFY11 STP PMR

Accomplishments & Updates
CORS Internet Collector (IC)



NGDC is nearing completion of the long-awaited CORS IC. The internet collector gathers GPS receiver data from numerous sites, processes these data into RINEX files and copies these RINEX files to the on-line CORS repository. Limited live testing of 50 sites will be completed by the end of January and then turned over to NGS for validation and deployment. At that time Rob Prentice will transition back to CLASS development.

Accomplishments & Updates

DMSP via McMurdo – Data Availability

United States Department of State

Bureau of Oceans and International Environmental and Scientific Affairs

Washington, D.C. 20520

December 15, 2011

Ms. Ruth Moser
Acting Director
Space Programs and Policy Office of the Secretary of Defense
6000 Defense Pentagon
Washington, DC 20301-6000

Subject: Antarctica Treaty compliance for the Defense Meteorological Satellite Program (DMSP) Data Recovery at McMurdo Station, Antarctica

Dear Ms. Moser:

The State Department appreciates the information the Department of Defense has provided regarding its partnership with NOAA and the National Science Foundation to establish a downlink site for the Defense Meteorological Satellite Program (DMSP) at McMurdo Station, Antarctica. We further understand that, as outlined in your April 2011 memorandum, all DMSP stored mission data down-linked to McMurdo Station will be made freely available to the public, without artificial delay, and that any data that cannot be made freely available without time constraints will not be down-linked at McMurdo Station.

We appreciate these commitments to ensure the DMSP downlink at McMurdo Station complies with the Antarctic Treaty. As you know, any limitation on the public availability of data down-linked to Antarctica risks inconsistency with the Antarctic Treaty's prohibition of any measure of a military nature. With this in mind, we appreciate your assurance that the Department of Defense will pre-clear with the State Department and National Science Foundation any changes to the DMSP data access policy that could undermine compliance with the Antarctic Treaty.

Sincerely,

Evan T. Bloom
Director
Office of Ocean and Polar Affairs

cc: Dr. Karl Erb, Director, Office of Polar Programs, National Science Foundation

U.S. Department of State, "We further understand that, as outlined in your April 2011 memorandum, all DMSP stored mission data down-linked to McMurdo will be made freely available to the public . . ."

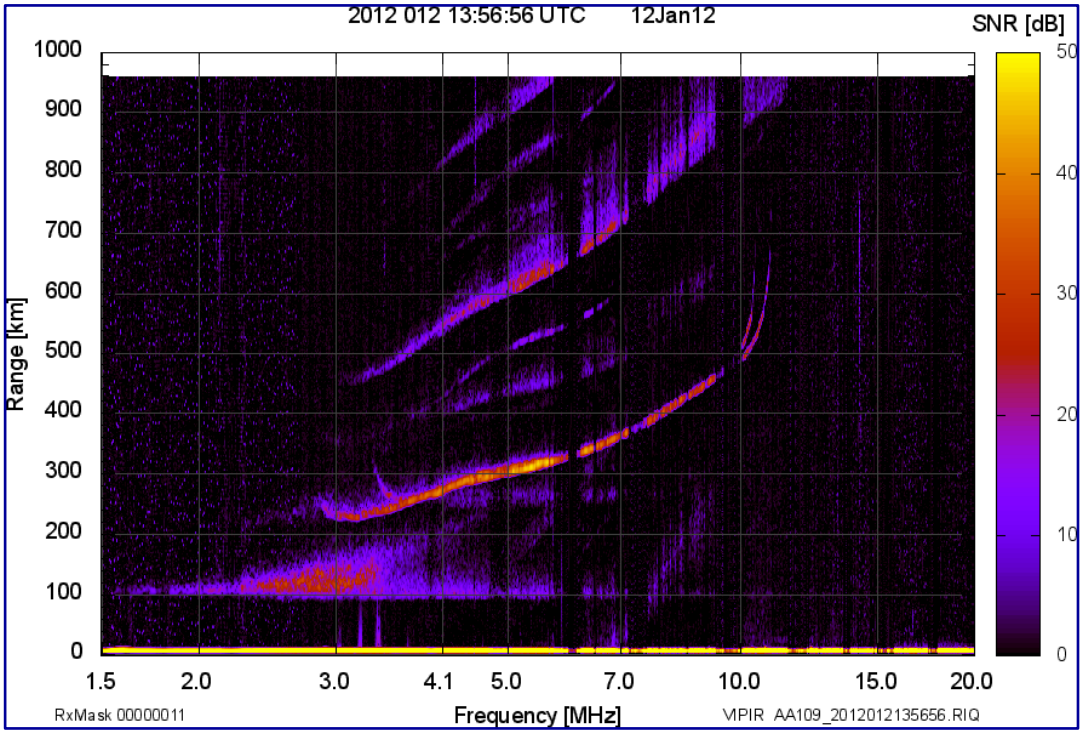
Status: At 12:38 MST on 16 Jan 2012, the McMurdo DMSP data was first received via AFWA and immediately posted to the NGDC website for pubic availability. (2QFY12 Milestone)

Raw Data: http://www.ngdc.noaa.gov/dmsp/mcmurdo/simple/
Processed OLS: http://www.ngdc.noaa.gov/dmsp/mcmurdo/ngdcproc/dda/

Accomplishments & Updates

VIPIR 1st Light in Ethiopia

Terry Bullett has reported "1st Light" from the new Addis Ababa Vertical Incident Pulsed Ionospheric Radar (VIPIR). This is the first ionosonde to be deployed in Ethiopia. The field site was established by hacking into the forest and building the infrastructure by hand. A second African VIPIR is planned for Kenya [*TBD*]. *I, for one, am glad that Terry likes to visit exotic locations.*



OUTLINE
Solar & Terrestrial Physics Division

STP Division Overview

Milestones & Performance Measures

Personnel Activities – *nothing to report*

Accomplishments & Updates

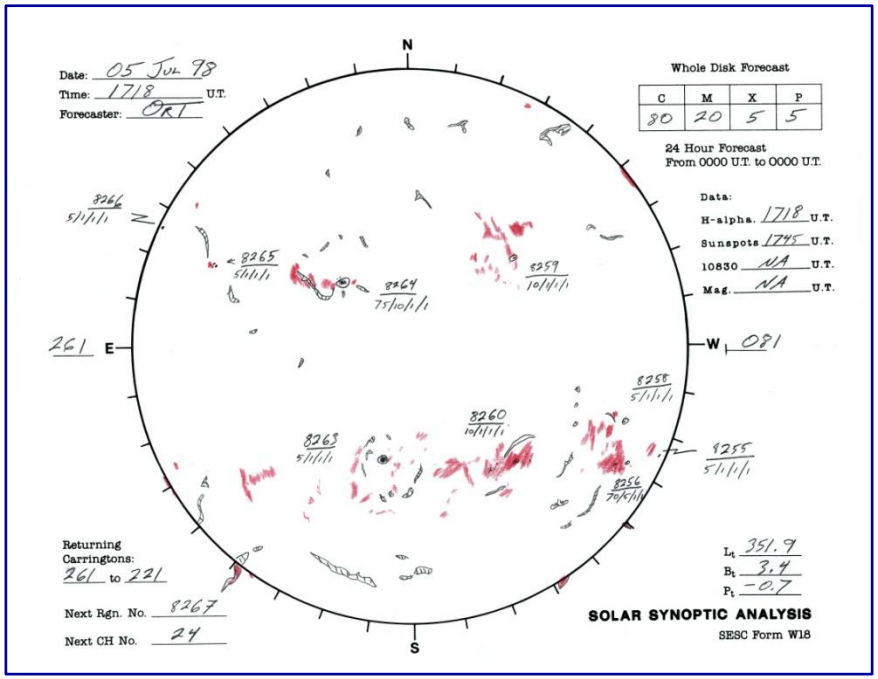
Special Interest Items

USAF Datasets At NGDC

Issues & Summary

Special Interest Item
ASTRA Time Machine – Android APP

ASTRA has developed an Android APP for displaying solar synoptic drawings available from NGDC. The APP allows the user to determine what the sun looked like on the day he/she was born or any other day. The APP can be downloaded for free from the Android Market.



Boulder Neutral Line Drawing
05 July 1998

Special Interest Item
Site Visit: Russian Space Research Institute

NPOESS Preparatory Project (NPP) Seminar at Russian Space Research Institute

While in Moscow, Peter Elespuru presented a seminar[1] on the NPP project and a detailed look of the Visible/Infrared Imager/Radiometer Suite (**VIIRS**), focusing on comparisons to past instrumentation such as the Optical Linescan System (OLS) and the Moderate Resolution Imaging Spectroradiometer (MODIS). The seminar was well attended and showed clear interest from the scientists at the Space Research Institute and the Russian Academy of Science, in general.

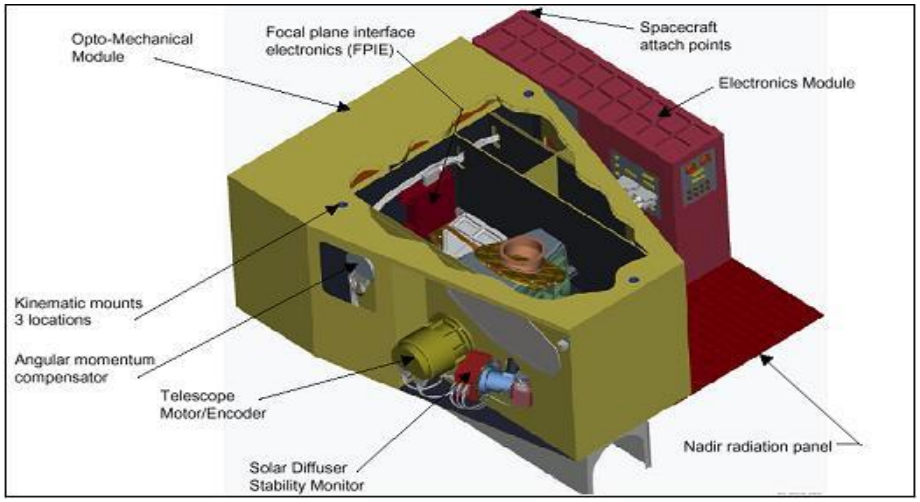
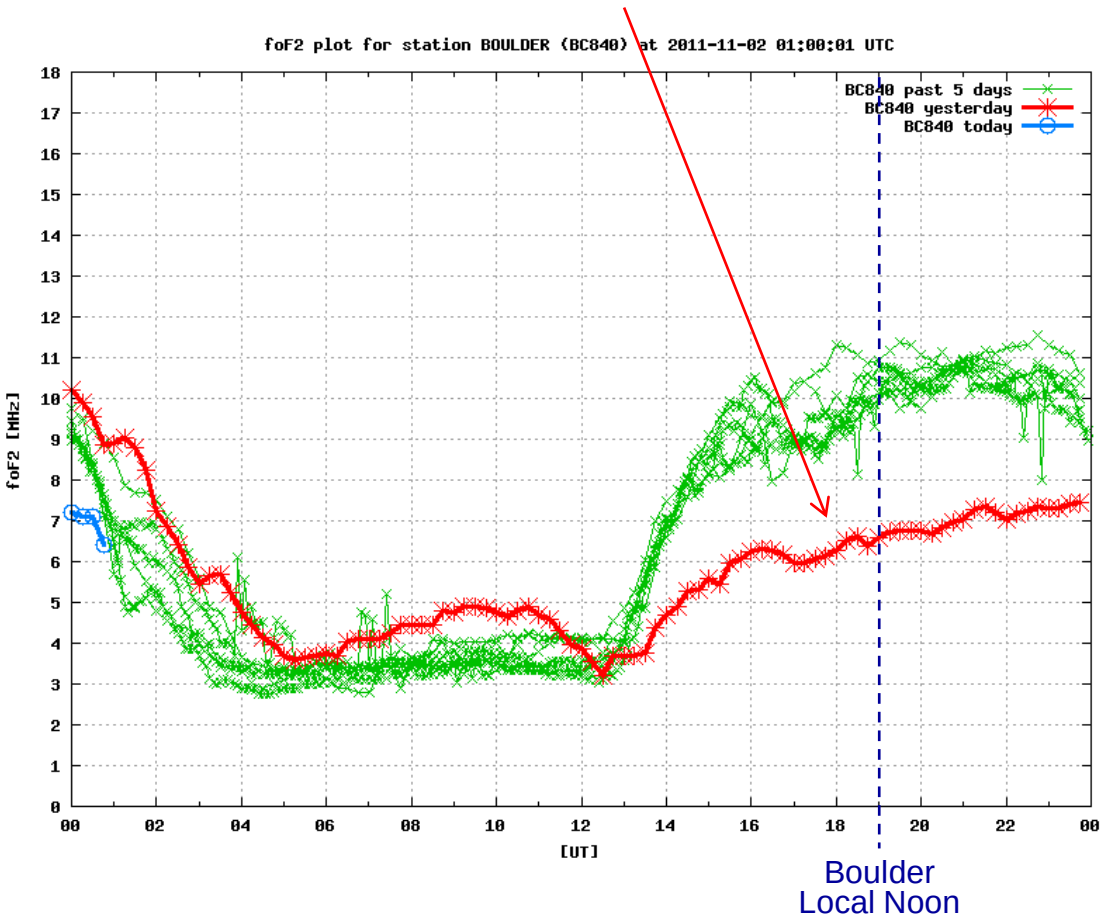


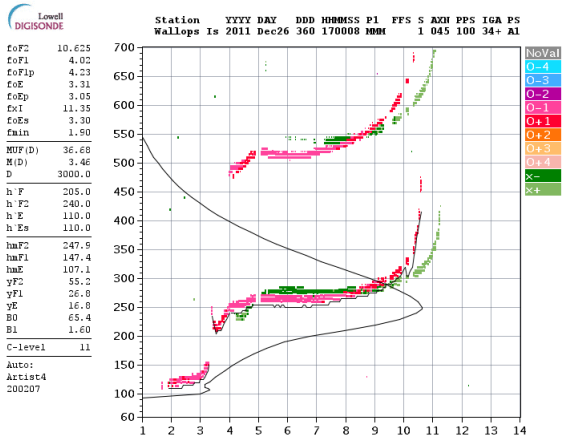
image credit: Raytheon SBRS

[1]Only publicly available information was discussed.

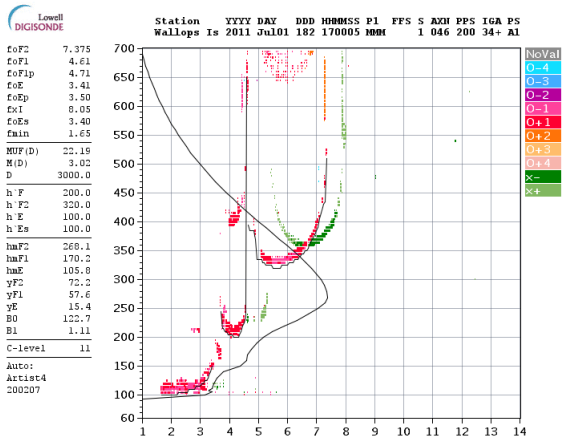
Special Interest Item
Anomalous Diurnal Profile - Ionosphere

The ionosphere at Boulder on 02 November 2011 apparently got tired of winter and adopted a more summer-like diurnal profile. The reason for this anomalous behavior is unknown.





"Typical" Winter Vertical Profile - Noon



"Typical" Summer Vertical Profile - Noon

Special Interest Item
Spacecraft Anomalies Meeting

Background:

Janet Green and Bill Murtagh are organizing a Satellite Anomaly Mitigation Stakeholders' Meeting on the Monday before Space Weather Workshop. The meeting will include featured speakers and open panel discussions for stakeholders interested in satellite anomaly mitigation. The meeting is consistent with NGDC's increasing environmental support to the satellite anomaly community.

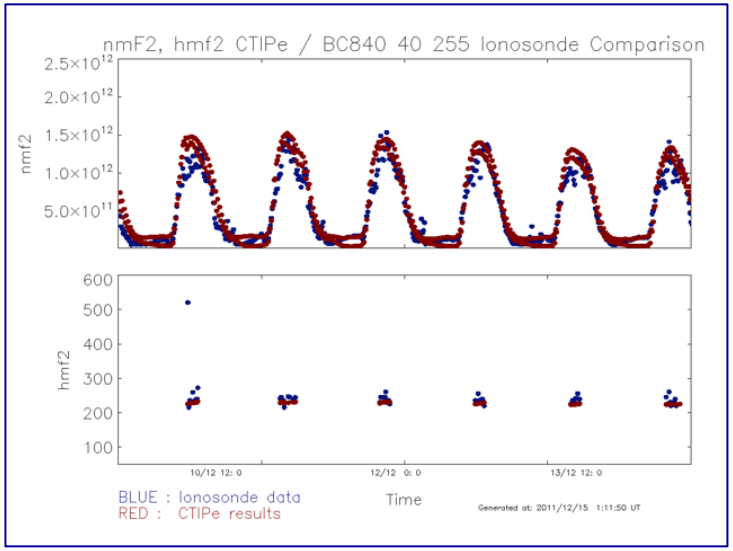
Goals:

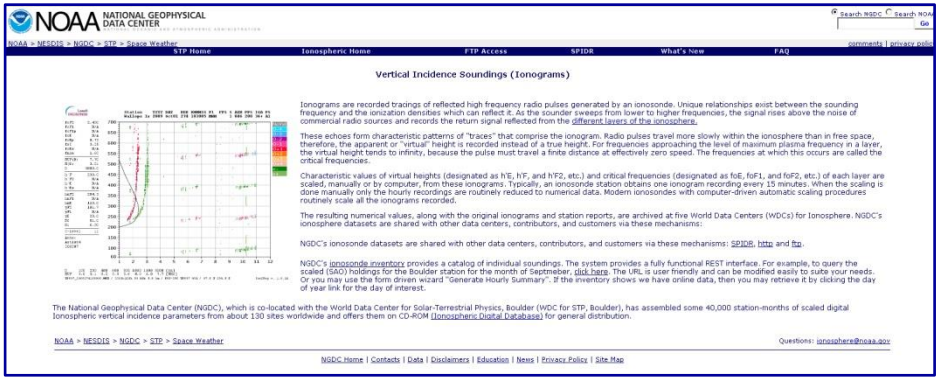
1. Solicit inputs from customers about satellite anomaly issues/impacts,
2. Provide customers with NOAA current and future plans for relevant environmental data and products,
3. Solicit feed-back on what other data, products and services NOAA should provide,
4. Ensure that the nation's fleet of satellites is responsibly prepared for large space weather events.

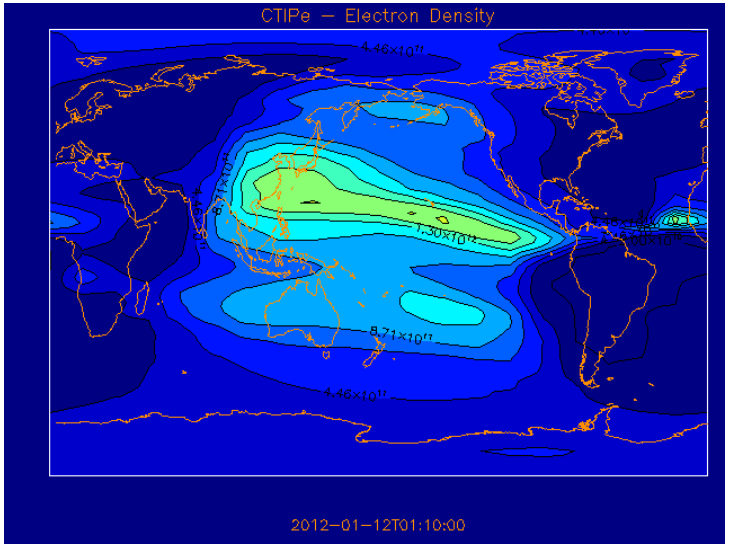
Special Interest Item
NGDC Data Used for Model Validation

Mihail Codrescu has used NGDC ionosonde data to validate the predictive Coupled Thermosphere Ionosphere Plasmasphere Electrodynamics Model (CTIPe) model.

"CTIPe is a state of the art research tool used at the Space Weather Prediction Center to study thermosphere-ionosphere phenomena in order to develop nowcasting and forecasting algorithms for space weather. The objectives are to understand and quantify the importance of the upper-atmospheric mechanisms that affect human activities and to develop new monitoring and prediction techniques."







Special Interest Item
Requests for STP Support

NASA and STP have discussed to possibility to host NOAA satellite SWx data on **CDAWeb**. This would significantly increase the exposure of NOAA environmental datasets to the scientific community. Attribution does not seem to be a problem. We are investigating whether this arrangement can be implemented within the context of a new umbrella MOU between NASA and NOAA.

Representatives of the NRO have approached STP with a request for NGDC to host the next-generation radiation belts model, **AE-9/AP-9**. Similar requests have been echoed by others in the community, including the Aerospace Corp and MIT/LL-AFRL. At this time it is unclear what level of effort would be needed to manage these models. No obvious source of funding has been identified to support this effort.

Caretakers for the ultra-violet imaging sensors on DMSP have requested that STP manage the operational data products for the **SSULI** and **SSUSI** sensors, including providing public access to these data. At the same time representatives of the scientific community have issued similar appeals. Scientific data stewardship of these products will be a topic for the NGDC-AFWA AAA discussions.

OUTLINE
Solar & Terrestrial Physics Division

STP Division Overview

Milestones & Performance Measures

Personnel Activities – *nothing to report*

Accomplishments & Updates

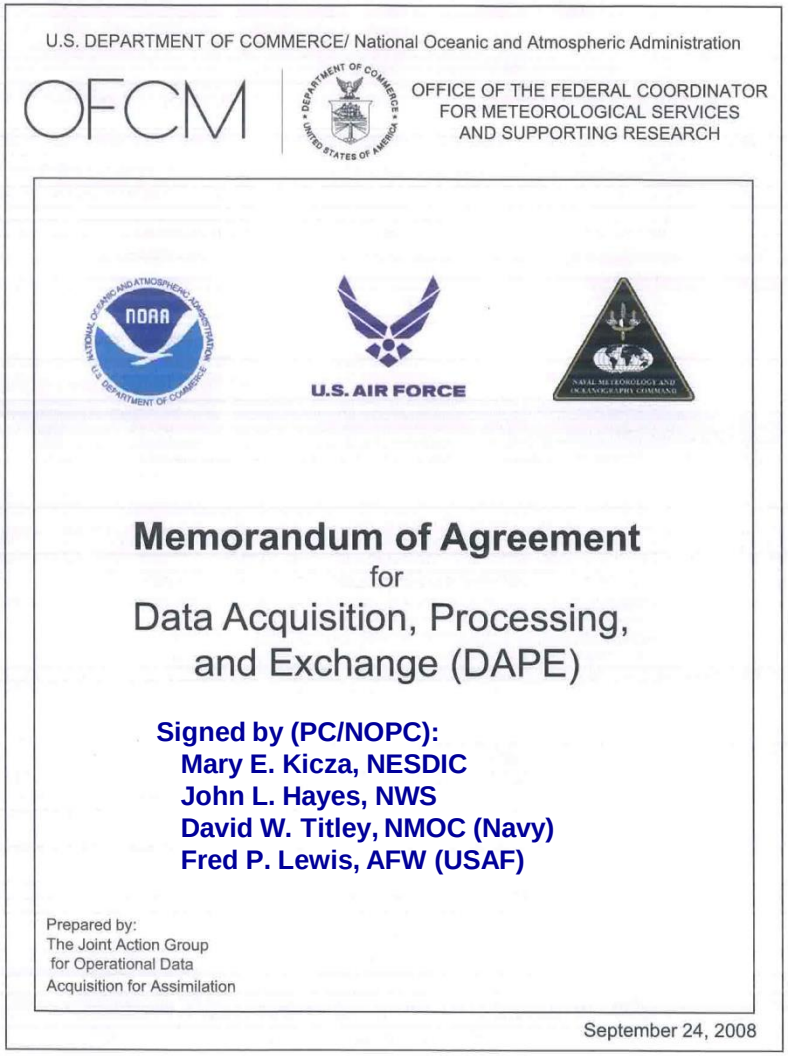
Special Interest Items

USAF Datasets At NGDC

Issues & Summary

USAF Datasets
Renewing AFWA-NGDC MOA

DRAFT



U.S. DEPARTMENT OF COMMERCE/ National Oceanic and Atmospheric Administration

OFCM

OFFICE OF THE FEDERAL COORDINATOR FOR METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

U.S. AIR FORCE

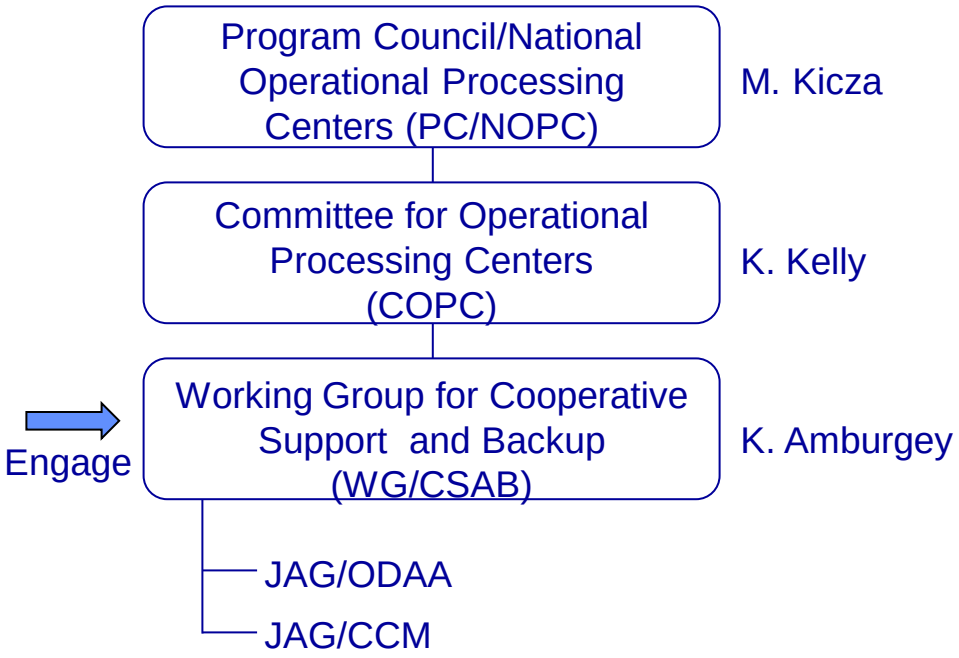
Memorandum of Agreement
for
Data Acquisition, Processing, and Exchange (DAPE)

Signed by (PC/NOPC):
Mary E. Kicza, NESDIC
John L. Hayes, NWS
David W. Titley, NMOC (Navy)
Fred P. Lewis, AFW (USAF)

Prepared by:
The Joint Action Group for Operational Data Acquisition for Assimilation

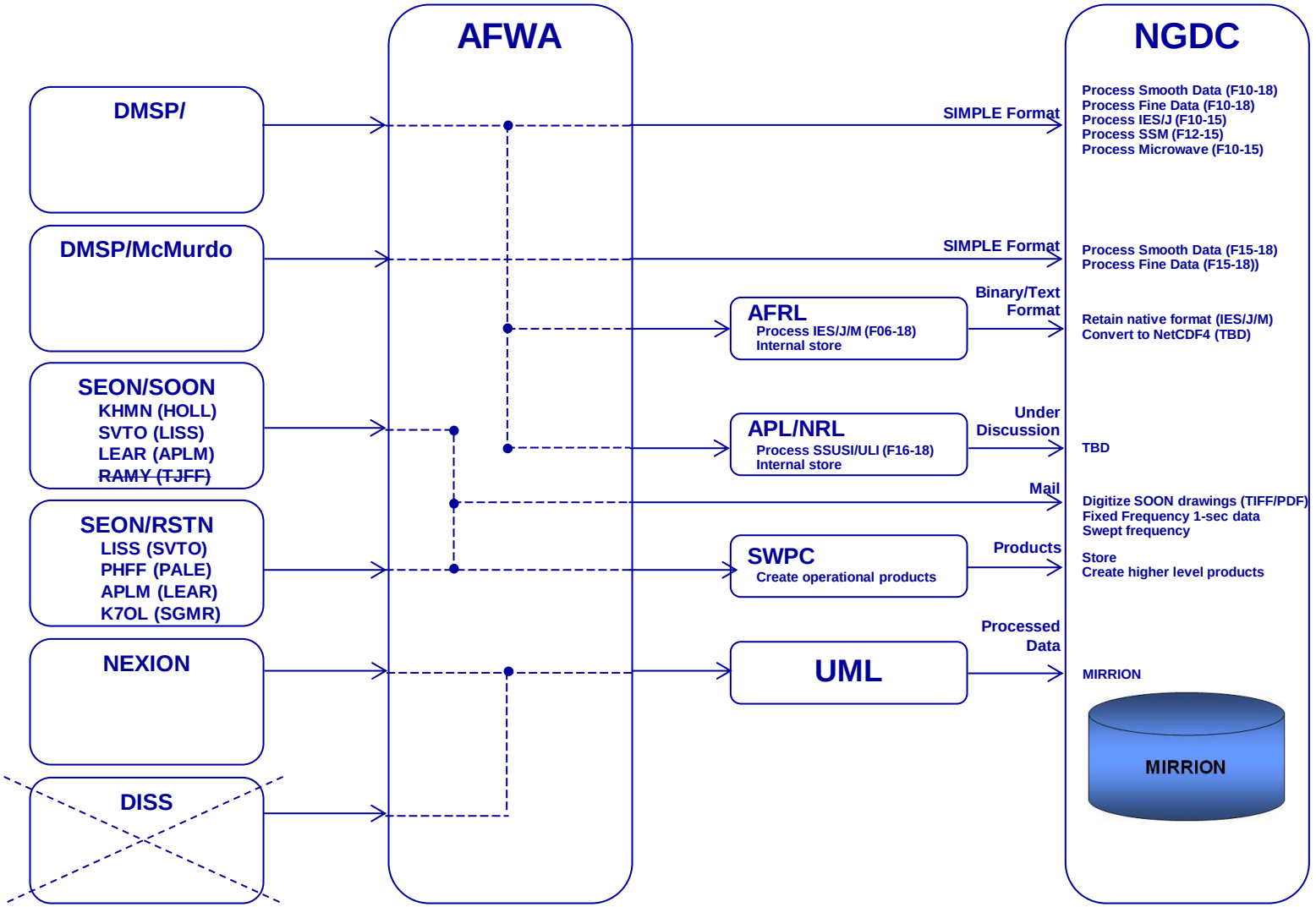
September 24, 2008

It is likely that the existing MOA-DAPE is an appropriate vehicle for a renewed agreement between AFWA and NGDC for the AAA of USAF satellite and space weather datasets. W. Denig is working with Mr.Ron Dunic to better define AFWA's needs and NGDC's capabilities.



USAF Datasets
Data Flows - Overview

DRAFT



USAF Datasets
USAF Data Contributors

DRAFT

AFWA direct

- DMSP – full data stream (SIMPLE format) from Thule and McMurdo; smooth/fine
- NEXION – *tbd* – under discussion
- ISOON – *tbd* – future? (Interim GONG – *tbd*)

SEON (SOON & RSTN) Sites via Mail (monthly)

- SOON Sunspot Drawings – paper originals – *images to CU but status is unknown?*
- RSTN datafiles – CD – includes:
  - ✓Metrics – Station metrics (up/down time, etc)
  - ✓RIMS – Fixed frequency data – 1 sec, up to 8 frequencies
  - ✓SRS – Swept frequency data
  - ✓WNDS – Semi-automatic massages generated by the WNDS (operator input)

AFRL (APL & NRL – *tbd*) – Daily ftp

- Processed DMSP SWx sensor data (SSJ/SSIES/SSM; SSUSI/SSULI – *tbd*)

University of Masachusetts, Lowell

- Ionosonde – DIDBase – ionograms in SAO/XML format

Space Weather Prediction Center – next slide

USAF Datasets
Received via SWPC

DRAFT

External Space Weather Data Store (E-SWDS)[1]

- BURSTData – RSTN – Solar radio bursts (start, stop, frequency, type)
- DALASData – SOON – Disk & limb reports - filaments (locations)
- FLAREData – SOON – H-alpha flares (start, stop, peak, location)
- FLUXData – *TBD*
- SPOTData – SOON – Sunspots/groups
- STATSData – SOON – Times of sun viewing for each day
- SWEEPData – RSTN observations – Solar radio type
- *X-RAYData – GOES observations - X-Ray flares*

Derived SWPC Daily Products[2] – Relies on SOON/RSTN data plus other sources

- Solar Event Reports (edited events) – H-alpha, solar radio, and H-alpha flares
- Solar Region Summaries – Region numbers, sunspots/groups and plague
- Summary of Space Weather Observations – Region numbers, sunspots and characteristics
- Space Weather Indices – sunspot numbers, background x-ray flux and solar radio flux
- Reports of Solar Geophysical Activity – Geophysical analyses and forecasts
- Solar Geophysical Event Summaries – Flares and burst events and daily particle fluences
- Space Weather Event Reports – Energetic solar events; flares and bursts, locations
- *Geoalerts – International Ursigram & World Data Service (IUWDS) listings*

[1]Currently being acquired – not available online
[2]Daily files available online

USAF Datasets
DMSP Data Holdings

DRAFT

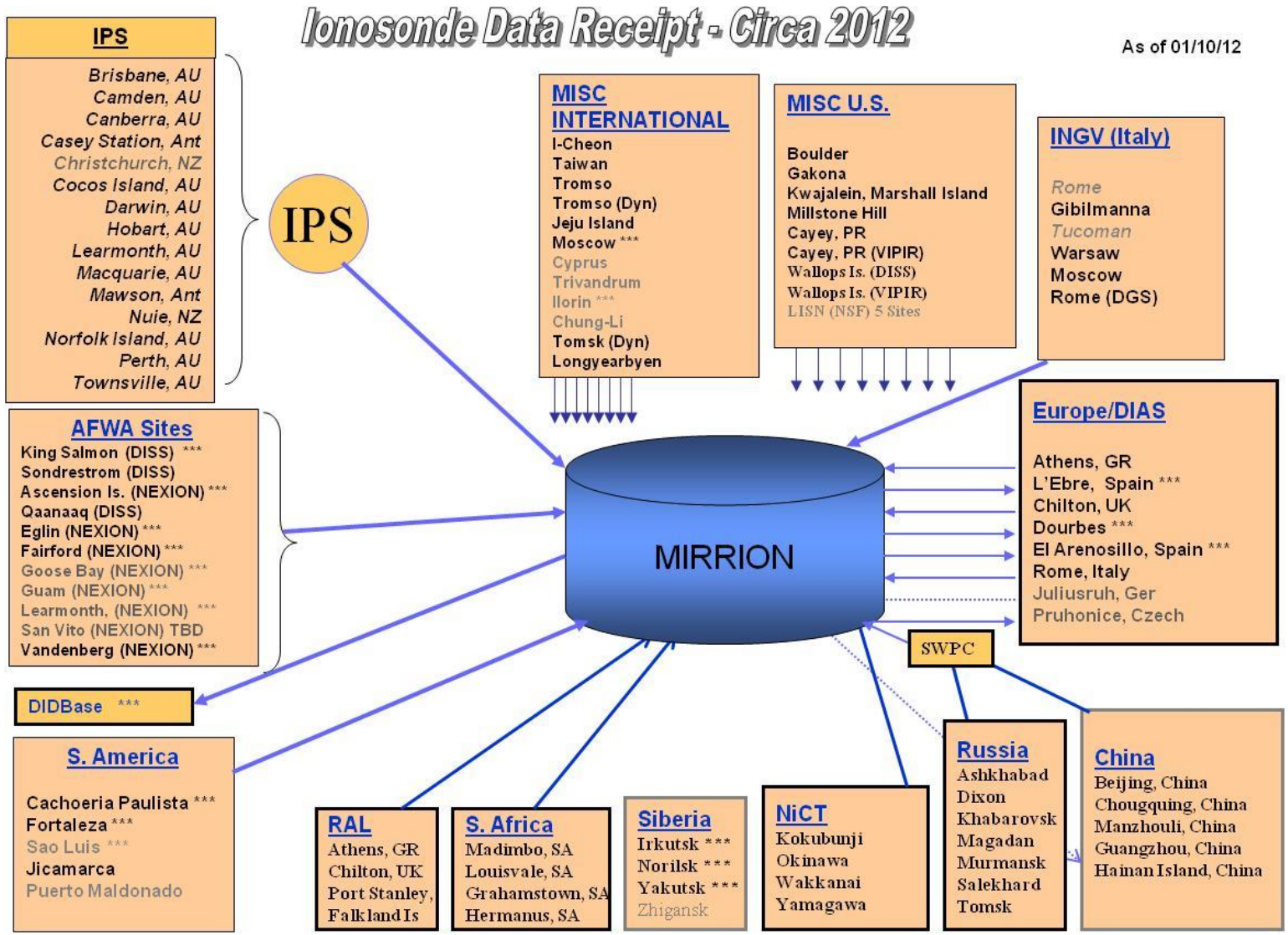
			OLS	SSM/I	SSM/T1	SSM/T2	SSMIS	SSJ	SSIES	SSM	
Data Vol/Day/Sat (Mb)			2218	205	2.3	0		44.5	32.7	18.3	
	BLOCK	DATE	OLS	SSM/I	SSM/T1	SSM/T2	SSMIS	SSJ	SSIES	SSM	Daily Data Rates (Mb)
F10		92-95	X	X	X			X	X		906 (Inactive)
F11		92-95	X	X	X			X	X		924 (Inactive)
F12		94-02	X	F*	X	X		X	X	X	735 (Inactive)
F13	5D-2	95-09	X	X	X			X	X	X	923 (Inactive)
F14	5D-2	97-08	X	X	X	X		X	X	X	941 (Inactive)
F15	5D-2	00-	X	X	X	X		X	X	X	2400 (Active)
F16	5D-3	03-	X								1200 (Active)
F17	5D-3	06-	X								1975 (Active)
F18	5D-3	09-	X								1800 (Active)
Total (GB)			17460	2590	209			796	815	252	
F19	5D-3		X				X	X	X	X	
F20	5D-3		X				X	X	X	X	*Failure

DMSP Raw Data Volume: 40.3 TB / DMSP Processed Data: 22.3 TB / Total: 62.6 TB
DMSP Raw Data Volume: 58 TB / DMSP Processed Data: 34 TB / Total: 92 TB (w/McMurdo est.)

USAF Datasets

DRAFT

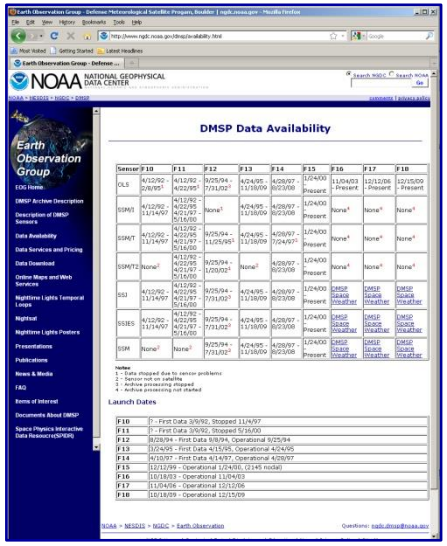
MIRRION Data – Used by AFWA



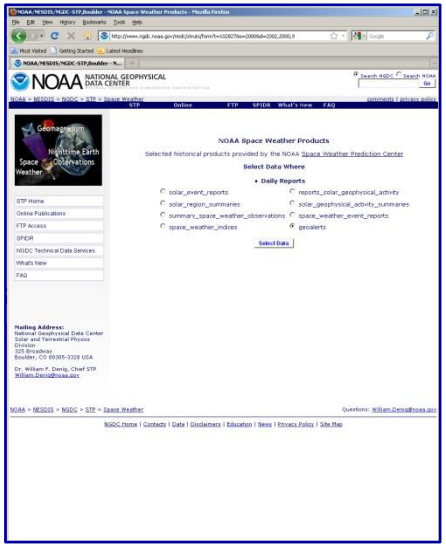
USAF Datasets

Data Availability – *Online*

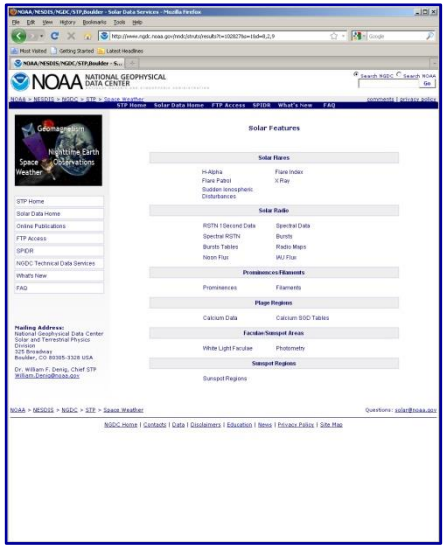
DRAFT



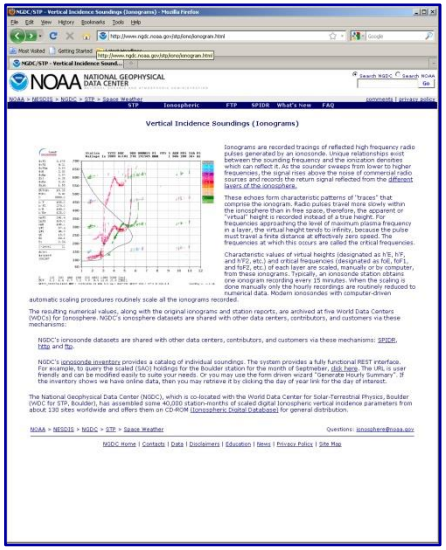
DMSP Data



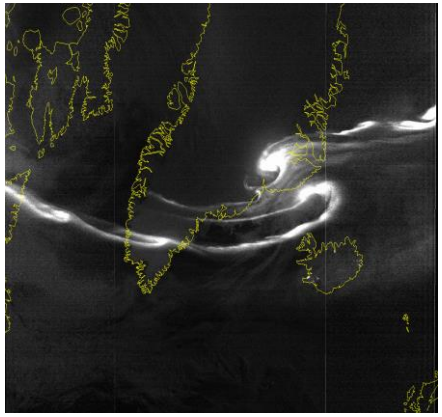
SWPC Products



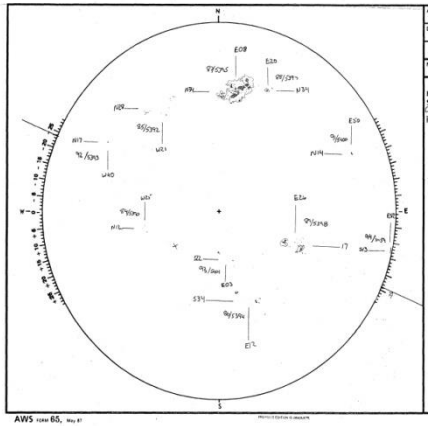
Solar Feature Products

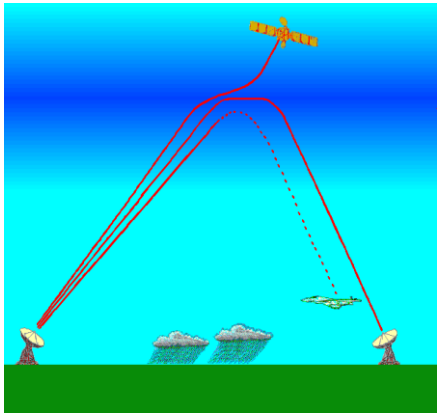


Ionosonde Data



```
:Product: 20020501SRS.txt
:Issued: 2002 May 01 0030 UTC
# Prepared jointly by the U.S. Dept. of Commerce, NOAA,
# Space Environment Center and the U.S. Air Force.
#
Joint USAF/NOAA Solar Region Summary
SRS Number 121 Issued at 0030Z on 01 May 2002
Report compiled from data received at SWO on 30 Apr
I.  Regions with Sunspots.  Locations Valid at 30/2400Z
Nmbr Location  Lo  Area  Z   LL   NN Mag Type
9914 N05W80   018  0110 Cso  09   03 Beta
9915 N12W69   007  0150 Dso  10   06 Beta
9919 N14W28   326  0070 Cso  05   06 Beta
9922 N22W38   336  0010 Bxo  07   02 Beta
9926 N14W15   313  0060 Cao  03   05 Beta
9927 S29E55   243  0070 Cso  07   04 Beta
9928 N18E61   237  0070 Cso  03   04 Beta
9929 N22E16   282  0010 Bxo  03   03 Beta
IA. H-alpha Plages without Spots.  Locations Valid at 30/2400Z Apr
Nmbr  Location  Lo
9916  S15W43   341
9921  N14W54   352
II. Regions Due to Return 01 May to 03 May
Nmbr Lat    Lo
9896 S09    196
9899 N19    181
9901 N21    206
9905 S14    204
9908 N05    206
```

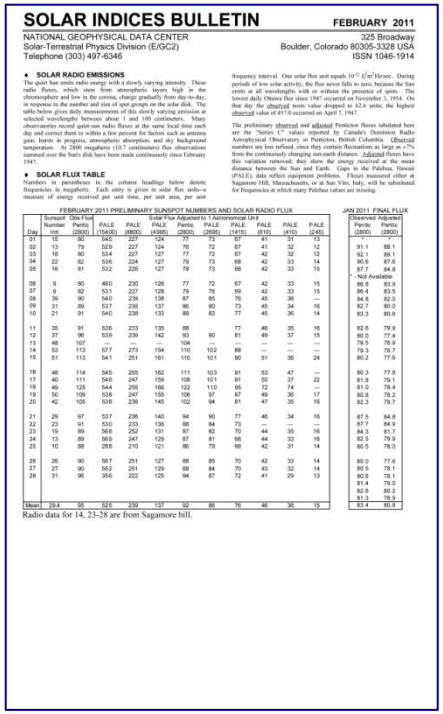




USAF Datasets
NGDC Solar Feature Products

DRAFT

Solar Indices Bulletin



SOLAR INDICES BULLETIN — FEBRUARY 2011

NATIONAL GEOPHYSICAL DATA CENTER
Solar-Terrestrial Physics Division (E/GC2)
Telephone (303) 497-6346

325 Broadway
Boulder, Colorado 80305-3328 USA
ISSN 1046-1914

♦ SOLAR RADIO EMISSIONS

The quiet Sun emits radio energy with a slowly varying intensity. These radio fluxes, which stem from atmospheric layers high in the chromosphere and low in the corona, change gradually from day-to-day, in response to the number and size of spot groups on the solar disk. The table below gives daily measurements of this slowly varying emission at selected wavelengths between about 1 and 100 centimeters. Many observatories record quiet-sun radio fluxes at the same local time each day and correct them to within a few percent for factors such as antenna gain, beam in progress, atmospheric absorption, and sky background temperature. At 2800 megahertz (10.7 centimeters) flux observations summed over the Sun's disk have been made continuously since February 1947.

♦ SOLAR FLUX TABLE

Numbers in parentheses in the column headings below denote frequencies in megahertz. Each entry is given in solar flux units--a measure of energy received per unit time, per unit area, per unit frequency interval. One solar flux unit equals 10^{-22} J/m^2/Hz/sec. During periods of low solar activity, the flux never falls to zero, because the Sun emits at all wavelengths with or without the presence of spots. The lowest daily Ottawa flux since 1947 occurred on November 5, 1954. On that day the observed noon value dropped to 62.6 units; the highest observed value of 417.0 occurred on April 7, 1947.

The preliminary observed and adjusted Penticton fluxes tabulated here are the "Series C" values reported by Canada's Dominion Radio Astrophysical Observatory in Penticton, British Columbia. Observed numbers are less refined, since they contain fluctuations as large as ±7% from the continuously changing sun-earth distance. Adjusted fluxes have this variation removed; they show the energy received at the mean distance between the Sun and Earth. Gaps in the Palehua, Hawaii (PALE), data reflect equipment problems. Fluxes measured either at Sagamore Hill, Massachusetts, or at San Vito, Italy, will be substituted for frequencies at which many Palehua values are missing.

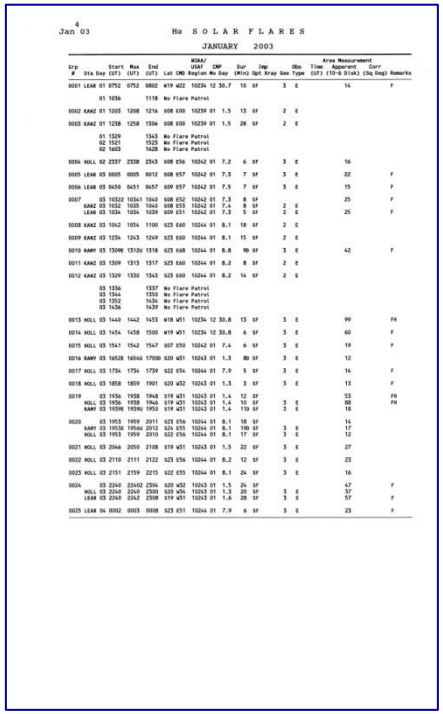
FEBRUARY 2011 PRELIMINARY SUNSPOT NUMBERS AND SOLAR RADIO FLUX

Day	Sunspot Number Initial	Obs Flux Penticton (2800)	PALE (15400)	PALE (8800)	PALE (4995)	Solar Flux Adjusted to 1 Astronomical Unit Penticton (2800)	PALE (2695)	PALE (1415)	PALE (610)	PALE (410)	PALE (245)	JAN 2011 FINAL FLUX Observed Adjusted Penticton (2800)	Penticton (2800)
01	16	80	545	227	124	77	73	67	41	31	13	*	*
02	13	79	529	227	124	76	72	67	41	32	12	91.1	88.1
03	18	80	534	227	127	77	72	67	42	32	12	92.1	89.1
04	22	82	536	224	127	79	73	68	42	33	14	90.6	87.6
05	16	81	532	226	127	79	73	68	42	33	15	87.7	84.9
												* Not Available	
06	9	80	480	230	126	77	72	67	42	33	15	86.8	83.9
07	9	82	531	227	128	79	76	69	42	33	15	86.4	83.5
08	39	90	540	239	138	87	85	76	45	36	—	84.8	82.0
09	31	89	557	235	137	86	80	73	45	36	16	82.7	80.0
10	21	91	540	238	133	88	83	77	45	36	14	83.3	80.6
11	35	91	536	233	135	88	—	77	46	35	16	82.6	79.9
12	37	96	539	239	142	93	90	81	49	37	15	80.0	77.4
13	48	107	—	—	—	104	—	—	—	—	—	79.5	76.9
14	53	113	577	273	154	110	102	88	—	—	—	79.3	76.7
15	51	113	541	251	161	110	101	90	51	36	24	80.2	77.0
16	48	114	545	255	162	111	103	91	53	47	—	80.3	77.8
17	40	111	546	247	159	108	101	91	50	37	22	81.8	79.1
18	49	125	544	255	166	122	110	95	72	74	—	81.0	78.4
19	50	109	516	247	155	106	97	87	49	36	17	80.8	78.2
20	42	105	536	238	145	102	94	81	47	35	16	82.3	79.7
21	29	97	537	236	140	94	90	77	46	34	16	87.5	84.8
22	23	91	550	233	136	88	84	73	—	—	—	87.7	84.9
23	19	89	568	252	131	87	82	70	44	35	16	84.3	81.7
24	13	89	569	247	129	87	81	68	44	33	16	82.5	79.9
25	10	88	428	288	270	121	86	79	66	42	31	81.4	78.9
26	26	90	567	251	127	88	85	70	42	33	14	80.0	77.6
27	27	90	552	251	129	88	84	70	43	32	14	80.5	78.1
28	31	96	366	222	126	94	87	72	41	29	13	80.6	78.1
												81.4	79.0
												82.6	80.2
												81.3	78.9
Mean	29.4	95	525	239	137	92	86	76	46	36	15	83.4	80.9

Radio data for 14, 23-28 are from Sagamore hill.

Finalizing Development
Filling Gap

H-alpha Flare Listings



4
Jan 03

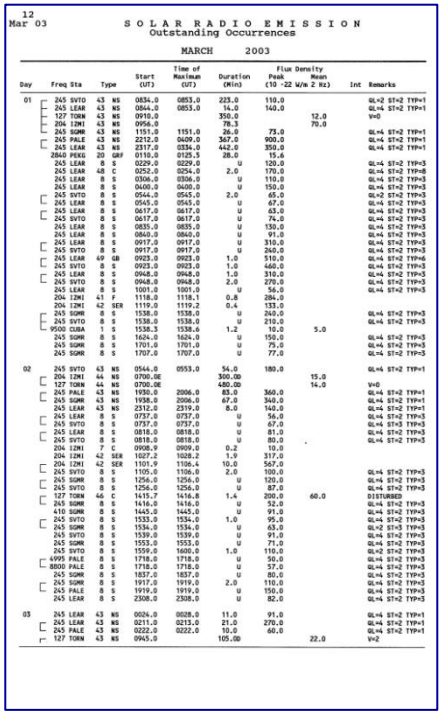
Hα SOLAR FLARES

JANUARY 2003

Grp #	Sta	Start Day	Start (UT)	Max (UT)	End (UT)	Loc	CMD	NOAA/USAF Region	Num Day	Dur (Min)	Imp	Spt Area	Sum Sec Type	Obs	Area Measurement Time	Area Measurement Apparent	Area Measurement Corr	Remarks
0001	LEAR	01	0752	0752	0802	W19	W22	10234	12	30.7	1F	10	SF	3	E	14		F
		01	1036		1118	No Flare Patrol												
0002	KANZ	01	1203	1208	1216	S08	E00	10239	01	1.5	1S	13	SF	2	E			
0003	KANZ	01	1238	1258	1306	S08	E00	10239	01	1.5	2B	50	SF	2	E			
		01	1329		1343	No Flare Patrol												
		02	1521		1525	No Flare Patrol												
		02	1603		1628	No Flare Patrol												
0004	HOLL	02	2337	2338	2343	S08	E56	10242	01	7.2	6	SF		3	E	16		
0005	LEAR	03	0005	0005	0012	S08	E57	10242	01	7.3	7	SF		3	E	22		F
0006	LEAR	03	0450	0451	0457	S09	E57	10242	01	7.5	7	SF		3	E	15		F
0007		03	1032	1034	1040	S08	E52	10242	01	7.5	8	SF				25		F
	KANZ	03	1032	1035	1040	S08	E53	10242	01	7.4	8	SF		2	E			
	LEAR	03	1034	1034	1039	S09	E51	10242	01	7.3	5	SF		2	E	25		F
0008	KANZ	03	1042	1054	1100	S23	E60	10244	01	8.1	1B	SF		2	E			
0009	KANZ	03	1234	1243	1249	S23	E60	10244	01	8.1	1S	SF		2	E			
0010	RAMY	03	1309	1312U	1318	S25	E68	10244	01	8.8	9B	SF		3	E	42		F
0011	KANZ	03	1309	1313	1317	S25	E60	10244	01	8.2	8	SF		2	E			
0012	KANZ	03	1329	1330	1343	S25	E60	10244	01	8.2	1N	SF		2	E			
		03	1336		1337	No Flare Patrol												
		03	1346		1350	No Flare Patrol												
		03	1352		1436	No Flare Patrol												
		03	1436		1439	No Flare Patrol												
0013	HOLL	03	1440	1442	1453	N18	W51	10234	12	30.8	1S	SF		3	E	99		FN
0014	HOLL	03	1454	1458	1500	N19	W51	10234	12	30.8	6	SF		3	E	60		F
0015	HOLL	03	1541	1542	1547	S07	E50	10242	01	7.4	6	SF		3	E	19		F
0016	RAMY	03	1652E	1654U	1700U	S20	W31	10243	01	1.3	8U	SF		3	E	12		
0017	HOLL	03	1734	1734	1739	S22	E54	10244	01	7.9	5	SF		3	E	14		F
0018	HOLL	03	1858	1859	1901	S20	W52	10243	01	1.3	3	SF		3	E	13		F
0019		03	1936	1938	1948	S19	W51	10243	01	1.4	1S	SF				53		FN
	HOLL	03	1936	1938	1940	S19	W51	10243	01	1.4	1B	SF		3	E	88		FN
	RAMY	03	1936	1939U	1950	S19	W51	10243	01	1.4	1N	SF		3	E	16		
0020		03	1953	1959	2011	S23	E56	10244	01	8.1	1B	SF				14		
	RAMY	03	1953E	1956U	2012	S24	E55	10244	01	8.1	1N	SF		3	E	17		
	HOLL	03	1953	1959	2013	S22	E56	10244	01	8.1	1F	SF		3	E	12		
0021	HOLL	03	2046	2050	2108	S19	W51	10243	01	1.5	2B	SF		3	E	27		
0022	HOLL	03	2110	2111	2122	S23	E56	10244	01	8.2	1F	SF		3	E	23		
0023	HOLL	03	2151	2159	2215	S22	E55	10244	01	8.1	2B	SF		3	E	16		
0024		03	2240	2240U	2304	S20	W52	10243	01	1.5	2B	SF				47		F
	HOLL	03	2240	2240	2308	S20	W54	10243	01	1.5	2B	SF		3	E	57		
	LEAR	03	2240	2242	2308	S19	W51	10243	01	1.6	2B	SF		3	E	57		F
0025	LEAR	04	0002	0003	0008	S25	E51	10244	01	7.9	6	SF		3	E	23		F

Under Consideration
Auto Generation

Solar Radio Bursts



12
Mar 03

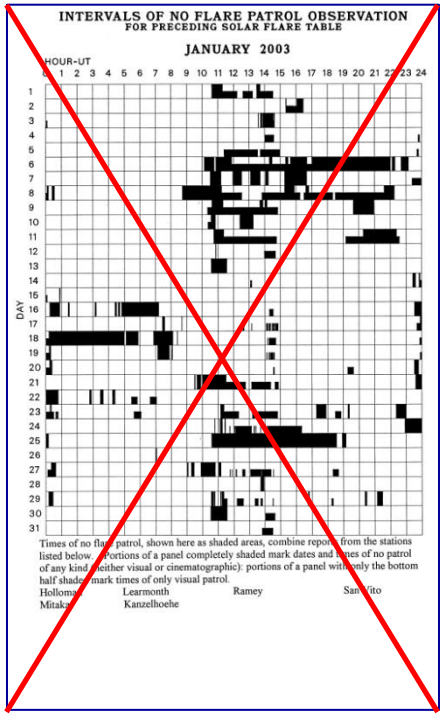
SOLAR RADIO EMISSION
Outstanding Occurrences

MARCH 2003

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10 -22 W/m 2 Hz)	Flux Density Mean (10 -22 W/m 2 Hz)	Int	Remarks
01	245	SVTO	43 NS	0834.0	0853.0	223.0	110.0			GL=2 ST=2 TYP=1
	245	LEAR	43 NS	0844.0	0853.0	14.0	140.0			GL=4 ST=2 TYP=1
	127	TORN	43 NS	0910.0		350.0		12.0		V=0
	204	IZMI	43 NS	0956.0		78.3		70.0		
	245	SGMR	43 NS	1151.0	1151.0	26.0	73.0			GL=4 ST=2 TYP=1
	245	PALE	43 NS	2211.0	0400	367.0	900.0			GL=4 ST=2 TYP=1
	245	LEAR	43 NS	2317.0	0334.0	442.0	350.0			GL=4 ST=2 TYP=1
	2840	PEKG	20 GBF	0110.0	0125.5	28.0	15.6			
	245	LEAR	8 S	0229.0	0229.0	U	120.0			GL=4 ST=2 TYP=3
	245	LEAR	48 C	0252.0	0254.0	2.0	170.0			GL=4 ST=2 TYP=8
	245	LEAR	8 S	0306.0	0306.0	U	110.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	0400.0	0400.0	U	150.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	0544.0	0545.0	2.0	65.0			GL=2 ST=2 TYP=3
	245	LEAR	8 S	0545.0	0545.0	U	67.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	0617.0	0617.0	U	63.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	0617.0	0617.0	U	74.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	0835.0	0835.0	U	130.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	0840.0	0840.0	U	91.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	0917.0	0917.0	U	310.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	0917.0	0917.0	U	260.0			GL=4 ST=2 TYP=3
	245	LEAR	49 GB	0923.0	0923.0	1.0	510.0			GL=4 ST=2 TYP=6
	245	SVTO	8 S	0923.0	0923.0	1.0	460.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	0948.0	0948.0	1.0	310.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	0948.0	0948.0	2.0	270.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	1001.0	1001.0	U	56.0			GL=4 ST=2 TYP=3
	204	IZMI	41 F	1118.1	1118.1	0.8	284.0			
	204	IZMI	42 SER	1119.0	1119.2	0.4	133.0			
	245	SGMR	8 S	1538.0	1538.0	U	240.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	1538.0	1538.0	U	210.0			GL=4 ST=2 TYP=3
	9500	CUBA	1 S	1538.3	1538.6	1.2	10.0	5.0		
	245	SGMR	8 S	1624.0	1624.0	U	150.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1701.0	1701.0	U	75.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1707.0	1707.0	U	77.0			
02	245	SVTO	43 NS	0544.0	0553.0	54.0	180.0			GL=4 ST=2 TYP=1
	204	IZMI	44 NS	0700.0E		300.0D		15.0		
	127	TORN	44 NS	0700.0E		480.0D		14.0		V=0
	245	PALE	43 NS	1930.0	2006.0	83.0	360.0			GL=4 ST=2 TYP=1
	245	SGMR	43 NS	1938.0	2006.0	67.0	340.0			GL=4 ST=2 TYP=1
	245	LEAR	43 NS	2312.0	2319.0	8.0	140.0			GL=4 ST=2 TYP=1
	245	LEAR	8 S	0737.0	0737.0	U	56.0			GL=4 ST=3 TYP=3
	245	SVTO	8 S	0737.0	0737.0	U	67.0			GL=4 ST=3 TYP=3
	245	LEAR	8 S	0818.0	0818.0	U	81.0			GL=4 ST=3 TYP=3
	245	SVTO	8 S	0818.0	0818.0	U	80.0			GL=4 ST=3 TYP=3
	204	IZMI	7 C	0908.0	0909.0	0.2	10.0			
	204	IZMI	42 SER	1027.2	1028.2	1.9	317.0			
	204	IZMI	42 SER	1101.9	1106.4	10.0	567.0			
	245	SVTO	8 S	1105.0	1106.0	2.0	100.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1256.0	1256.0	U	120.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	1256.0	1256.0	U	87.0			GL=4 ST=2 TYP=3
	127	TORN	46 C	1415.7	1416.8	1.4	200.0	60.0		DISTURBED
	245	LEAR	8 S	1416.0	1416.0	U	52.0			GL=4 ST=2 TYP=3
	410	SGMR	8 S	1445.0	1445.0	U	91.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	1533.0	1534.0	1.0	95.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1536.0	1536.0	U	63.0			GL=2 ST=2 TYP=3
	245	SVTO	8 S	1539.0	1539.0	U	91.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1553.0	1553.0	U	71.0			GL=4 ST=2 TYP=3
	245	SVTO	8 S	1559.0	1600.0	1.0	110.0			GL=2 ST=2 TYP=3
	4995	PALE	8 S	1718.0	1718.0	U	50.0			GL=4 ST=2 TYP=3
	8800	PALE	8 S	1718.0	1718.0	U	57.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1837.0	1837.0	U	80.0			GL=4 ST=2 TYP=3
	245	SGMR	8 S	1917.0	1919.0	2.0	110.0			GL=4 ST=2 TYP=3
	245	PALE	8 S	1919.0	1919.0	U	150.0			GL=4 ST=2 TYP=3
	245	LEAR	8 S	2308.0	2308.0	U	82.0			GL=4 ST=2 TYP=3
03	245	LEAR	43 NS	0024.0	0028.0	11.0	91.0			GL=4 ST=2 TYP=1
	245	LEAR	43 NS	0211.0	0213.0	21.0	270.0			GL=4 ST=2 TYP=1
	245	PALE	43 NS	0222.0	0222.0	10.0	60.0			GL=4 ST=2 TYP=1
	127	TORN	43 NS	0945.0		105.0D		22.0		V=2

Under Consideration
Auto Generation

H-alpha Observation Times



INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

JANUARY 2003

HOUR-UT
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

DAY
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Times of no flare patrol, shown here as shaded areas, combine reports from the stations listed below. (Portions of a panel completely shaded mark dates and times of no patrol of any kind, either visual or cinematographic): portions of a panel with only the bottom half shaded mark times of only visual patrol.

Hollomon Learmonth Ramey San Vito
Mitaka Kanzelhoehe

Discontinued

STP's general philosophy is to use SEON data from E-SWDS and SWPC products to generate these listings in an automatic fashion as is currently done for GOES x-ray listings. No external data sources are expected to be used.

OUTLINE
Solar & Terrestrial Physics Division

STP Division Overview

Milestones & Performance Measures

Personnel Activities – *nothing to report*

Accomplishments & Updates

Special Interest Items

USAF Datasets At NGDC

Issues & Summary

Issues & Summary
STP FY12 Publications – 6

Publications (YTD):

Chaturvedi M., **T. Ghosh**, and L. Bhandari. (2011). Assessing income distribution at the district level for India using nighttime satellite imagery. *Proceedings of the 32nd Asia-Pacific Advanced Network Meeting*. New Delhi, India.

Elvidge, C.E., P.C. Sutton, **K.E. Baugh**, **S. Anderson**, **T. Ghosh** and **D. Ziskin** (2011) "Satellite observation of urban metabolism in China" Proceedings of the Asian Conference on Remote Sensing, Taipei, Taiwan, October 3, 2011.

Elvidge, C.D., **K.E. Baugh**, **P.C. Sutton**, B. Bhaduri, B.T. Tuttle, **T. Ghosh**, **D. Ziskin and E.H. Erwin** (2011), "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, p. 211-224.

Kristina H.Y., **S.J. Anderson**, R.L. Powell, D.G. Sullivan and P.C. Sutton (2011), Identifying Similar Biophysical Characteristics among Nesting Beaches of Green Turtles of Turkey Using Remote Sensing Techniques, International Journal of Remote Sensing Applications (IJRSA), pp. 22-29, 31-Dec-2011.

Machol, J,L **J.C Green**, **R.J. Redmon**, R.A Viereck and P.T. Newell (2011), Evaluation of OVATION Prime as a Forecast Model for Visible Aurorae, *Space Weather*, (Accepted)

Small, C., **C.D. Elvidge**, D. Balk and M. Montgomery (2011), "Spatial scaling of stable night lights", *Remote Sensing of Environment*, Elsevier, 115 (2011), 269-280.

ftp://ftp.ngdc.noaa.gov/STP/publications/stp_publications/stp_publications.pdf

Issues & Summary
STP FY12 Presentations – 25 (1 of 2)

Presentations (YTD):

32nd Asian Conference on Remote Sensing (ACRS), 03-07 Oct 2011, Taipei, Taiwan

– Satellite observation of urban metabolism in China (Oral), **C.D. Elvidge**, P.C. Sutton, **K.E. Baugh**, **S. Anderson**, **T. Ghosh**, and **D. Ziskin**

US-UK Space Weather Workshop, 11-13 October 2011, Boulder, CO

– What are the requirements from satellite customers (Oral), **J.C. Green**

7th GOES Users' Conference, 15-21 October 2011, Birmingham, AL

– GOES Data and Products in the Space Weather Forecast Office (Oral), M. Shouldis, R. Viereck, S. Hill, J. Rigler, J.V. Rodriguez, and P. Lotoaniu

5th International Association for the Advancement of Space Safety, 17-19 October 2011, Paris, France

– Space Environmental Conditions at the Time of the Galaxy 15 Anomaly
*J.M. Kunches, **W. Denig**, **J. Green**, **D. Wilkinson**, **J. Rodriguez**, H. Singer, P. Loto'aniu, W. Murtagh and D. Biesecker*

Hokkaido University, 08 November 2011, Hakodate, Japan

– Long term trends in satellite observed lit fishing boat activity, C.E. Elvidge

Ministry of Agriculture, Forestry and Fisheries (MAFF), 10 November 2011, Tsukuba, Japan

– Trends in fishing boat activity observed from space, C.E. Elvidge

National Institute for Advanced Industrial Science and Technology (AIST), 10 November 2011, Tsukuba, Japan

– Prospects for monitoring gas flares with ASTER data, C.E. Elvidge

Institute of Arctic and Alpine Research (INSTAAR) Noontime Seminar, 14 November 2011, Boulder, CO

– Aurora, Space Physics and Nighttime Lights of the World (Oral), **W.F. Denig**

2nd Low Latitude Ionospheric Sensor Network Workshop, 07-10 November 2011, São José dos Campos, Brazil

– Advanced Ionospheric Sounding with Vertical Incidence Pulsed Ionospheric Radar, **T. Bullett**

– Detection of Spread-F and foF2 values using Digisonde and VIPIR instruments, **P. Bhaneja** and **T. Bullett**

European Space Weather Week-8 (ESWW8), November 28 - December 02, 2011, Namur, Belgium

– Space Environmental Data and Information Available from U.S. Civilian Operational Space Weather Systems (Poster), **W.F. Denig** and **J.V. Rodriguez**

– New Measurements of Magnetospheric Particle Fluxes, Densities and Temperatures on GOES 13-15 (Poster), **J.V. Rodriguez**, **J.C. Green**, T. Onsager and H. Singer

ftp://ftp.ngdc.noaa.gov/STP/publications/stp_presentations/stp_presentations.pdf

Issues & Summary
STP FY12 Presentations – 25 (2 of 2)

Presentations (continued)

American Geophysical Union (AGU) Fall Meeting, 05-09 December 2011, San Francisco, CA

- Equatorial electron flux pulsations correlated with ground-based pulsating aurora observations (Poster), SM13B-2038, Allison N. Jaynes, M. Lessard**, J.V. Rodriguez** and K.M. Rychert
- New Directions for the NOAA Solar and Terrestrial Physics Division (Poster), SM21A-1997, **W.F. Denig**
- Extreme Events in GOES Space Environment Monitor Data 1974 – 2011 (Poster), NG23A-1484, **D.C. Wilkinson** and **A.S. Sundaravel**
- Measured and Modeled O+ Upwelling at 800 km: Understanding the Dayside Asymmetry (Poster), SM31A-2093, **R.J. Red**mon, W.K. Peterson, L. Andersson and P.G. Richards
- Evaluation of Ovation Prime as a Forecast Model of Visible Aurora (Poster), SM31B-2101, **J.L. Machol**, **J.C. Green**, **R.J. Redmon**, R.A. Viereck and P.T. Newell
- Detailed Characterization of Substorm Dipolarization and Particle Injection from an Unprecedented Constellation of Geosynchronous Satellites (Poster), SM31B-2114, **J.C. Green**, H.J. Singer, T.G. Onsager**, J.V. Rodriguez**, **W.F. Denig**, **D.C. Wilkinson** and **J.L. Machol**
- National Trends in Satellite Observed Lighting: 1992–2009 (Oral, Invited), GC32C-03, **C.D. Elvidge**, P.C. Sutton, **K. Baugh**, **D.C. Ziskin**, **T. Ghosh** and **S. Anderson**
- The Unusual Response of the Magnetosphere to Solar Wind Conditions during the Galaxy 15 Substorm (Oral), SM32A-05, H.J. Singer, R.L. McPherron, **J.C. Green**, **J.V. Rodriguez** and **R.J. Redmon**
- Spatial Resolution and Detection Limit Considerations for Low Light Imaging of Urban Land Use Patterns (Poster), GC33B-1081, S. Anderson, **C. Elvidge** and P.C. Sutton
- Anatomy of a Radiation Belt Flux Dropout (Poster), SM41B-2026, J.F. Fennell, R.H. Friedel, **J.C. Green**, T.B. Guild and J.E. Mazur
- Modeling and Observations of the East-West Effect in Solar Energetic Particle Flux at Geosynchronous (Poster), SM31B-2103, Brian T. Kress and **J.V. Rodriguez**
- On the Relativistic Electron Injection Event in Early April 2010 (Poster), SM51B-2079, J.B. Blake, P. Obrien, **J.V. Rodriguez and J.C. Green**
- Comparison of Simulated and Observed Ring Current Magnetic Field and Ion Fluxes and ENA Intensity during the 5 April 2010 Storm (Oral), SM54A-08, M.W. Chen, C. Lemon, T.B. Guild, M. Schulz, A. Lui, A.M. Keesee, J. Goldstein and **J.V. Rodriguez**

ftp://ftp.ngdc.noaa.gov/STP/publications/stp_presentations/stp_presentations.pdf

Issues & Summary

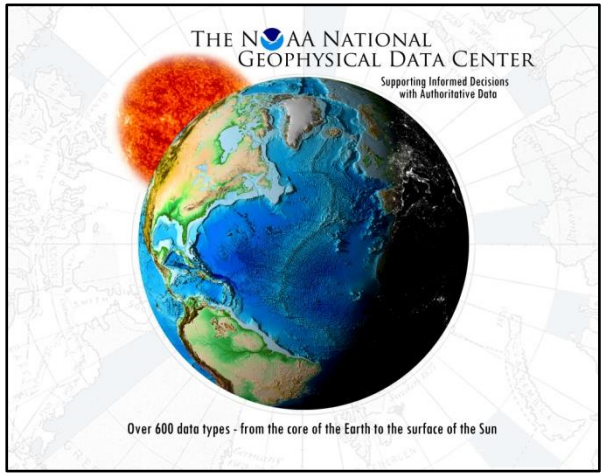
Solar & Terrestrial Physics Division

- ✓ **GOES-R L2+ SWx algorithms (3QFY11) – *active (on-going discussions)***
- ✓ Loss of key personnel has a severe mission impact (3QFY10) - *NLAI*
- • Satellite processing transition from SWPC (4QFY09) – *DOA/NLAI*
- ✓ Continuity of solar data services (1QFY09) – *NLAI*
- ✓ *Refocus of NWS/SWPC Objectives (2QFY08) – NLAI*
- • **NightSat Mission Concept (1QFY08) – *active (proposal under review)***
- ✓ *NGS Aerial Photography (1QFY08) – NLAI*

Metrics (FY12 - YTD)

Papers Published: 6

Presentations: 25



QUESTIONS?