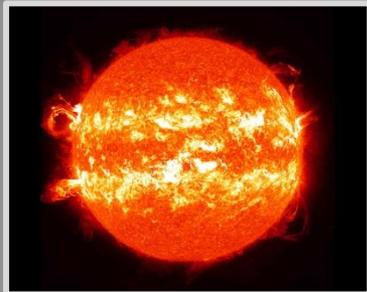


NOAA Space Weather Prediction Center

Current Activities Update



Dr. Thomas Berger

Director, NOAA/NWS/NCEP Space Weather Prediction Center

2016 Space Weather Workshop

NWS Organization

HQ Office

Field Office

Office of the Chief of Staff

Paul Schlatter (A)

International Affairs

Courtney Draggon

Office of the Chief Learning Officer

John Ogren (A)

The Office of Assistant Administrator
AA
DAA

Louis Uccellini Laura Furgione

CFO/CAO

John Potts

Enterprise Risk Management & Internal Audit Office

vacant

Assistant CIO

Richard Varn (A)

Office of Organizational Excellence

Kevin Werner

AWC: Bob Maxson
CPC: Dave DeWitt
EMC: Hendrik Tolman
NCO: Ben Kyger
NHC: Rick Knabb
OPC: Tom Cuff
SPC: Russ Schneider
SWPC: Tom Berger
WPC: Dave Novak

Office of Planning & Programming for Service Delivery

Kevin Cooley

Service Delivery Portfolios

Office of Facilities

Deirdre Jones

Office of Observations

Joe Pica

Office of Central Processing

Dave Michaud

Office of Dissemination

Luis Cano

Office of Science & Technology Integration

Ming Ji

Office of Chief Operating Officer

John Murphy

Field Operations

Analyze, Forecast, & Support Office

Andy Stern

National Centers for Env. Prediction

Bill Lapenta

Regional Offices

National Water Center

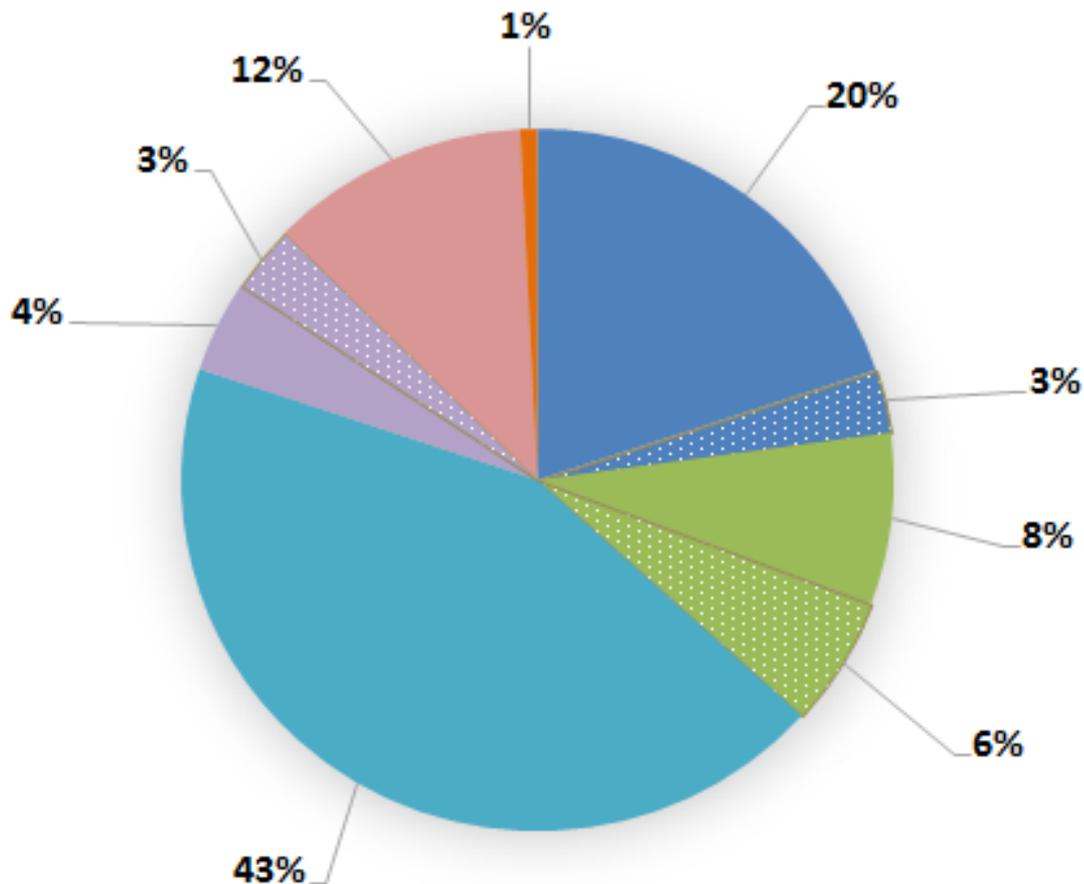
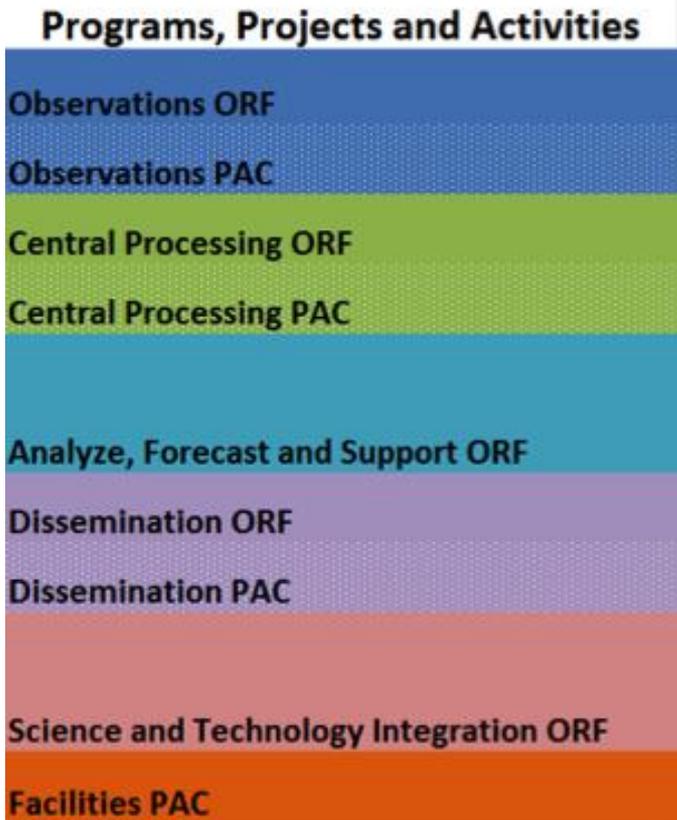
Tom Graziano (A)

AR: Carven Scott (A)
CR: Chris Strager
ER: Jason Tuell
PR: Ray Tanabe
SR: Steven Cooper
WR: Grant Cooper



NWS Portfolio Distribution

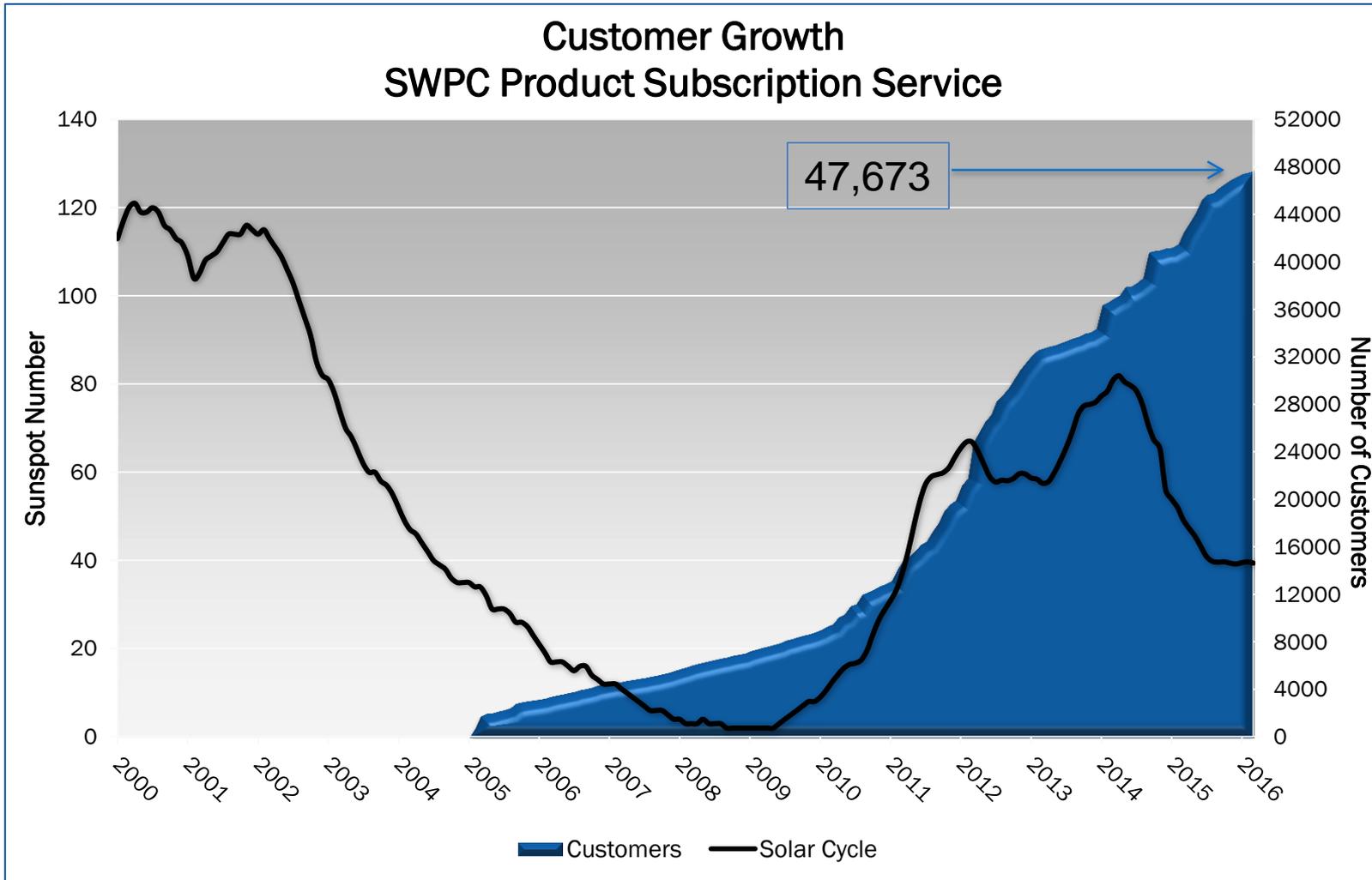
Budgetary Weighting





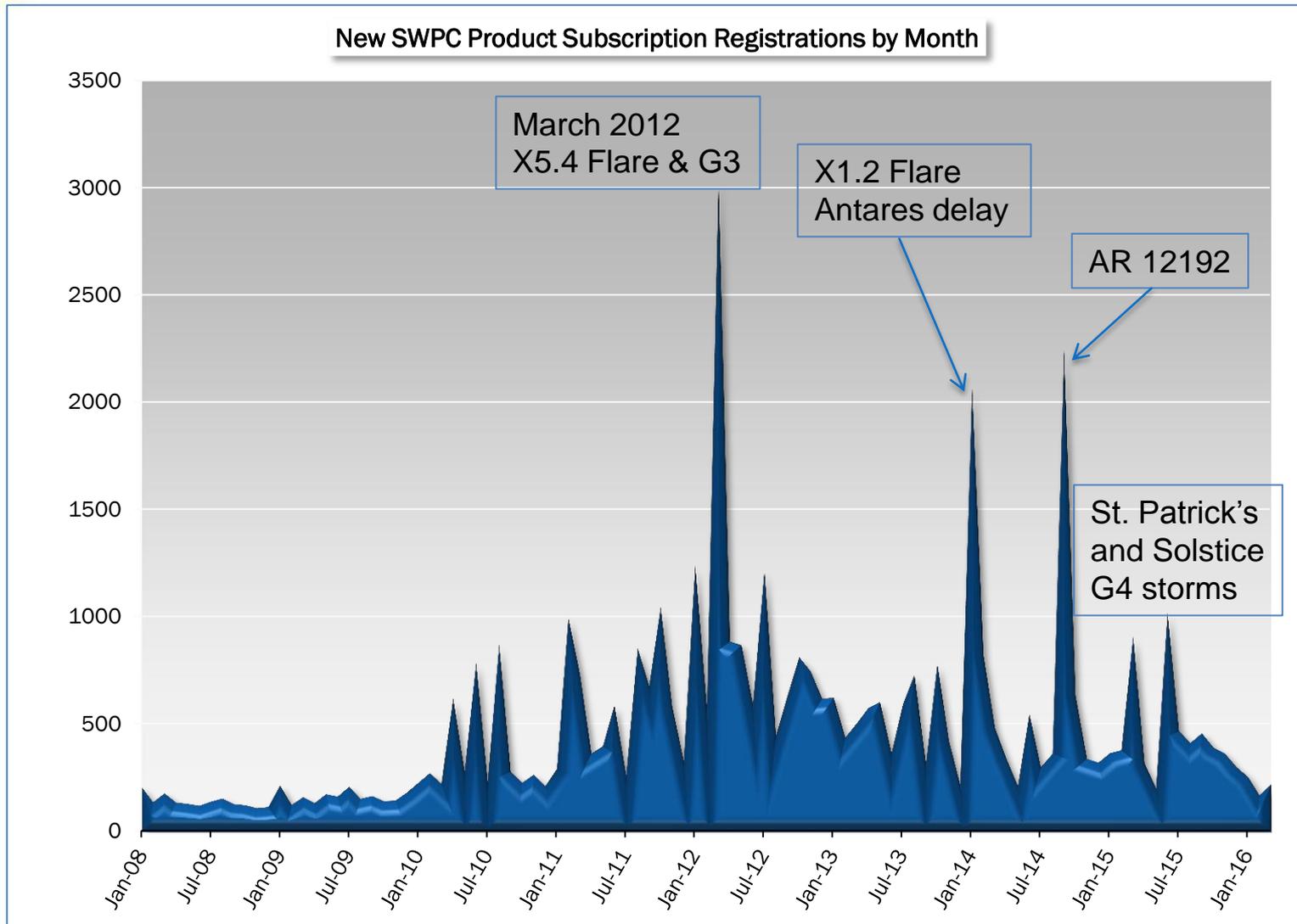
SWPC Customer Growth

Through March 2016





SWPC Customer Growth by Month





SWPC Budget

FY16 Enacted

- NOAA FY16 budget: +5.8% relative to FY15
 - OAR: +8%
 - NESDIS: +5.7%
 - NWS: +3.4%
 - OBS: +2.7% CP: -3.8% DIS: +11.5% STI: +12.3% AFS: +2.7%
- Total SWPC Budget FY16: \$12.6M (+20% rel. to FY15)
- SWPC Budget (non-labor)

Portfolio	FY15	FY16 request	FY16 enact
AFS	\$1.39M	\$1.37M	\$1.4M
CP	\$759K	\$856K	\$506K
OBS	\$400K	\$400K	\$1.4M ^a
STI	\$1.86M	\$1.86M	\$3.2M ^b

a. \$1M Presidential budget plus-up for operationalizing the GONG network.

b. \$1.5M Presidential budget plus-up for modeling and O2R development, net overhead.



SWPC Budget

FY17 Request

NOAA FY17 budget request

- Overall NWS Operations, Research, Facilities: -1.6% relative to FY16
- Total SWPC Budget FY17: projected \$12.6M (flat)
- NESDIS Space Weather Follow-On: \$2.5M for continued studies.
 - Mission start in 2018, launch in 2022, with total cost of \$757M.

Research & Development

- NOAA Research Transition Acceleration Program (RTAP): \$10M
 - Administered by NOAA Chief Scientist Office.
 - Designed to provide direct grants to NOAA organizations seeking to transition research from internal, academic, or private sector sources into operational products and services.
 - SWPC will aggressively pursue RTAP funding to be used for contract work in R2O transition of space weather models.



Senate Bill S2817

The Space Weather Research and Forecasting Act

- Introduced by Sen. Gary Peters (D-MI)
- Co-sponsored by Sen. Cory Gardner (R-CO) and Sen. Cory Booker (D-NJ)

[Home](#) > [Legislation](#) > [114th Congress](#) > S.2817

Print Subscribe Share/Save Give Feedback

S.2817 - A bill to improve understanding and forecasting of space weather events, and for other purposes.

114th Congress (2015-2016) | [Get alerts](#)

BILL [Hide Overview](#) ×

Sponsor: [Sen. Peters, Gary C. \[D-MI\]](#) (Introduced 04/19/2016)

Committees: Senate - Commerce, Science, and Transportation

Latest Action: 04/19/2016 Read twice and referred to the Committee on Commerce, Science, and Transportation. ([All Actions](#))

Tracker:

Introduced > Passed Senate > Passed House > To President > Became Law

More on This Bill
[CBO Cost Estimates \[0\]](#)

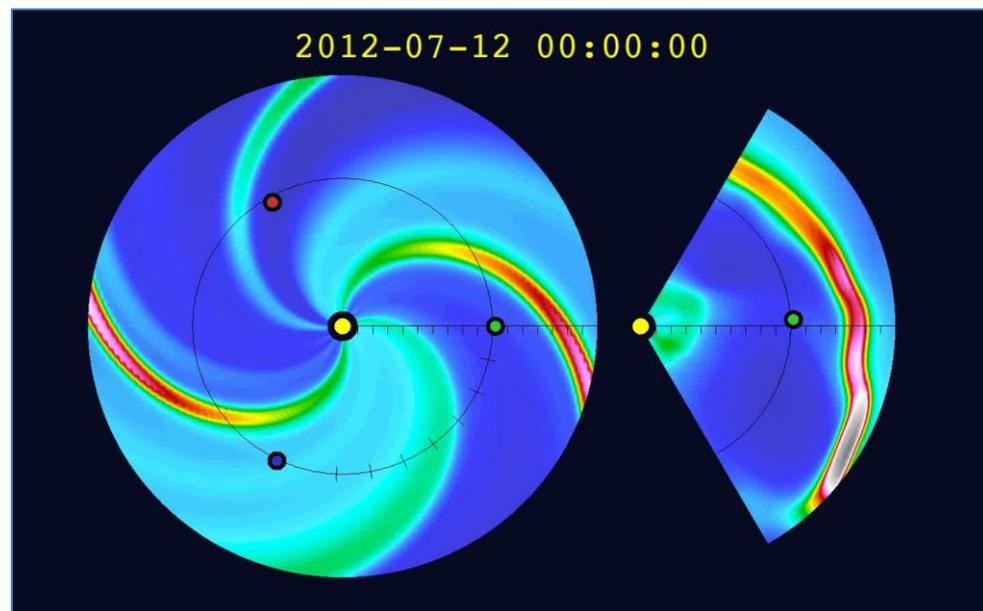
Get more information
See [Coverage Dates for Legislative Information](#) and learn about other sources.

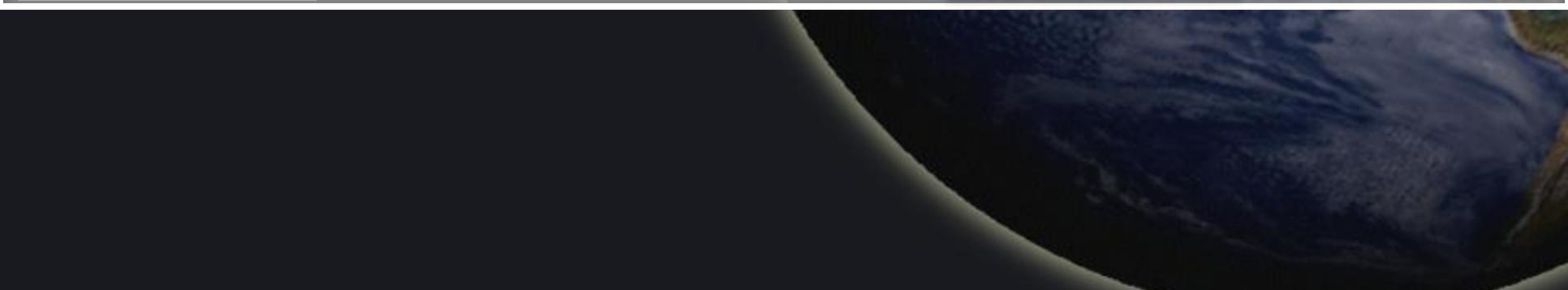
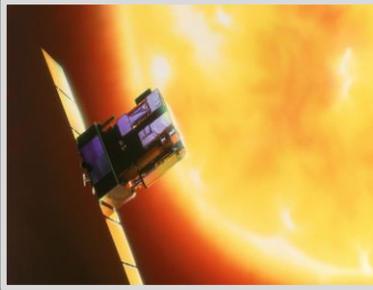
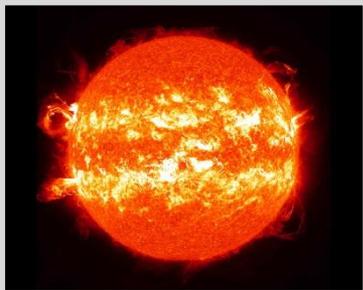
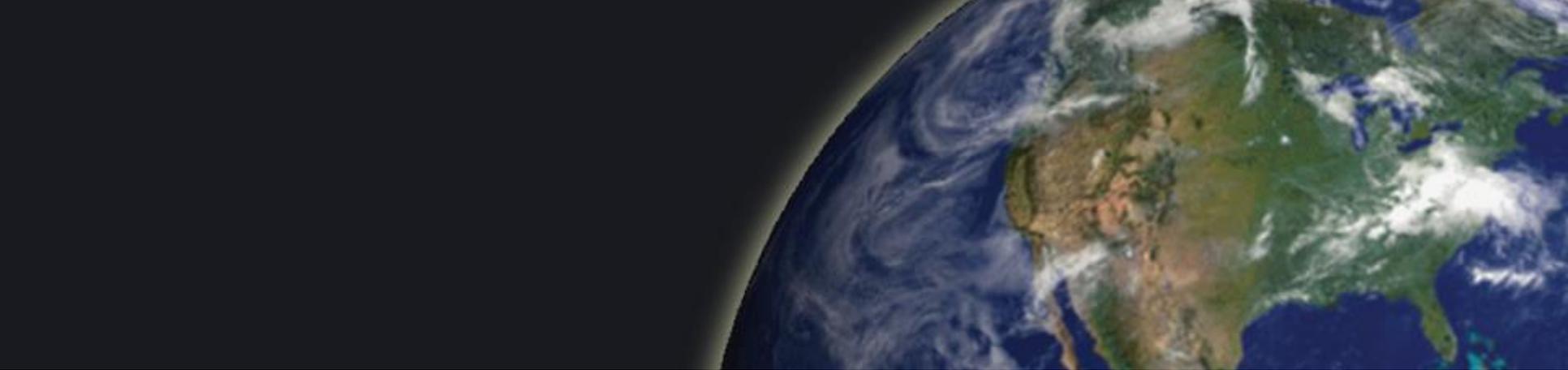


R20 Developments

WSA/Enlil R20

- New CIRES hire: Dr. Eric Adamson
- Update operational Enlil to v2.8 in 2016—2017.
- Implement AFRL ADAPT code for improved WSA input in 2017.
- Time-dependent Enlil: validation study required

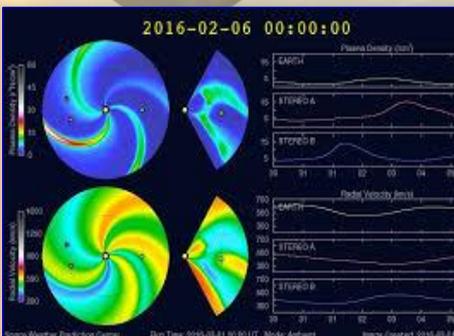






SWPC Operational Model Suite

Tracking solar storms from “Sun to Mud”



GMU/AFRL WSA/Enlil

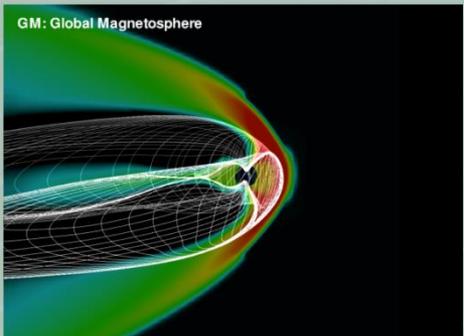
Inputs:

1. GONG solar magnetic field data
2. SOHO/LASCO coronagraph CME images from L1

Validation:

1. DSCOVR solar wind character at L1
2. GOES magnetometer shock arrival

Operational



U. Michigan Geospace

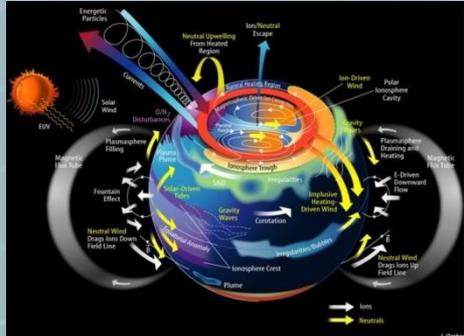
Inputs:

1. DSCOVR solar wind density, temp, speed, mag field at L1
2. Solar F10.7 radio flux measurements

Validation:

1. GOES vector magnetic field
2. USGS magnetometer network

Operational FY16



NOAA/CIRES WAM-IPE

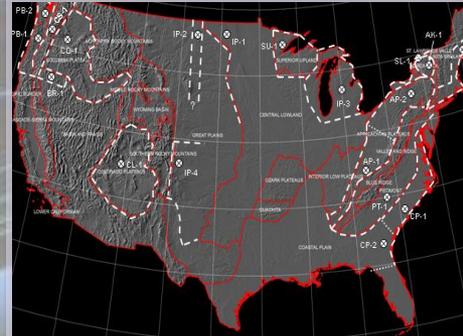
Inputs:

1. GFS Tropospheric weather model inputs
2. GOES Solar EUV flux
3. COSMIC-2 RO electron density
4. Geomagnetic storm data from Geospace

Validation:

1. GPS receiver network TEC measurements

Operational FY17-19



USGS/NOAA E-field

Inputs:

1. USGS lithospheric conductivity model
2. USGS magnetometer network

Validation:

1. USGS geoelectric field measurements.

Operational FY16-17





DSCOVR Update

March 8, 2016 Solar Eclipse

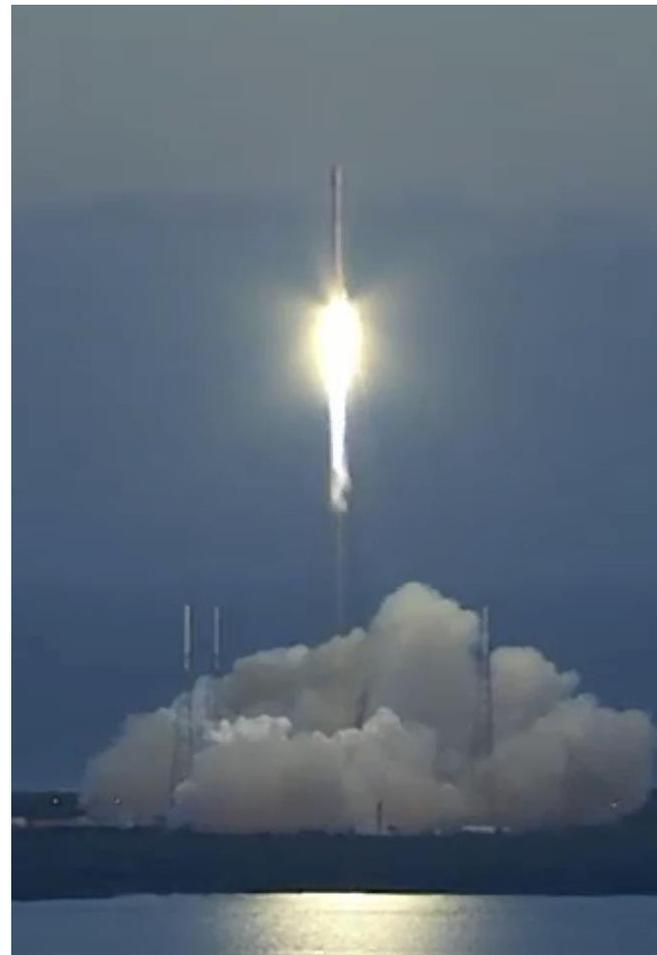




DSCOVR Update

Operational Status

- Spacecraft operations transitioned from NASA to NOAA October 27, 2015.
- Magnetometer is performing exceptionally well, delivering high-quality data for research and forecasting.
- Recent optimization of Faraday Cup has improved data quality. Work is ongoing to understand FC performance in a variety of solar wind conditions.
- Transition to operational data service expected no earlier than Summer 2016.
- ACE spacecraft remains healthy and continues to support NOAA's space weather forecasting mission.





GONG Update

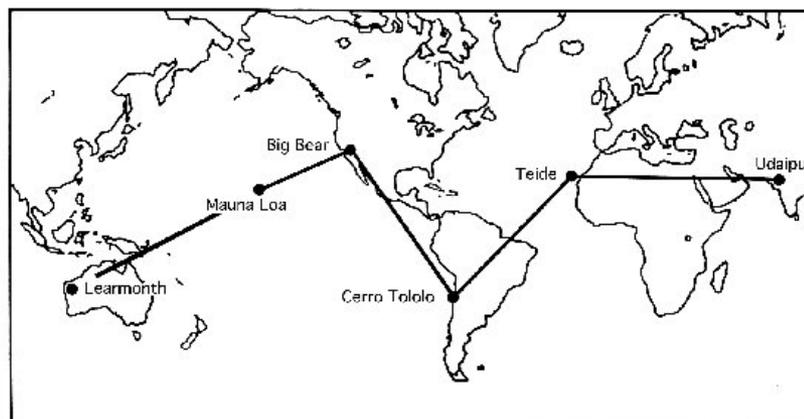
Global Oscillations Network Group

2016++: Operational funding from NOAA/NWS

- Collaboration between NOAA/SWPC and the National Solar Observatory, the newest Boulder space science organization.
- Magnetogram maps are primary input to WSA solar wind model.
- SWPC Data Processing Project: progress to date
 - Testing data flow from 6 sites into Boulder IDP data center.
 - Full operational data (mag and H-alpha) flow and processing by ~April 2017.



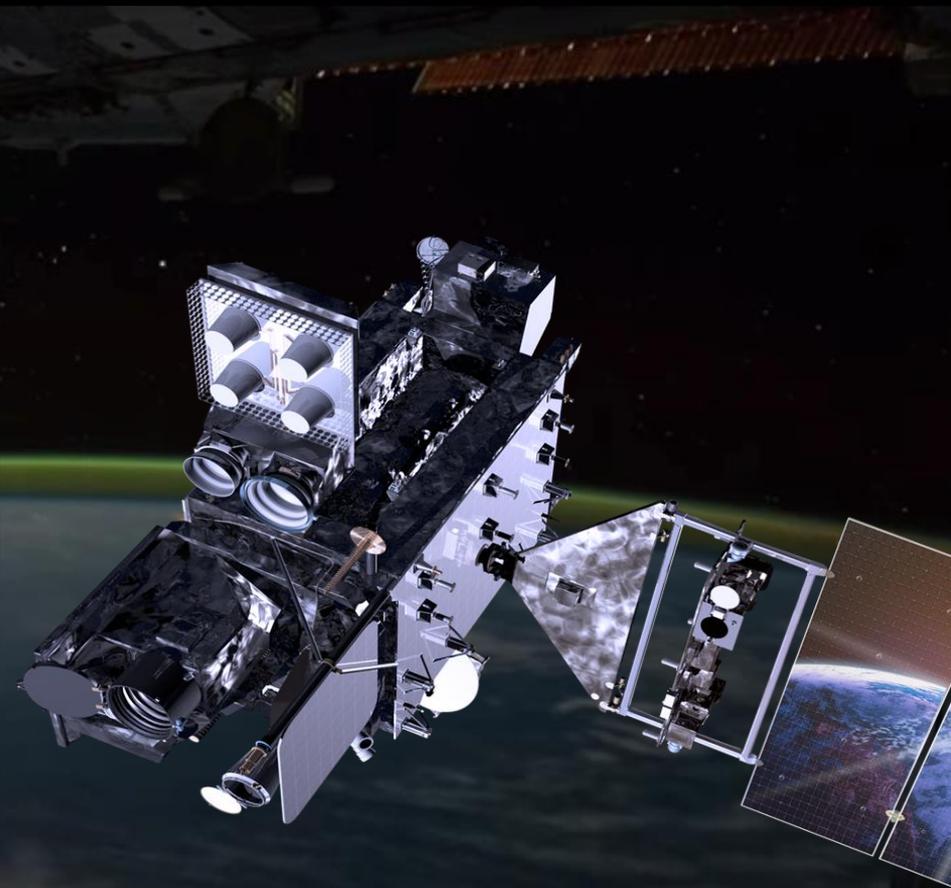
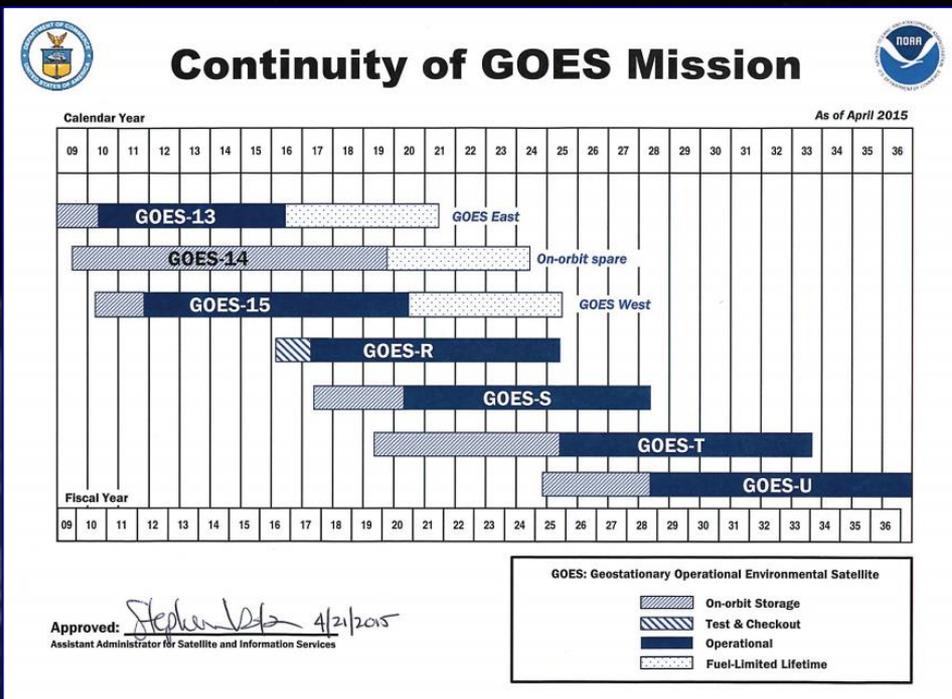
Learmonth, Australia





GOES-R Update

LRD: October 13, 2016
 GOES-R → GOES-16





COSMIC-2 Update

C-2A: 6 satellites launched to 520 km equatorial in 2016

C-2B: 6 satellites launched to polar orbits in 2019*



- Follow-on to successful COSMIC-1 mission that demonstrated RO utility for numerical weather prediction.
- Larger number of satellites and lower data latency to improve application to ionospheric data assimilation.
- Major effort underway at SWPC to develop data assimilation into WAM/IPE and other models.

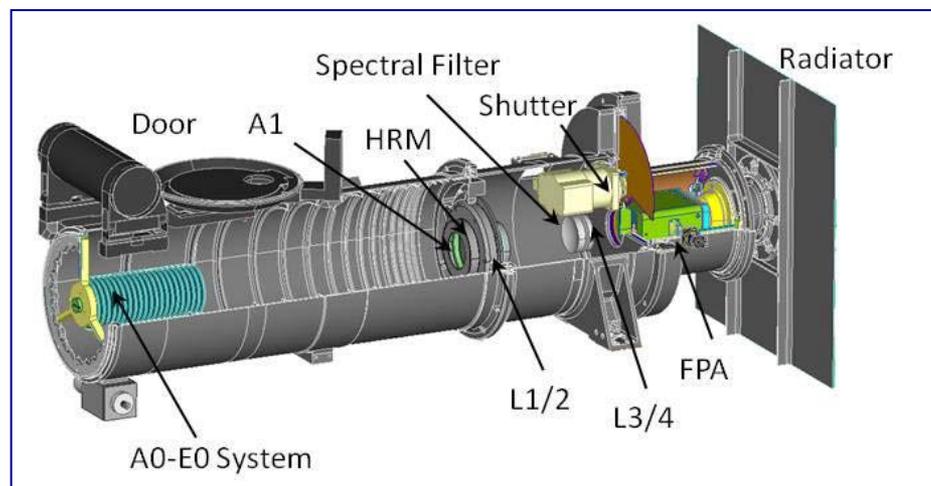
*Not yet funded in FY17



SWx Follow-On Mission Update

- NOAA FY17 Budget Blue-Book proposes mission budget profile.
- Primary instruments
 - NRL Compact Coronagraph (CCOR)
 - Solar Wind Plasma
 - Interplanetary mag field
- Orbit: L1 halo
- Goal: on station by SOHO EOL (~2022)

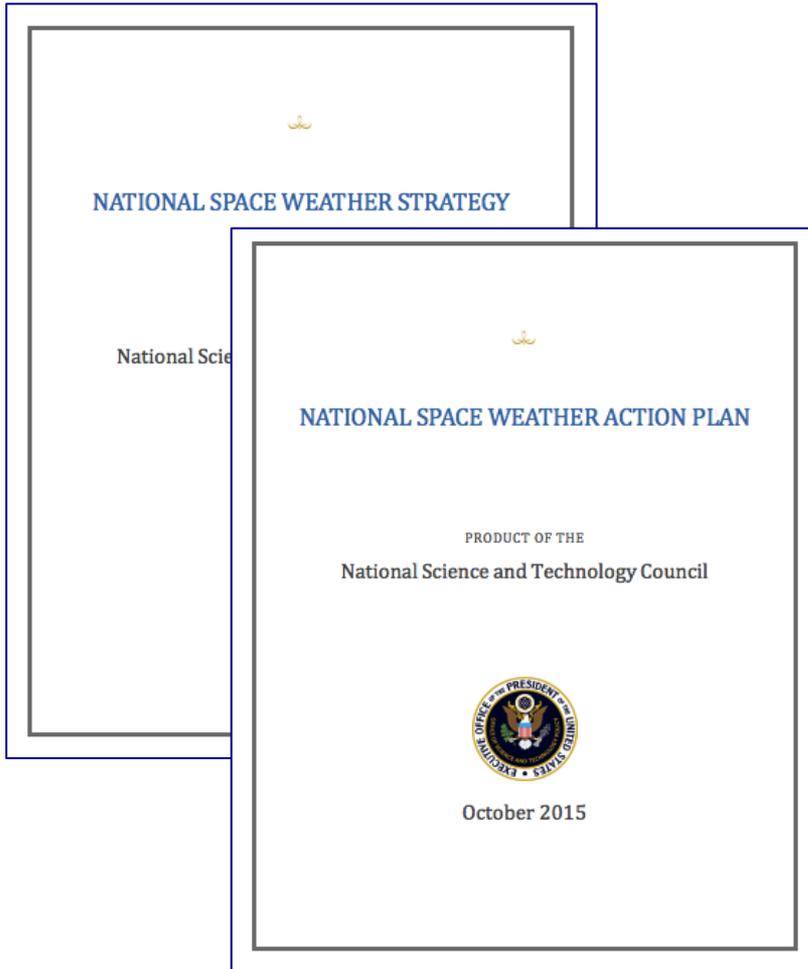
SPACE WEATHER FOLLOW ON BUDGET AUTHORITY IN THOUSANDS			
FY 2016 & Prior	\$1,200	FY 2020	\$154,500
FY 2017	\$2,500	FY 2021	\$81,500
FY 2018	\$53,700	CTC	\$278,200
FY 2019	\$186,100	Total	\$757,700





Space Weather Action Plan

Highlights in Observations, Data, and Research



- Chartered under White House Office of Science & Technology Policy (OSTP)
- Chaired by OSTP, National Weather Service, and Dept. of Homeland Security.
 - OSTP: policy lead
 - NWS: operational forecasting
 - DHS: mitigation and response
- Released 29-October-2015
- Outlines goals for operations, research, mitigation, and response in preparation for extreme events.
- Chapter 5 of Space Weather Action Plan (SWAP) addresses **observations and research** to sustain and improve prediction of space weather events.

For copies, google "OSTP space weather"

Baseline Operational Observing System

Critical measurements for operational SWx forecasting

SWAP Section 5.3

Defines observations required by operational space weather forecasting centers to execute baseline mission.

5.3.2 Sun-Earth line (L1) Orbit: sustain solar coronagraph CME and solar wind measurements	Current Capabilities	NASA SOHO 	NOAA DSCOVR 	Future Capability NOAA SWx Follow-On
5.3.3 Geostationary Orbit: sustain or enhance solar imagery, X-ray irradiance, energetic particle, mag field	Current Capabilities	NOAA GOES RSTU 		Future Capability ?
5.3.4 Ground-based: sustain or enhance solar imaging and magnetic field measurements	Current Capabilities	NOAA-NSF GONG 		Future Capability ?
5.3.5 Ground-based: sustain or enhance solar radio measurements	Current Capabilities	USAF RSTN 		Future Capability ?
5.3.6 Ground-based: sustain or enhance the real-time geomagnetic field measurement network	Current Capabilities	USGS MagNet 		Future Capability INTERMAGNET?
5.3.7 LEO/MEO: enable and sustain GNSS radio occultation measurements for ionospheric characteristics	Current Capabilities	NCAR COSMIC 		Future Capability COSMIC-2  ?
5.3.8 Ground-based: sustain or enhance the worldwide neutron monitoring (NM) network	Current Capabilities	NSF Polar NM 		Future Capability NOAA-NSF Global NM Net 

