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***Committee on Operational  
Environmental Satellites***

***Meeting 2016-1***

**March 18, 2016**

***Office of the Federal Coordinator for  
Meteorological Services and Supporting  
Research (OFCM)***

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# Administrative Remarks

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**Mr. Michael F. Bonadonna**

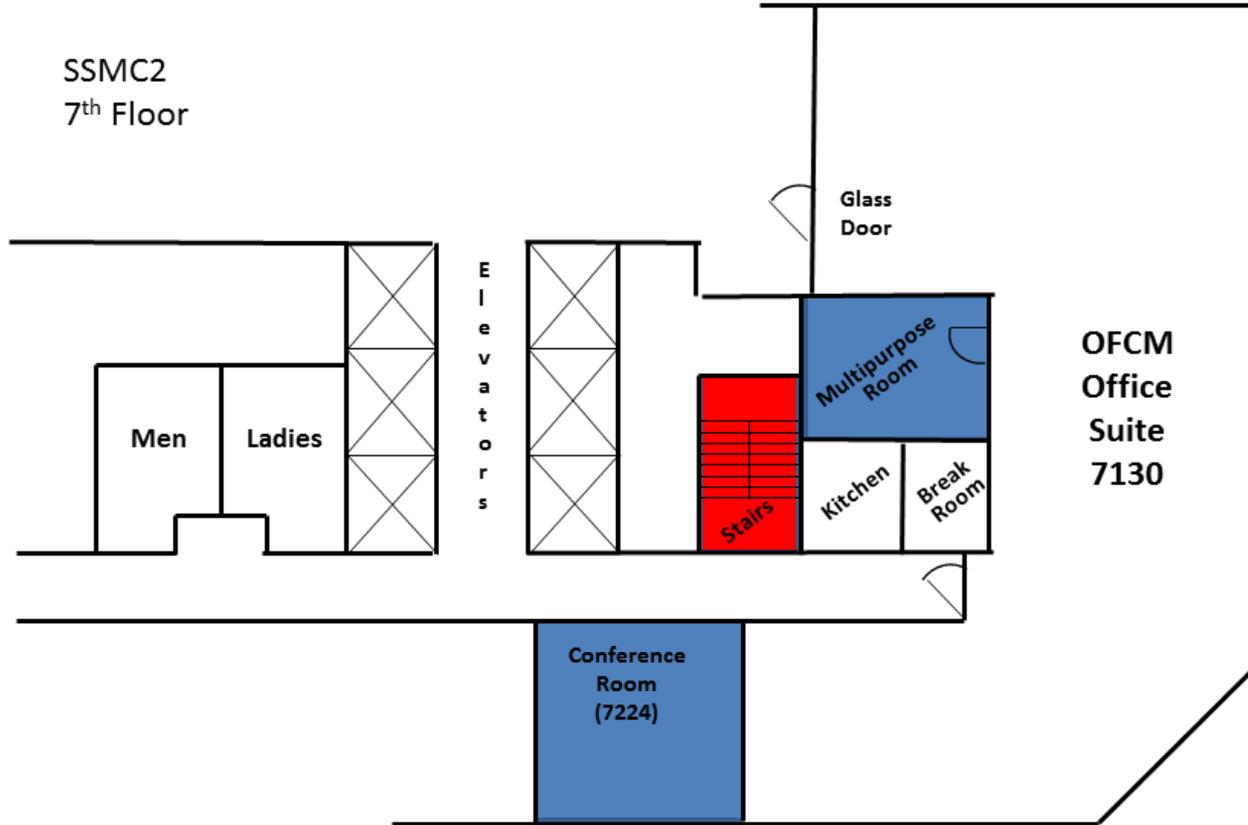
**Executive Secretary, Committee for  
Operational Environmental Satellites (COES)**

**Secretariat, Federal Meteorological Coordination**

**Meeting is being recorded to help produce an  
accurate Record of Action (ROA)**

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# OFCM Floor Plan



# Agenda

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- Administrative Remarks: Executive Secretary
  - Opening Remarks: COES Cochairs
  - Action Item Review: Executive Secretary
  - COSMIC-2 Ground System & User Readiness: Mr. Joe Pica, (NWS)
  - GOES-R Dowlink Frequency Challenges:  
    Kay Metcalf (NOAA)  
    LySanias Broyles (U.S. Army Corps Of Engineers)
  - Interagency Coordination of  
    Environmental Satellite Issues: Executive Secretary
  - Open Discussion: COES Members.
  - Action Item Review / Next Meeting: Executive Secretary
  - Adjourn: The meeting is expected to end by 3:00 PM EDT.
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# Action Item Review

AI #	Text	Responsible Office	Comment	Status	Due Date
2015-3.1	Determine the anticipated latency of INSAT-3D data throughout the proposed data retrieval path through EUMETSAT to NESDIS to US users. Provide results to the COES.	NESDIS	9/25: Dr. Burns said he would follow up on this AI. 12/22: NESDIS will brief out IODC data dissemination plan after June 2016 CGMS mtg.	Open	07/01/16
2015-5.1	Follow up on questions raised during NESDIS OSPO presentation provided during the meeting. Request organizations identified provide responses to the COES ExecSec for distribution.	COES Participants	3/10: ExecSec Following up on all questions	Open	01/29/16
2015-5.2	Invite NESDIS OSPO to present NOAA satellite operations briefings at upcoming COES meetings at least once per year.	COES ExecSec		Open	09/01/16
2015-5.3	Schedule four COES meetings for 2016 based on input from the COES Cochairs and members.	COES ExecSec	12/28: The following dates were proposed: March 1, 1-3pm June 7, 1-3pm Sep 6, 1-3pm Dec 6, 1-3pm	Closed	01/15/16

# Action Item Review

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AI 2015-5.1: Responses on questions raised:

- NOAA NWS, NESDIS: How can organizations other than NWS access NESDIS satellite products distributed on AWIPS?
  - NOAA NESDIS/OSPO, JPSS: What are the current nodal crossing times (LTANs) for NOAA POES and how much orbital maintenance / maneuver fuel remains on S-NPP?
  - USAF A3W: Is the 557 Weather Wing currently accessing data from the DSCOVR mission? Are there any issues? Are they ready for the termination on real-time data from ACE?
-

# Action Item Review

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- How can organizations other than NWS access NESDIS satellite products distributed on AWIPS?
    - Mike Johnson (NWS): Anyone that has an SBN feed can access content from the SBN (commercial users, research community, etc). That said...satellite product content on the SBN is quite constrained to those things that are most urgently needed by NWS field offices. It does not come close to enabling the entire NESDIS satellite product offerings. For that, NESDIS is responsible and has systems set up at CLASS (archives), legacy operational servers DSS, and soon next generation servers (PDA).
    - Brian Gockel (NWS): Indeed the SBN (also known as NOAAPort) is an open network whose data stream is accessible to any user within its footprint. The user must have a satellite dish and an ingest system. While NWS uses AWIPS, there are commercial sources for SBN/NOAAPort downlink systems (or resellers of the data stream via terrestrial networks):  
[http://www.nws.noaa.gov/noaaport/html/manu\\_1st.shtml](http://www.nws.noaa.gov/noaaport/html/manu_1st.shtml)  
The NOAAPort pages will be updated in a month or so for GOES-R and other recent developments.  
As MikeJ mentioned, many NESDIS/satellite products are either not on NOAAPort or the NOAAPort versions of many satellite products are sectorized subsetted  
External users requiring additional satellite data should request access via NESDIS:  
<http://www.ospo.noaa.gov/Organization/About/access.html>
-

# Action Item Review

What are the current nodal crossing times for NOAA POES?

SC	ASCENDING NODE			Local Time	DRIFT (Mins)
	REV	LON	UTC_TIME		
---	---	---	-----	-----	-----
NOAA15	92744	115.40	2016/074/01:25:14	17:43:40	
NOAA15	93170	77.73	2016/103/22:56:30	17:45:35	1.92
-----					
NOAA18	55731	114.27	2016/074/01:22:44	17:45:39	
NOAA18	56153	76.12	2016/103/22:54:54	17:50:27	4.80
-----					
NOAA19	36572	166.41	2016/074/01:37:39	14:32:2	
NOAA19	36994	130.50	2016/103/23:16:35	14:34:34	2.53
-----					
METP01	18091	55.17	2016/074/01:10:13	21:29:34	
METP01	18516	24.61	2016/103/23:07:24	21:28:59	-0.58
-----					
METP02	48777	42.09	2016/074/00:17:28	21:29:7	
METP02	49203	36.92	2016/103/23:56:51	21:29:11	0.07
-----					
NPPA11	22681	166.00	2016/074/00:30:24	13:26:24	
NPPA11	23106	149.99	2016/103/23:26:08	13:26:12	-0.20

How much orbital maintenance / maneuver fuel remains on S-NPP?

In terms of fuel availability:

Current Projected Fuel available: 308.8 kg

Required Margin for Deorbit: 240 kg

Projected use for 2016: 3 kg (with padding)

Projected future annual usage: 5-6 kg/yr (with padding)

Projected time frame to reach Deorbit limit: 2026-2027 (10+ years)

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  - GOES-R Dowlink Frequency Challenges:  
Kay Metcalf (NOAA)  
LySanias Broyles (U.S. Army Corps Of Engineers)
  - Interagency Coordination of  
Environmental Satellite Issues: Executive Secretary
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# Satellite Program Briefings

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## Satellite Programs to be covered:

- ✓ S-NPP / JPSS
  - ✓ DSCOVR
  - ✓ METEOSAT / Meteosat Third Generation (MTG)
  - ✓ Himawari / Geostationary Meteorological Satellite (GMS)
  - ✓ GOES NOP/ GOES-R
  - ✓ SMAP
  - ✓ GPM
  - ✓ JASON-2 / JASON-3
  - ✓ DMSP, DoD WSF
  - ✓ RapidScat, CATS, CYGNSS
  - ✓ Satellite Operations (NESDIS/OSPO)
  - COSMIC / COSMIC 2 / GNSS RO missions
  - POES, MetOp
  - GCOM, JAXA missions
-

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# GOES Data Collection System

Kay Metcalf

NOAA GOES DCS Program Manager

NOAA/NESDIS

Office of Satellite and Products Operations

17 July 2015



NOAA Satellite and Information Service

National Environmental Satellite, Data, and Information Service (NESDIS)

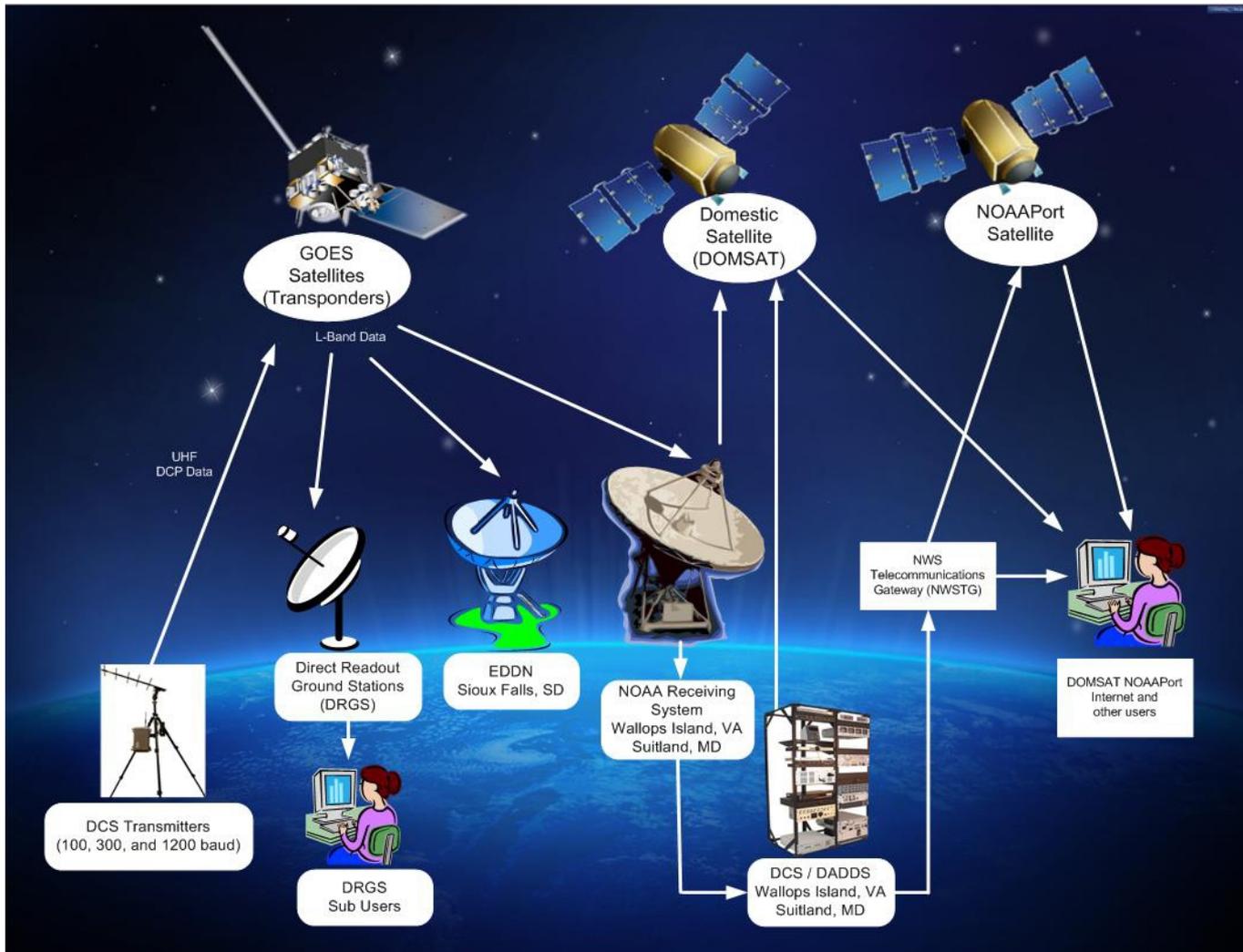


# What is GOES DCS?

- A GOES data relay service used for the collection and distribution **in real-time** of environmental data from > 27,000 remote data collection platforms located throughout the Western Hemisphere
  - Contributes an estimated 7 Million Observations per day into the global observing system
- Started as an experimental system for collecting real-time data that has evolved into a National Critical operational system used by many Federal, State and Local agencies
- Has evolved into the backbone of real-time data collection programs for many environmental agencies
- Many Emergency warning systems in the U.S. and neighboring countries rely on data delivered through GOES DCS



# GOES DCS System Diagram



# GOES DCS Users

- National Weather Service
  - largest single data user
- National Ocean Service(CO-OPS, PORTS)
- National Climatic Data Center (CRN)
- National Data Buoy Center
- Pacific Tsunami Warning Center
- US Army Corps of Engineers
- US Air Force
- US Navy
- National Interagency Fire Center
- National Forest Service
- Bureau of Land Management
- US Geological Survey
  - largest single platform operator
- Bureau of Reclamation
- National Park Service
- Department of State
  - (International Boundary & Water Commission)
- Multiple State Agencies
- Canadian Environmental Agencies
- South and Central American Environmental Agencies
- Caribbean Tsunami Network
- Pacific Island Nations
- Caribbean Island National
- Total of over 400 agencies



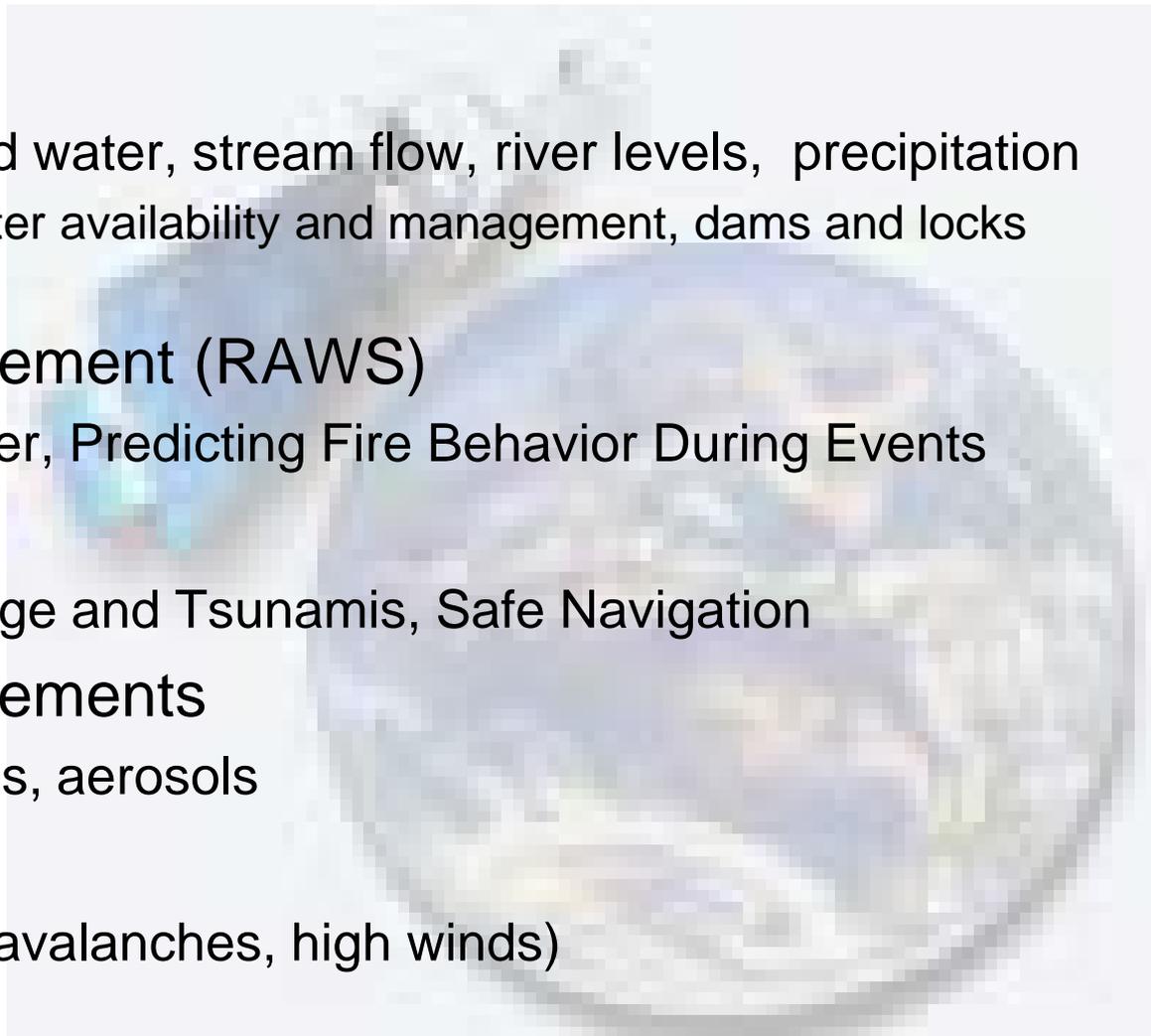
NOAA Satellite and Information Service

National Environmental Satellite, Data, and Information Service (NESDIS)



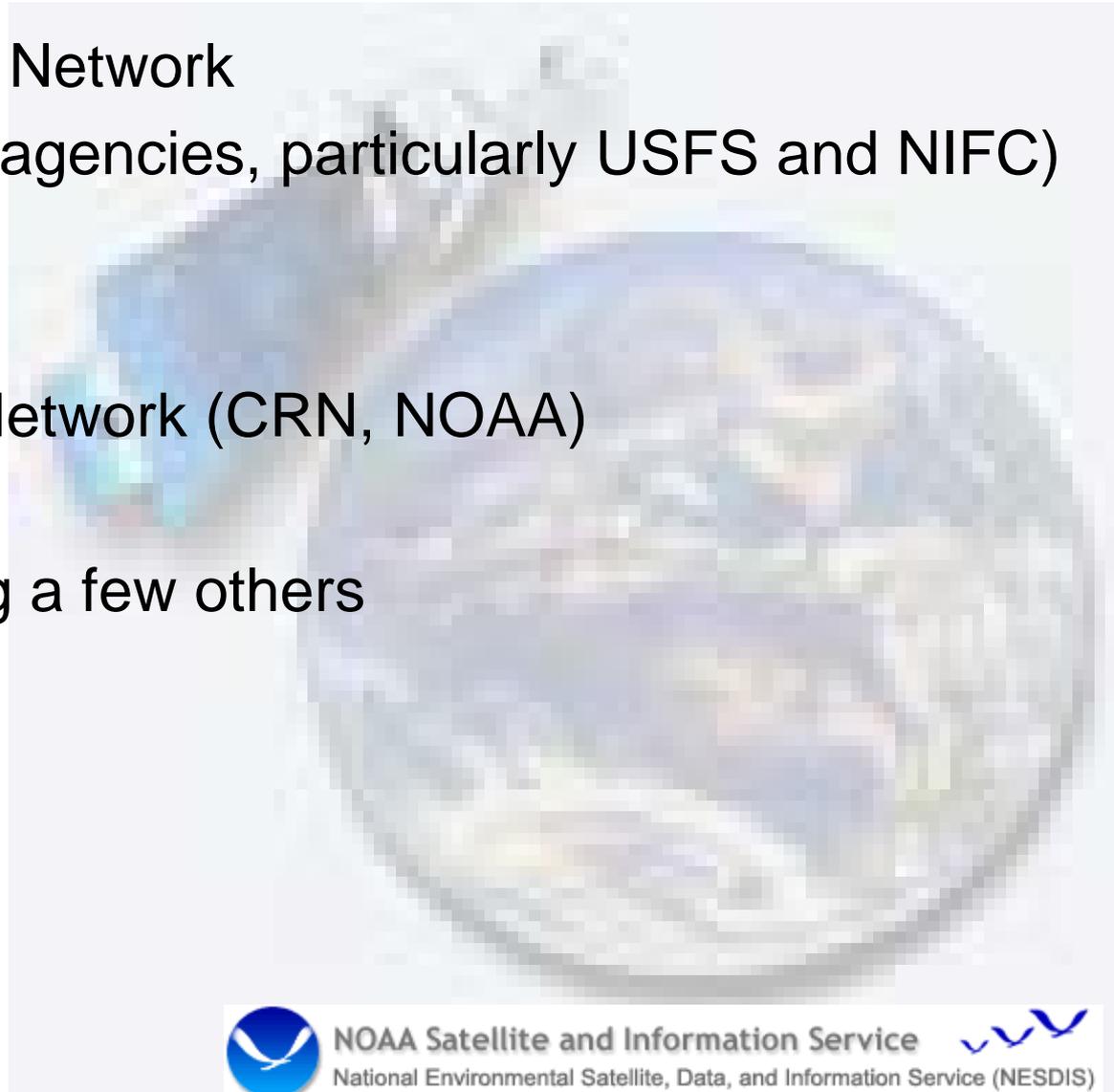
## ...And This is What They Use It For

- Water Resources
  - Surface water, ground water, stream flow, river levels, precipitation
    - Flood warnings, water availability and management, dams and locks management
- Wildland Fire Management (RAWS)
  - Monitoring Fire Danger, Predicting Fire Behavior During Events
- Tide Levels
  - Monitoring Storm Surge and Tsunamis, Safe Navigation
- Atmospheric Measurements
  - Synoptic Observations, aerosols
- Transportation
  - Hazards (rockslides, avalanches, high winds)



# Networks that use DCS

- USGS Stream Gage Network
- RAWs (wildland fire agencies, particularly USFS and NIFC)
- PORTS (NOS)
- COOPS (NOS)
- Climate Reference Network (CRN, NOAA)
- SNOTEL
- ....working on getting a few others



NOAA Satellite and Information Service  
National Environmental Satellite, Data, and Information Service (NESDIS)

# SOME TYPICAL INSTALLATIONS



# Satellite Telemetry Interagency Working Group (STIWG) History

- Satellite Data Collection System Interagency Working Group (SDCSIWG) Formed In 1976 To Formulate Plan For A National GOES DCS
- Served As Focal Point For Various GOES DCS User Agencies To Coordinate With NOAA On Use Of GOES DCS
- Work Of SDCSIWG Led To A Presidential Directive In November 1979 Giving NOAA A Mandate To Operate The GOES DCS To Satisfy National Requirements
- In June 1985 The Interdepartmental Committee For Meteorological Services And Supporting Research (ICMSSR) And The Interagency Advisory Committee On Water Data (IACWD) Chartered STIWG To Continue Work Of SDCSIWG



NOAA Satellite and Information Service  
National Environmental Satellite, Data, and Information Service (NESDIS)

# Satellite Telemetry Interagency Working Group (STIWG) Today

- Continued To Operate Under Authority Of ICMSSR After IACWD Dissolved
  - OFCM Acted As STIWG Treasurer
  - Appropriations Law Changes Forced OFCM To End Treasurer Role In 2010
- STIWG Continued To Function In NOAA Coordinating Role Without Parent Committee Involvement
- ACWI And OFCM Reached Out To Reconnect, Restructure, And Reaffirm STIWG Mandate



NOAA Satellite and Information Service  
National Environmental Satellite, Data, and Information Service (NESDIS)

# ISSUES FOR CONSIDERATION OF COMMITTEE

- Loss of Spectrum
  - To Guarantee Critical Real Time Reception Many Users have Direct Readout Ground Systems (DRGS)
  - Auction of 1695-1710 May Be Harmful (Still Uncertain) to DCS
  - Auction of 1675-1695 Would Be Catastrophic
    - Can't Mitigate Interference from Signals in the Same Band
    - Any Filter Would Filter Out the Data You are Trying to Receive
- System Visibility
  - Frequency Managers within your agencies should be aware of impact of loss of these bands to your programs
    - Most were not aware when NTIA began fast track review of spectrum allocations so did not speak up
- Overall Coordination with NOAA



# GOES DCS Contact Information

- **Kay Metcalf**
  - **GOES DCS Program Manager**
  - [kay.metcalf@noaa.gov](mailto:kay.metcalf@noaa.gov)
  - **301-817-4558**
- **URL**
  - <http://noaasis.noaa.gov/DCS>
  - <https://dcs1.noaa.gov>
  - <https://dcs2.noaa.gov>
  - <https://dcs3.noaa.gov>
  - <https://dcs4.noaa.gov>



# **STIWG Slides for COES Meeting**

LySanias Broyles

# User Concerns

- 400+ agencies collect and receive 7+ million observations daily
  - NWS, USACE, USGS alone have 10K+ platforms
- Ground receive locations strategically chosen due to low terrestrial interference
  - DRGS, L/HRIT, EMWIN
  - Expansion of wireless devices on or near 1675 – 1695 MHz threatens public safety and agency missions

# User Concerns

- GOES DCS is inexpensive
- GOES DCS has an ever expanding user base
- Users collect and decode data from multiple agencies or share platforms
- GOES DCS data has been indispensable in preventing damages and loss of life due to natural and manmade disasters
- GOES DCS provides data for models, water resource management, operating civil works projects, etc.

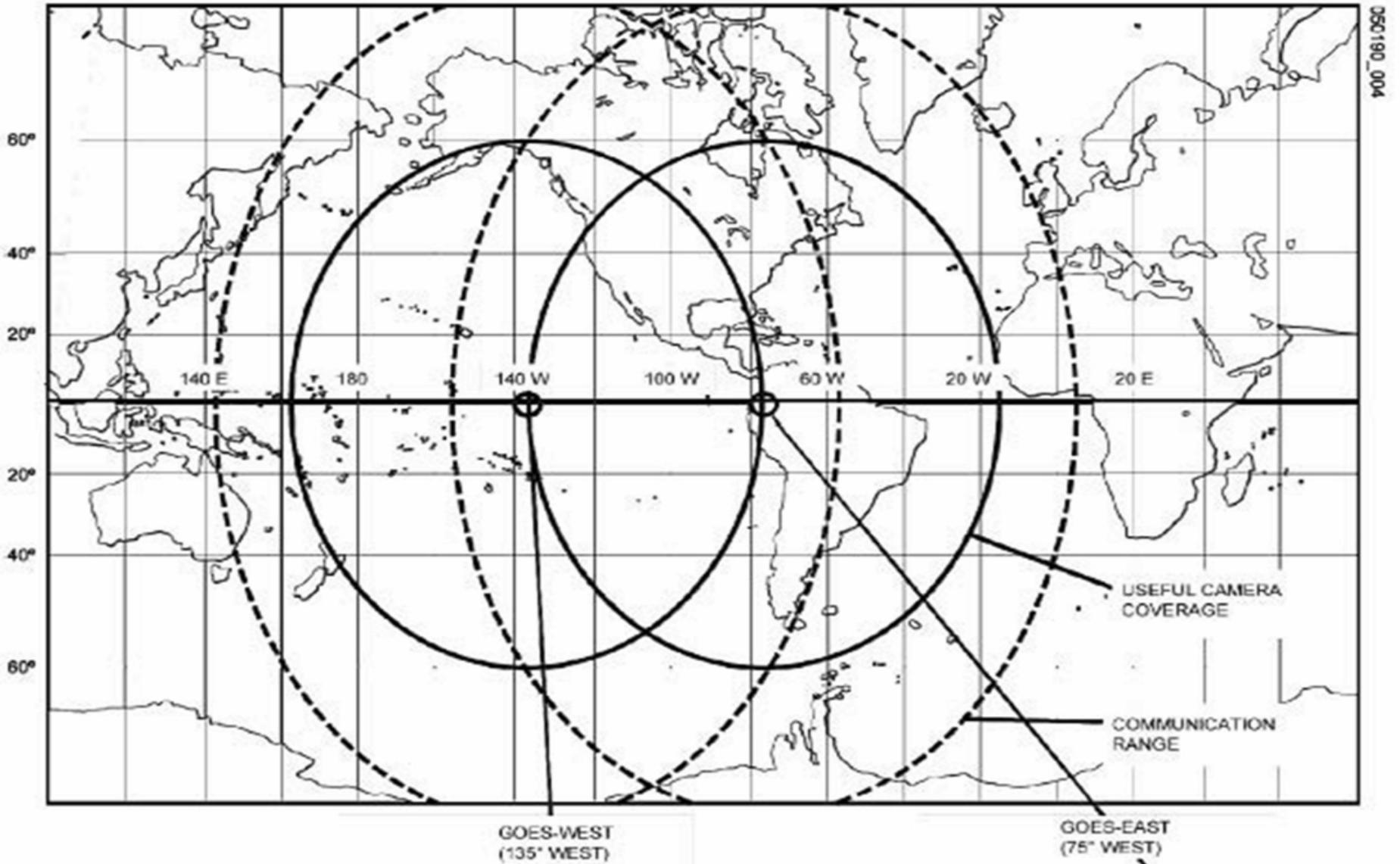
# User Concerns

- Commercial alternatives are costly and/or vulnerable
  - Network outages (administrative or otherwise)
  - Damaged communication infrastructure
  - Cost per transmission
- Proximity, autonomy and distribution
  - Relay mechanism insulated from terrestrial threats
  - Collection is independent of other subsystems
  - Internet or cellular availability is not a factor
  - LRIT systems deployed across the country
- Agencies already migrating from commercial DOMSAT to L/HRIT
  - HRIT/EMWIN downlink at 1694.1 MHz is impacted by Advanced Wireless at 1695 MHz

# L/HRIT vs DOMSAT and DRGS

- DRGS autonomously collects initial GOES transmission from DCP
  - Can customize thresholds to adjust sensitivity
  - Nearly instantaneous receipt after DCP transmission
  - Fairly expensive; very few in operation outside of Wallops and EROS
  - Used in critical locations
    - Protection zones would prevent the installation of future DRGS systems
- DOMSAT is the legacy GOES rebroadcast
  - GOES messages collected and processed at ground stations
  - Transmitted to commercial satellite
  - Hardware no longer available
  - Text only and limited coverage
  - Susceptible to rain-fade with signal being above 11 GHz
- L/HRIT replaces DOMSAT
  - Wider coverage area using both spacecrafts
  - Text and GOES space and Earth imagery products
  - Redundant rebroadcast from GOES East and West; no cost to users
  - Signal less susceptible to rain-fade @ ~1690 MHz vs 11 GHz
  - Relatively inexpensive compared to DRGS and hardware is currently supported
  - Low initial investment makes LRIT ideal for distributed direct data collection
    - ROI as low as 2 years
  - Receivers' connectivity to existing LRGS software variants

# GOES Imagery and Communication Footprint



# User Concerns

- Interference
  - NTIA found LTE overpowers GPS transmissions
    - Impacted 1559 – 1610 MHz band at 15kW output
    - Overpowered filters at 1575.52 MHz
    - FCC ended authority for expanding commercial infrastructure
  - Bench tests demonstrated HRIT interruption by LTE signal with 3.6 MHz guard-band

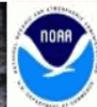
# User Concerns

- Policy Protections
  - 15 CFR 911.6 and 911.7
    - NOAA DCS users permit full, open, timely and appropriate use of data; raw data openly transmitted and accessible; NOAA DCS processed ground segment data handled based on user specs and design limits
  - 51 U.S. Code § 60161
    - Prohibits transfer or privatization of Department of Commerce spacecrafts' responsibilities (includes GOES)

# Uses

- GOES DCS Dependent Systems/Capabilities (abridged)
  - USGS Emergency Data Distribution Network (EDDN)
    - Utilizes DRGS to functions as backup to NOAA
  - Multi-agency flood inundation mapping
    - Flood impact analysis, planning, emergency management, etc.
  - Multi-agency stream gaging and ocean/tide monitoring
    - Intracoastal and oceanic navigation, civil works, etc.
  - USACE Water Management Data Collection Center
    - East and West DRGS systems and LRIT for Water Resource Management
    - Looking for path forward for 15-minute GOES transmissions
  - NWS Hydrometeorological Automated Data System (HADS)
    - 3.6 million observations/day, >16K DCS DCP's
  - NWS/NDBC Coastal-Marine Automated Network (C-MAN)
    - Weather forecasting and warning for public dissemination
  - USBR AgriMET
    - Incorporates data in evapo-transpiration models
  - NOAA/NOSS National Water Level Observation Network (NWLON)
    - Coastal tide information for tsunami detection

# USGS Emergency Data Distribution Network (EDDN)



NOAA GOES DCS  
EROS USGS  
STIWG

## Emergency Data Distribution Network

EDDN Home

### LRGS Message Access

#### MAIN CRITERIA

Since Time:  Time Formats

Until Time:

Network Lists:

DCP Addresses:

GOES Channels:  Spacecraft:  BAUD:

Before Text:  After Text:

#### SPECIAL ADDRESSES

- DCP User EMail
- DCP Bulletins
- Global Bulletins
- Detailed Timing Data

#### MESSAGE QUALIFIERS

Retransmissions:

DAPS Status Messages:

```
//SOURCE GOESTR DCP DAPS
CE569DEE16075133404G49+0NN177EUB00105":HG 4 #30 4.02 4.04 4.05 4.06 :PC 4 #30 87.68 87.68 87.68 87.68 :SN 4 #30 -74529 :BL 12.48 :PWR 6.8/0.0
//END
//SOURCE GOESTR DCP DAPS
CE55F1D416075133413G44-0NN177EUP00168":HG 4 #30 45.52 45.53 45.54 45.56 :PC 4 #30 91.58 91.58 91.58 91.58 :TW 4 #30 10.4 10.4 10.4 10.4 :SN 4 #30 -71332 -71332 -71332 -71332 :BATTLOAD
//END
//SOURCE GOESTR DCP DAPS
CE18640C16075133424G40+0NN177EXE00071":HG 4 #30 1.40 1.40 1.39 1.40 :SN 4 #30 -63048 :BL 12.60 :PWR 5.7/0.0
//END
//SOURCE GOESTR DCP DAPS
CE56804A16075133434G46+0NN177EXE00100":HG 4 #15 4.67 4.66 4.65 4.64 :PC 4 #15 48.90 48.90 48.90 48.90 :SN 4 #15 0 :BL 12.65 :PWR 6.4/0.0
//END
//SOURCE GOESTR DCP DAPS
CE56A6A616075133444G46+0NN177EUP00105":HG 4 #30 4.33 4.32 4.32 4.33 :PC 4 #30 49.72 49.72 49.72 49.72 :SN 4 #30 -74528 :BL 12.60 :PWR 6.7/0.0
//END
//SOURCE GOESTR DCP DAPS
```

# Multi-agency Flood Inundation Mapping



USGS Home  
Contact USGS  
Search USGS

USGS Flood Inundation Mapping Science

[Home](#) [Science](#) [Mapper](#) [Toolbox](#) [FIM Libraries](#) [About FIM](#) [Contact](#)

## Flood Inundation Mapping (FIM) Program

Floods are the leading cause of natural-disaster losses in the United States. More than 75 percent of declared Federal disasters are related to floods, and annual flood losses average almost \$8 billion with over 90 fatalities per year. Although the amount of fatalities has declined due to improved early warning systems, economic losses have continued to rise with increased urbanization in flood-hazard areas. The **USGS Flood Inundation Mapping (FIM) Program** helps communities protect lives and property by providing tools and information to help them understand their local flood risks and make cost-effective mitigation decisions.

The **USGS Flood Inundation Mapping Program** has two main functions:

### 1) Partner with local communities to assist with the development and validation of flood inundation map libraries.

A flood inundation map library is a set of maps that shows where flooding may occur over a range of water levels in the community's local stream or river. The USGS works with communities to identify an appropriate stream section, gather the necessary data to model where flooding will likely occur, and verify that the maps produced are scientifically sound. To learn more about the scientific process of developing a map library, visit the [FIM Science section](#).

Inundation maps can be used for:

- *Preparedness - "What-if" scenarios*
- *Timely Response - tied to real-time gage and forecast information*
- *Recovery - damage assessment*
- *Mitigation and Planning - flood risk analyses*
- *Environmental and Ecological Assessments - wetlands identification, hazardous spill cleanup*

To help communities create a flood inundation map library, the USGS created the [FIM Toolbox](#), which contains development resources and contact information.

### 2) Provide online access to flood inundation maps along with real-time streamflow data, flood forecasts, and potential loss estimates.

Once a community's map library is complete, it is uploaded to the [USGS FIM Mapper](#), an online public mapping application. The FIM Mapper allows users to explore the full set of inundation maps that shows where flooding would occur given a selected stream condition. Users can also access historical flood information and potential loss estimates based on the severity of the flood. The FIM Mapper helps communities visualize potential flooding scenarios, identify areas and resources that may be at risk, and enhance their local response effort during a flooding event.

The USGS works with the National Weather Service, the U.S. Army Corps of Engineers, and the Federal Emergency Management Agency to connect communities with federal flood-related science thereby ensuring the quality and consistency of flood inundation maps across the country.

**Partners:**



### Flood Inundation Mapper

Visit the [Flood Inundation Mapper](#) to explore flood inundation maps, streamflow conditions, flood forecasts, potential loss estimates, and more...

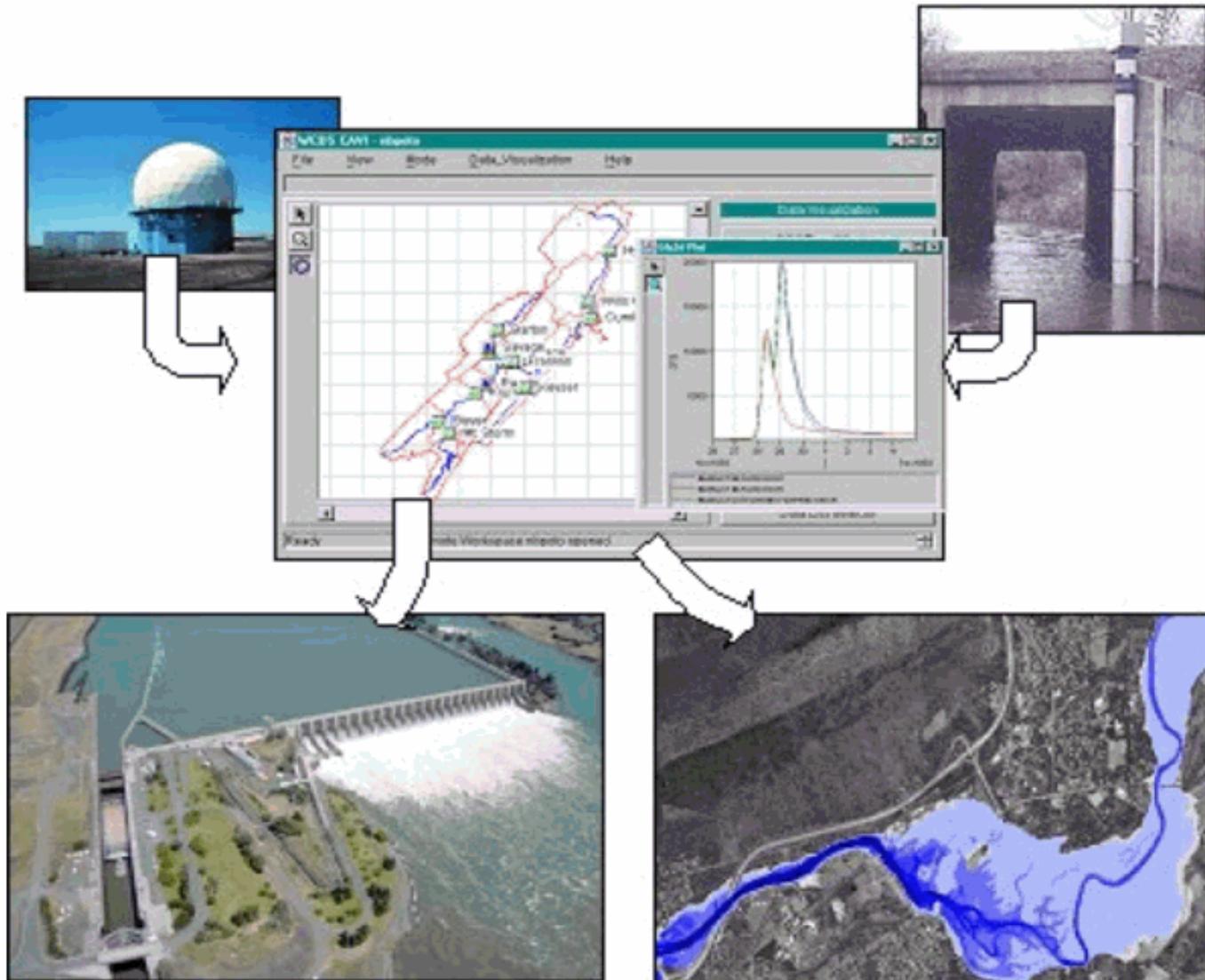
### FIM Toolbox

Visit the [FIM Toolbox](#) to learn more about developing a flood inundation map library for your community.

### Download

Download the [FIM Information Sheet](#) to share information about the flood libraries and the FIM Program with others.

# USACE Corps Water Management System (CWMS)



# USACE Inland Navigation on the Mississippi River: Lock and Dam 15



# USACE Inland Navigation on the Mississippi River: Lock and Dam 16



# USACE Reservoir Regulation: Red Rock Lake



# Red Rock Hydro Power Project (operational in 2018)

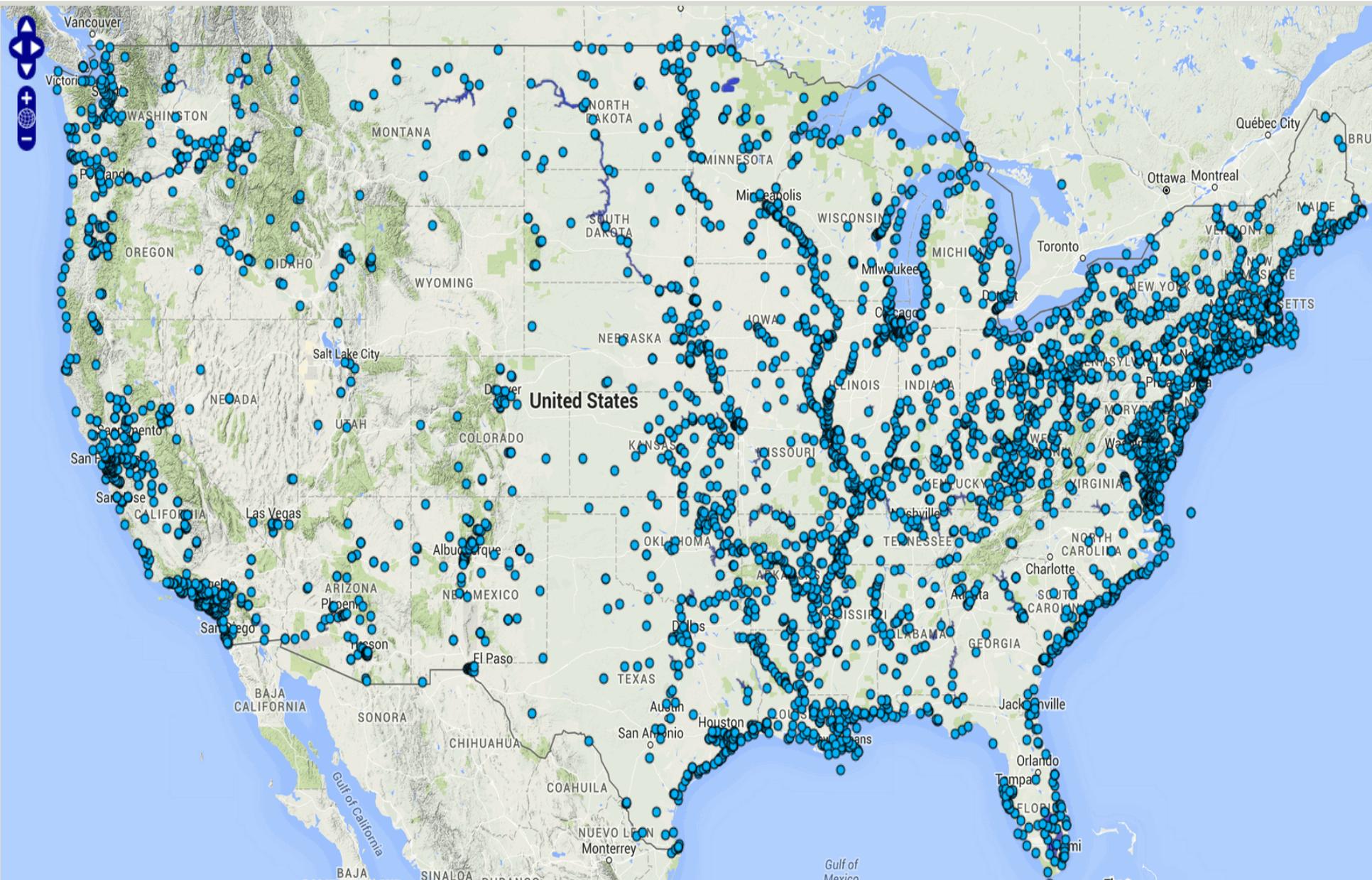
## 55 MW Peak output, powering 18,000 homes



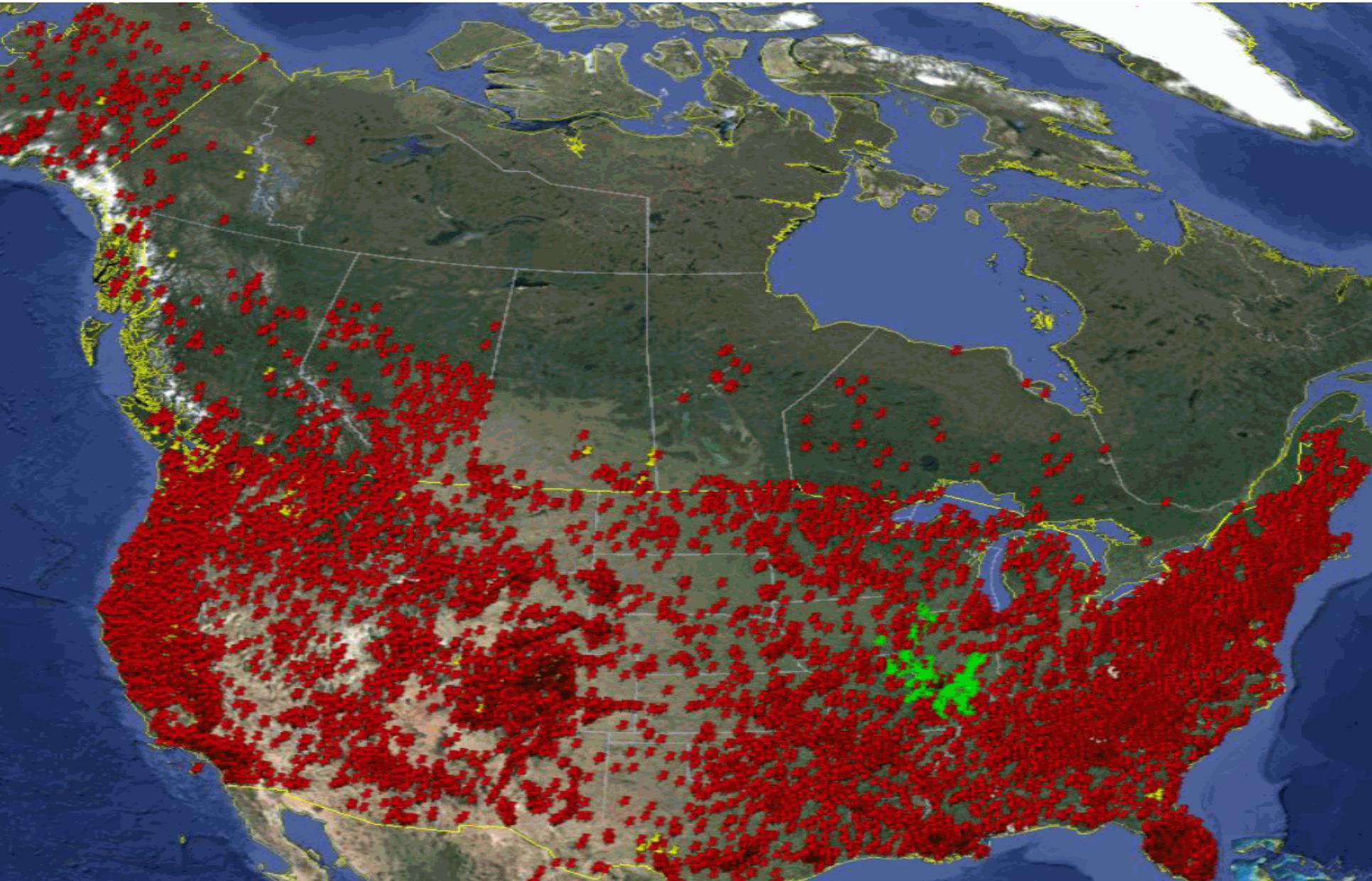


# DCP's Located at USACE Projects

<http://www.CorpsMapu.usace.army.mil>



# North American GOES Platforms



# Benefits of Federal Projects (Damages Prevented) Accumulative Corps Expenditures (Principle plus O&M)

Adjusted to 2000 Using Construction Cost Index EM 1110-2-1304 (Mar 2015 revision)

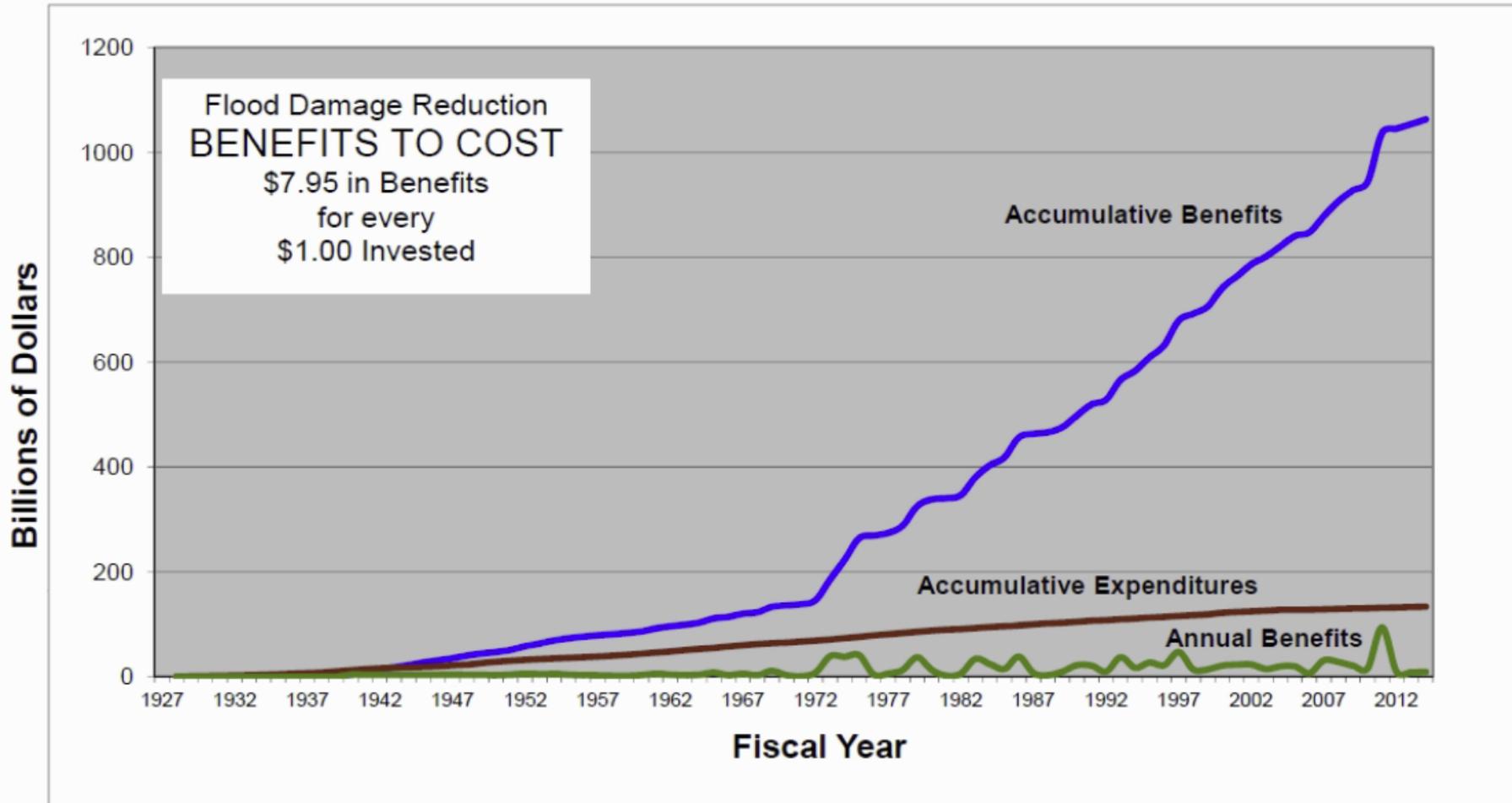
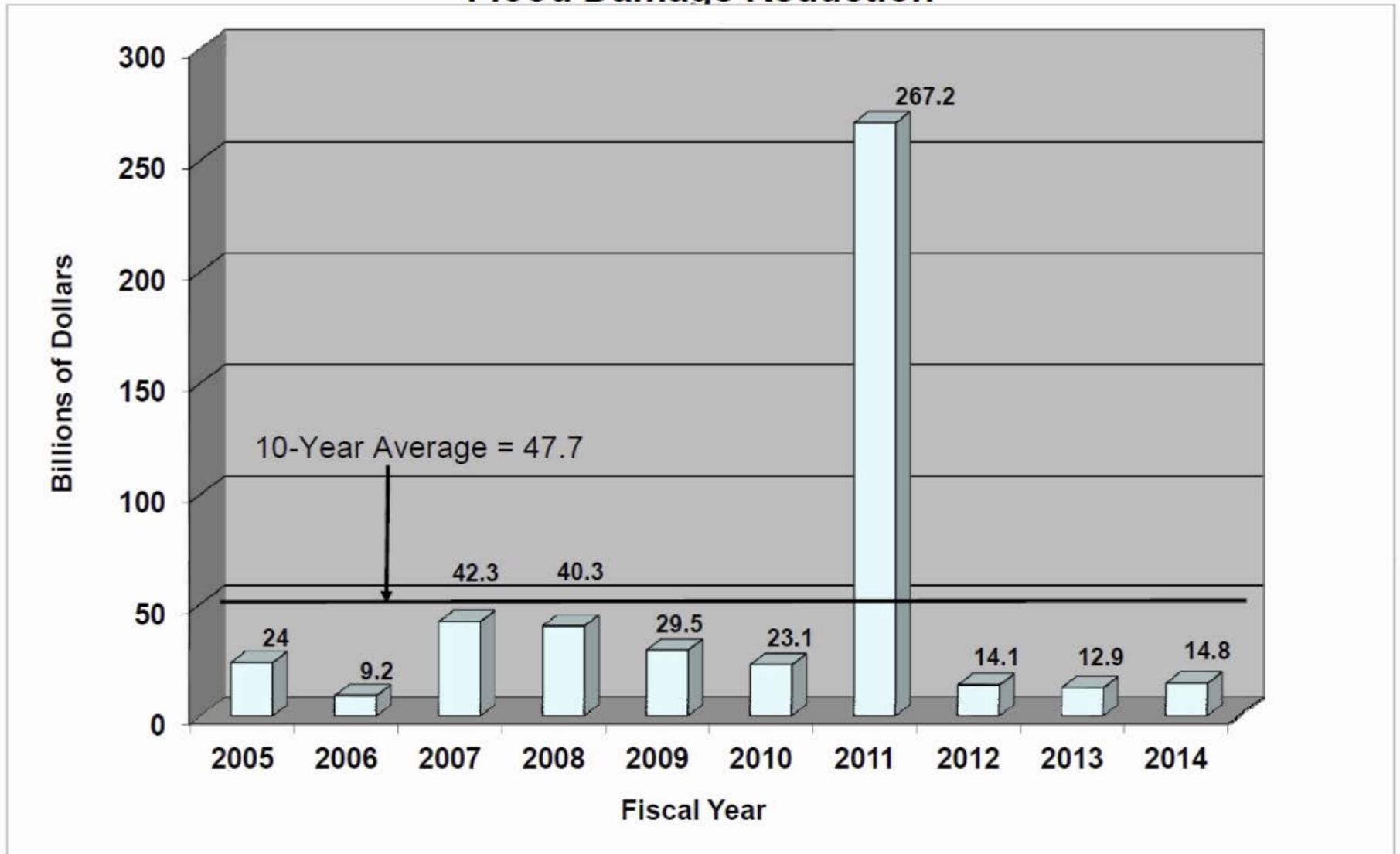


Figure 6 Graph illustrating the adjusted flood damage reduction benefit to cost relationship for the Corps of Engineers from 1927 - 2014. GOES DCS has been instrumental in providing data to maximize benefits since the early 1980's.

## Flood Damage Reduction



Flood Damages Prevented in the U.S.A. by the U.S. Army Corps of Engineers

Figure 5 Graph illustrating the billions of dollars in flood damages prevented by the Corps of Engineers from 2005 - 2014. GOES DCS is the primary data source for operational and emergency water resource management.



# USBR AgriMet Dayfiles

<http://www.USBR.gov/gp/agrimet/>

## Great Plains Region

Reclamation / Great Plains / AgriMet / Big Flat, near Turner, Montana

### GP REGION

[Great Plains Home](#)  
[About Us](#)  
[Area Offices](#)  
[Multimedia](#)  
[Programs & Activities](#)

### Reservoirs, Dams & Hydropower

#### AgriMet

- [AgriMet Stations](#)
- [About Crop Water Use Charts](#)
- [AgriMet Weather Parameters](#)
- [Other Crop Water Use & ET Programs in the GP Region](#)
- [Regional Forecasts, Weather and Climate Info.](#)
- [Irrigation Guide](#)
- [Pacific Northwest Region AgriMet Home](#)
- [AgriMet Partners & Water Resource Info outside GP Region](#)

#### Boat Ramps

#### HydroMet

#### Power Levels

#### Projects & Facilities

#### Recreation

#### Safety of Dams

#### Snowpack & Reservoir Levels

#### Water Management Info.

#### Water User Organization Roster

#### Contact Us



AgriMet Data Collection Station, near Turner, Montana, part of the Great Plains Agricultural Data Collection System.

## AgriMet: Weather & Crop Water Use Charts

### Big Flat, near Turner, Montana

- [AgriMet Home](#)
- [AgriMet Station List](#)
- [Daily Weather Information](#)
- [Archival Weather Information](#)
- [Crop Water Use Charts](#)
- [Crop Evapotranspiration Summaries](#)

The AgriMet station BFTM was installed March 29, 2000. The cooperating agencies involved with this station were the Bureau of Reclamation, Blaine County Conservation District, Big Flat Electric Coop., and the local producers.

The site is approximately 8 miles west-southwest of Turner, Montana. Latitude: 48 50 08 Longitude: 108 33 50 Elevation: 3103'

AgriMet provides generic local crop and weather information accessed via the links on the individual station page.

AgriMet is excited to announce a partnership with Washington State University to incorporate AgriMet data into [WSU's AgWeatherNet](#) Irrigation Scheduler program. To customize crop consumptive water use specific to your field or fields, use the [mobile link](#) or [desktop link](#). Note, to use either link, you have to have a AgWeatherNet account (free registration) which can be done through either of these two links.

## Daily Weather Data

### Dayfiles Information:

Enter date and parameter codes then submit your request.

Station Code:

Enter date desired (i.e. 97SEP1 or a range 97SEP1,97SEP30) or blank for today:

- **BV** = BATTERY VOLTAGE
- **OB** = TEMPERATURE (deg F)
- **PC** = ACCUM PRECIPITATION (inches)
- **SQ** = ACCUM SOLAR RADIATION (langley)
- **TP** = DEW POINT TEMPERATURE (deg F)
- **TU** = RELATIVE HUMIDITY (%)
- **UI** = ACCUM WIND RUN (miles)
- **WD** = WIND DIRECTION (deg az)
- **WG** = PEAK WIND GUST (mph)
- **WS** = AVG WIND SPEED (mph)

Enter parameters from above list, separated by commas, but without spaces (e.g., OB,PC,SQ) or leave blank for all parameters:

# Nat'l Interagency Fire Center Remote Automatic Weather Stations (RAWS)

<http://www.raws.fam.nwccg.gov/links.html>



## Interagency Remote Automatic Weather Stations

[Home](#) | [Resources](#) | [WFMI](#) | [Standards & Guidelines](#) | [RSFWSU Services](#) | [Station Assets](#) | [IRAWS](#) | [Contacts](#)

### Link to the following websites



The Wildland Fire Management Information (WFMI) web-site is designed to support wildland fire organizations by providing current weather and lightning data, as well as historic fire occurrence data. In addition, the NWCG unit identifiers are maintained on WFMI. The WFMI Weather module provides access to the weather data that is transmitted from the more than 2500 Remote Automatic Weather Stations (RAWS) located throughout the U.S.



Real-time Observation Monitor and Analysis Network (ROMAN) MesoWest was created to provide access to current weather observations in the western United States. It is used by the National Weather Service to aide in forecasting, used extensively by researchers to understand severe weather events such as winter snow storms and damaging winds, and is available to the public for personal use.



The Western Regional Climate Center, inaugurated in 1986, is one of six regional climate centers in the United States. The regional climate center program is administered by the National Oceanic and Atmospheric Administration. Specific oversight is provided by the National Climatic Data Center (NCDC) of the National Environmental Satellite, Data, and Information Service (NESDIS). The mission of the Western Regional Climate Center is to disseminate high quality climate data and information pertaining to the western United States; foster better use of this information in decision-making; conduct applied research related to climate issues; and improve the coordination of climate-related activities at state, regional and national scales.



DCS Administration and Data Distribution System (DADDS) Federal, state and local agencies monitor the environment through the transmission of observations from surface-based platforms to NOAA satellites. Decision-makers in the areas of emergency response and resource allocation depend on the GOES DCS. This site is here to provide you background information and assistance in applying for access to and using the GOES DCS.

# USGS Stream Gauge Coverage

<http://www.Weather.gov>

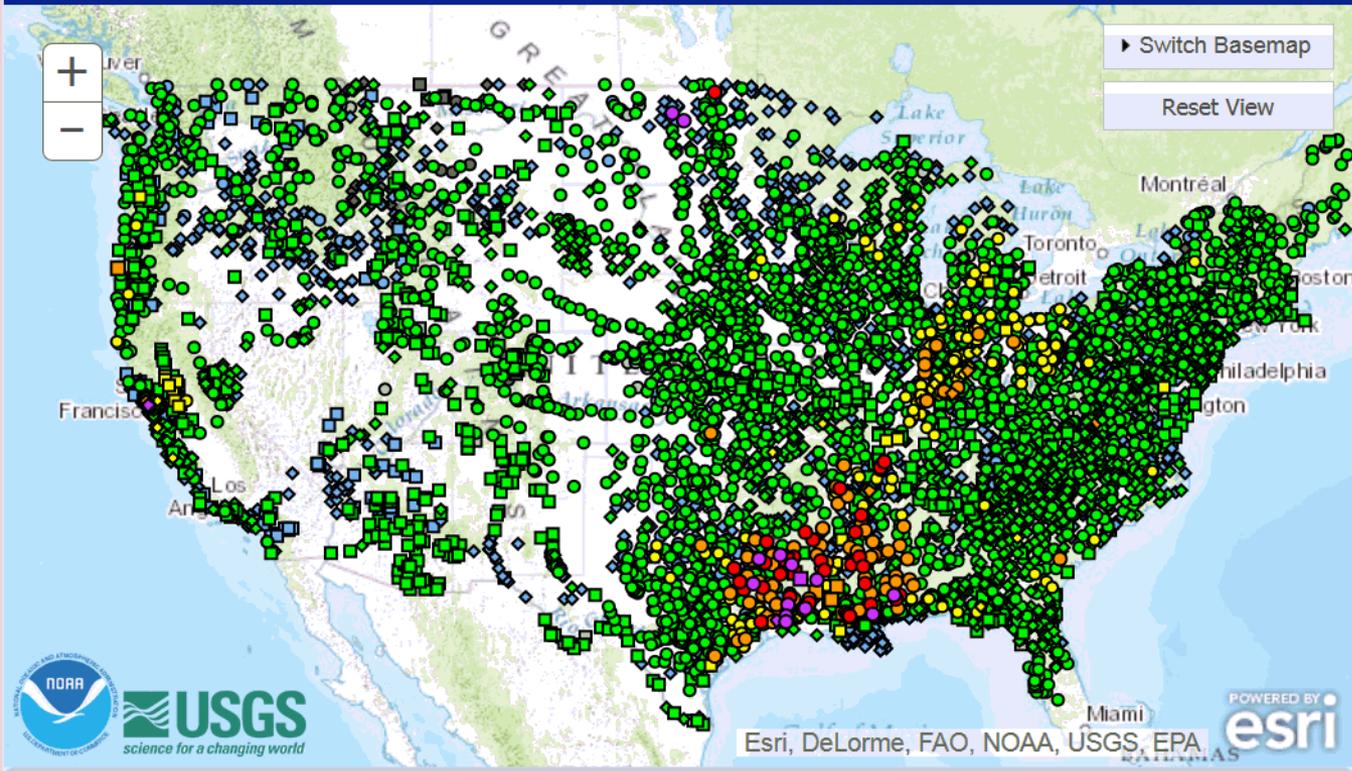
Warnings & Forecasts | Graphical Forecasts | National Maps | Radar | Water | Air Quality | Satellite | Climate

River Observations | River Forecasts | Experimental Long-Range River Flood Risk | Precipitation | River Download | Other Information

Auto Refresh: OFF

Print this map | [Permalink](#) | BOOKMARK |

All Locations



Click on the map or select one of the data views below:

- United States
- NWS Weather Forecast Offices
- NWS River Forecast Centers
- Water Resources Regions

- Probability and forecasts available
- Observations only available
- Forecasts available

7704 total gauges  
[Show all locations in flood \(146\)](#)

- 16 Gauges: Major Flooding
- 34 Gauges: Moderate Flooding
- 96 Gauges: Minor Flooding
- 175 Gauges: Near Flood Stage
- 4865 Gauges: No Flooding
- 2100 Flood Category Not Defined
- 3 At or Below Low Water Threshold
- 283 Gauges: Observations Are Not Current
- 132 Gauges: Out of Service

[Show all locations](#)

Last map update:  
03/15/2016 at 12:31:49 pm EDT  
03/15/2016 at 16:31:49 UTC

[What is UTC time?](#)  
[Map Help](#)

[Alaska](#) | [Hawaii](#) | [Puerto Rico](#)

[Disclaimer](#)

# NOAA Tides and Currents Information

<http://www.TidesAndCurrents.noaa.gov>



## PRODUCTS

Data, Analyses, and Publications

## PROGRAMS

Serving the Nation

## EDUCATION

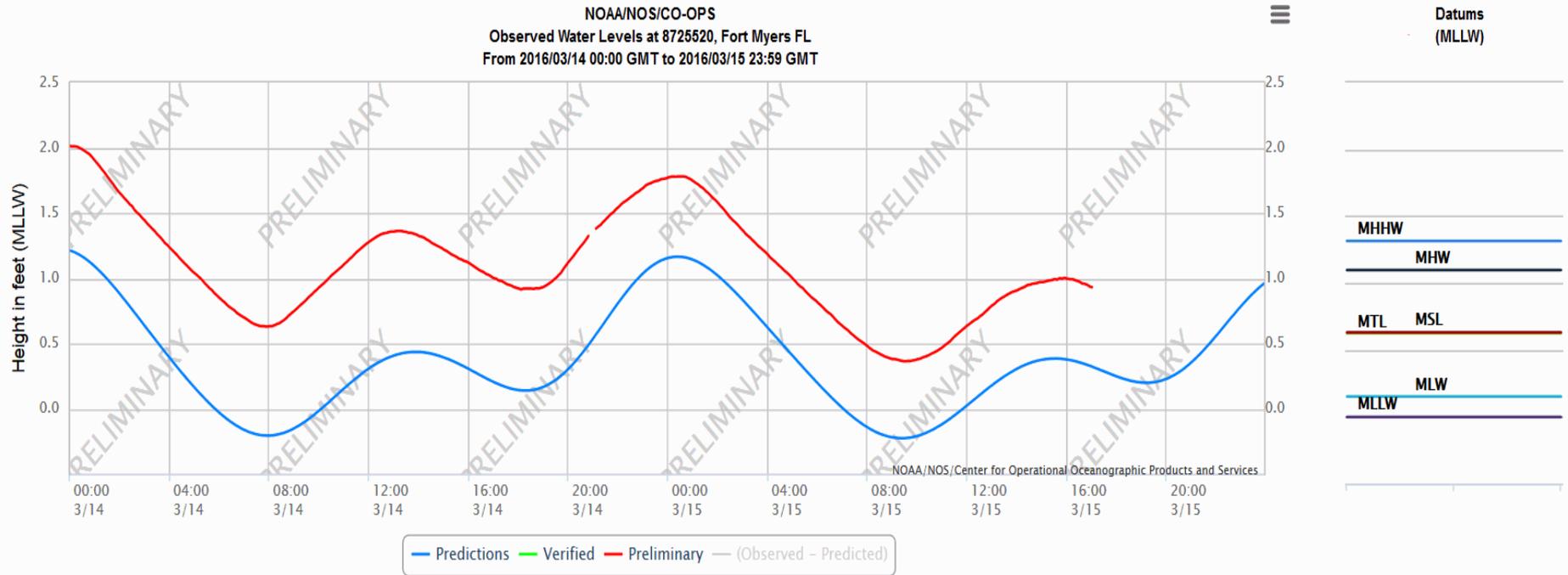
Tides, Currents, and Predictions

## HELP & ABOUT

Info and how to reach us

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[Station Info](#) ▾ [Tides/Water Levels](#) ▾ [Meteorological Obs.](#) [Phys. Oceanography](#)



Options for

8725520 Fort Myers, FL ▾

Units

Feet ▾

Shift dates

⏪ Back 1 Day

Forward 1 Day ⏩

# NWS Hydrometeorological Automated Data System (HADS)

<http://www.nws.noaa.gov/oh/hads/>

## Meta Data

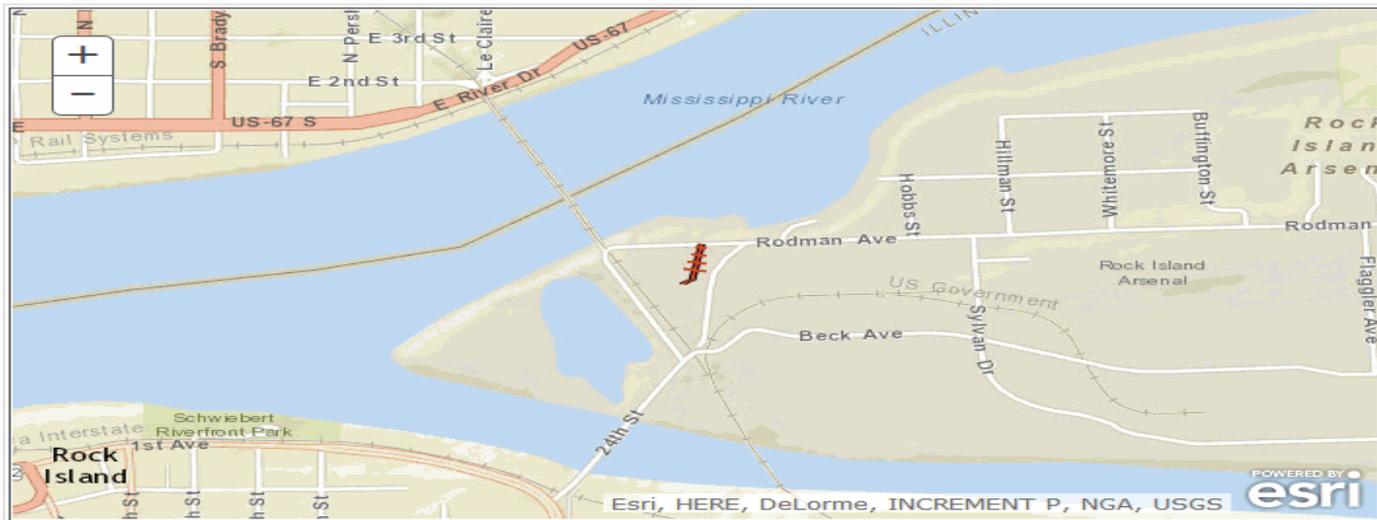
<b>NESDIS ID</b>	CE252210		<b>NWS Location ID</b>						RCKI2					
<b>Location</b>	MISSISSIPPI RIVER LOCK & DAM #15 AT ROCK ISLAND													
<b>Latitude</b>	N 41°31'00"			<b>Longitude</b> W 90°33'49"			<b>HSA</b>				<b>DVN</b>	<b>State</b>	<b>IL</b>	
<b>Owner</b>	CEMVR1	<b>Channel</b>	177	<b>Initial Transmit Time (HH:MM:SS)</b>				00:09:00		<b>Transmission Interval (min)</b>				30
<b>Transmission Times GMT</b>	00:09:00	00:39:00	01:09:00	01:39:00	02:09:00	02:39:00	03:09:00	03:39:00	04:09:00	04:39:00	05:09:00	05:39:00	06:09:00	
	06:39:00	07:09:00	07:39:00	08:09:00	08:39:00	09:09:00	09:39:00	10:09:00	10:39:00	11:09:00	11:39:00	12:09:00	12:39:00	
	13:09:00	13:39:00	14:09:00	14:39:00	15:09:00	15:39:00	16:09:00	16:39:00	17:09:00	17:39:00	18:09:00	18:39:00	19:09:00	
	19:39:00	20:09:00	20:39:00	21:09:00	21:39:00	22:09:00	22:39:00	23:09:00	23:39:00					

## Decode Information

NWSLI	Data Interval(min) Self-time	Data Interval(min) Random	SHEF Code	Time Offset (min)	Coefficient Self-time	Coefficient Random	Constant	Base Elevation (ft)	Gage Correction
RCKI2	10		HPIRG	9	0.01		0	0	0
RCKI2	10		HTIRG	9	0.01		0	0	0
RCKI2	10		PCIRG	9	0.01		0	0	0
RCKI2	10		USIRG	9	0.01		0	0	0
RCKI2	10		UDIRG	9	1		0	0	0
RCKI2	10		UP*RG	9	0.01		0	0	0
RCKI2	10		TAIRG	9	0.01		0	0	0
RCKI2	10		TWIRG	9	0.01		0	0	0
RCKI2	30		VBIRG	9	0.01		0	0	0

Today ▼

Decoded Data



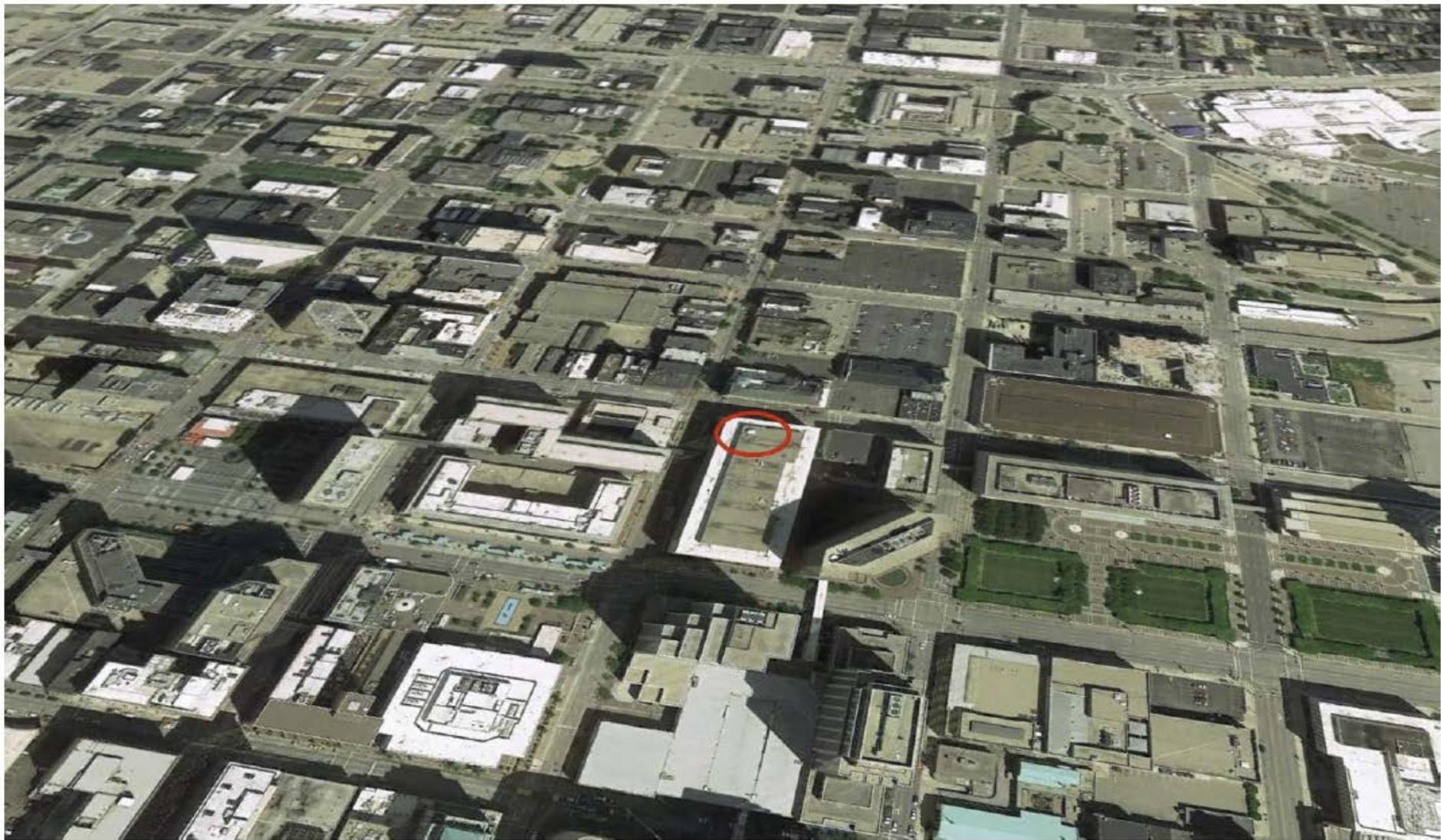


Figure 4 Shows a typical GOES DCS DRGS (Direct Readout Ground Station) dish antenna (red circle) deployed on a roof top in a typical downtown metropolitan area. Sites such as these are especially susceptible to interference. DRGS systems are the most timely and reliable methods to acquire GOES DCS data as they collect the first relay from the DCP; operate within the 1675 – 1695 MHz spectrum.

# Agenda

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- Administrative Remarks: Executive Secretary
  - Opening Remarks: COES Cochairs
  - Action Item Review: Executive Secretary
  - COSMIC-2 Ground System & User Readiness: Mr. Joe Pica, (NWS)
  - GOES-R Dowlink Frequency Challenges:  
Kay Metcalf (NOAA)  
LySanias Broyles (U.S. Army Corps Of Engineers)
  - **Interagency Coordination of**  
**Environmental Satellite Issues:** Executive Secretary
  - Open Discussion: COES Members.
  - Action Item Review / Next Meeting: Executive Secretary
  - Adjourn: The meeting is expected to end by 3:00 PM EDT.
-

# Interagency Coordination of Environmental Satellite Issues

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- ICMSSR Action Item
  - COES Objectives
  - GAO-16-252R “Defense Weather Satellites:... Released 3/10/2016
  - USGEO Satellite Needs Working Group (SNWG)
-

# Interagency Coordination of Environmental Satellite Issues

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## ICMSSR Action Item 2016-1.5.

Schedule a presentation at the next ICMSSR meeting on interagency coordination and cooperation on environmental satellite issues. Following the ICMSSR briefing, determine whether the topic should be brief to FCMSSR.

Responsible Office: OFCM

Due Date: March 31, 2016.

***How should we handle this?***

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# COES Objectives

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- Ensure interagency review and coordination of approved requirements for operational environmental satellite programs.
  - Promote an open dialog concerning environmental satellite systems development, satellite data systems architecture, continuity plans, data exploitation readiness plans.
  - Consider potential use of research satellite capabilities to augment operational systems in meeting user needs, and plans to transition research data into operational products and new applications.
  - Facilitate working-level relationships between Federal members and other stakeholders to effectively resolve interagency issues with regard to the availability of environmental satellite data and products from future systems.
-

# COES Objectives

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- Establish dialog with other standing groups currently engaged in various aspects of environmental satellite and data readiness and exploitation, including: U.S. Global Earth Observing (USGEO) program, Committee for Earth Observing Satellites (CEOS), Coordinating Group for Meteorological Satellites (CGMS), Geostationary Operational Environmental Satellite (GOES) User conference, and other relevant user groups.
  - Coordinate with the Committee for Operational Processing Centers (COPC) on issues of mutual interest, i.e. data availability and data assimilation, and share information.
  - Address other matters as directed by the PC/NOPC (*now ICMSSR*).
  - Provide regular updates to the PC/NOPC (*now ICMSSR*) and other elements of the Federal Coordination Infrastructure as necessary.
-

# GAO-16-252R: Released March 10, 2016

- GAO-16-252R “Defense Weather Satellites: Analysis of Alternatives Is Useful for Certain Capabilities, but Ineffective Coordination Limited Assessment of Two Critical Capabilities”
- Provided recommendations for improving interagency coordination of environmental satellite issues



## Objective 2: Collaboration with NOAA on International Partner Capabilities *(continued)*

- One potential vehicle for formalizing coordination and collaboration between DOD and NOAA is the recently re-established Committee for Operational Environmental Satellites, led by NOAA’s Office of the Federal Coordinator for Meteorology.
  - The committee is intended to help achieve interagency coordination in the planning for and use of operational environmental satellites. DOD representatives have participated in quarterly meetings, according to officials.
  - While the committee does not necessarily focus on international partner issues, one proposed objective of the committee is to establish a dialogue with other groups, including international organizations. Further, DOD officials have stated that the committee is one way DOD can connect with NOAA’s international affairs officials.

# **USGEO Satellite Needs Working Group (SNWG)**

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**The US Group on Earth Observations (USGEO) has established the Satellite Needs Working Group (SNWG) to collect the needs of the federal agencies for new environmental satellite observing capabilities and to present these needs to potential provider agencies (NASA, NOAA, USGS, DoD) for consideration and inclusion in their new programs.**

**COES should request a briefing from USGEO on the SNWG at the next COES meeting in June.**

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# Interagency Coordination of Environmental Satellite Issues

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## ICMSSR Action Item 2016-1.5.

Schedule a presentation at the next ICMSSR meeting on interagency coordination and cooperation on environmental satellite issues. Following the ICMSSR briefing, determine whether the topic should be brief to FCMSSR.

Responsible Office: OFCM

Due Date: March 31, 2016.

***How should we handle this?***

**COES consult with USGEO then develop and present the briefing at the next ICMSSR meeting in May.**

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# Agenda

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- Administrative Remarks: Executive Secretary
  - Opening Remarks: COES Cochairs
  - Action Item Review: Executive Secretary
  - COSMIC-2 Ground System & User Readiness: Mr. Joe Pica, (NWS)
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  - Open Discussion: COES Members.
  - Action Item Review / Next Meeting: Executive Secretary
  - Adjourn: The meeting is expected to end by 3:00 PM EDT.
-

# Action Item Review / Next Meeting

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- **The Executive Secretary will document any action items taken during the meeting**
  - **The Executive Secretary will coordinate with the cochairs and schedule the next meeting.**
    - **Our goal is to conduct 4 COES meetings in 2016 (March, June, September, and December)**
      - **March 18, 1-3pm**
      - **June 15, 1-3pm (TBD)**
      - **Sep 6, 1-3pm (TBD)**
      - **Dec 6, 1-3pm (TBD)**
-