Earth Observations and Diplomacy



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U.S. Department of State



"NOAA Workshop on Prediction/Projection Capability for Decision Support," NOAA Center for Weather & Climate Prediction, College Park, MD, 5-6 June 2019

Bureau of Oceans & Int'l Environmental & Scientific Affairs

-Mission Statement:

Advance America's security and prosperity through international leadership on oceans, environment, science, space, and health.

-3 Directorates:

Oceans (2 offices) Environment (3 offices) Science (3 offices)

-There are ~300 U.S. Embassies and Consulates in 180 countries



OES Strategic Goals

from the Functional Bureau Strategy (FBS)

- * Goal 1: Counter the drivers of instability at the intersection of the OES mission
- * Goal 2: Increase U.S. Economic Growth and Job Creation through Oceans, Environment, Science, Technology, Space, and Health-Related Engagement
- * Goal 3: Advance American Space Leadership
- * Goal 4: Protect the American Public's Health at Home and Abroad
- * Goal 5: Safeguard U.S. Security, Environmental and Economic Interests in the Arctic



OES Functional Bureau Strategy

OES Goal 3: Advance American Space Leadership

Objective 3.1: Pursue and maintain a rules-based international framework for the long-term sustainability, commercialization and utilization of space.

Sub-Objective 3.1.1: International support for commercial exploitation of space that ensures responsible behavior in space while placing minimal burden on the U.S. private sector.

Sub-Objective 3.1.2: Enhanced civil use of space for science, **Earth observation**, civil positioning, navigation, and timing, and other space-based applications.

Objective 3.2: Strengthen American leadership in coalitions and bilateral engagements that extend human presence deeper into outer space for long-term exploration and utilization.

Sub-Objective 3.2.1: Agreement among space-faring nations and commercial interests on an approach to post-International Space Station exploration, to include plans for space-based platforms for further exploration.



Our Mission and Key Statistics

OES/SAT strives for outcomes with spacefaring nations and in international fora that are consistent with U.S. interests; foster conducive domestic and international environments for U.S. companies conducting space activities; and pursue bilateral and multilateral engagements to enable space science and exploration, resilient space services, and burden sharing.





Office of Space & Advanced Technology (OES/SAT) Bureau of Oceans and International Environmental and Scientific Affairs

National Space Policy (PPD-4)



The Secretary of State, after consultation with the heads of appropriate departments and agencies, shall carry out diplomatic and public diplomacy efforts to strengthen understanding of, and support for, U.S. national space policies and programs...

PPD-4 Goals:

- Energize competitive domestic industries
- Expand international cooperation
- Strengthen stability in space
- Increase assurance and resilience of mission-essential functions
- Pursue human and robotic initiatives to increase humanity's understanding of the Earth, enhance scientific discovery, and explore our solar system and the universe beyond.
- Improve space-based Earth and solar observation



Venues for Space Cooperation

- UN Committee on the Peaceful Uses of Outer Space (COPUOS)
- Multilateral Coordination Board for ISS
- US-India Civil Space Joint Working Group *
- International Committee on GNSS (ICG)*
- Interagency Space Debris Coordination Committee (IADC)
- International Telecommunications Union*
- Committee on Earth Observation Satellites (CEOS)
- COSPAS-SARSAT (Satellite-aided Search and Rescue Program)
- Group for Earth Observations (GEO)
- US-EU Space Policy Dialogue *
- World Meteorological Organization (WMO) Satellite Executive Committee
- Coordination on Geostationary Meteorological Satellites (CGMS)

Those with State lead/chair/co-chair have asterisk (*)





U.S. – EU Cooperation Arrangement on Copernicus Earth Observation Data



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The U.S. – EU Cooperation Arrangement formalizes collaboration between experts from NASA, NOAA, USGS, the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), and the European Space Agency (ESA) to realize the full value of these Earth observation satellites for research and operational purposes.

The Arrangement serves as an **umbrella** under which technical implementing procedures can be finalized.

U.S. Deputy Assistant Secretary of State for Science, Space and Health, Acting, Jonathan Margolis and European Commission Director for Space Policy, Copernicus and Defense Philippe Brunet signed the arrangement in Washington, D.C. on October 16, 2015.

Sample daily NOAA composite image from Sentinel 1A/B, 14 Jan 2017



U.S. National Ice Center (NOAA, US Coast Guard, US Navy) uses Sentinel-1 and other satellite data to produce estimates of current sea-ice to aid navigation in polar regions.

Copernicus EMS Maria activation

Home

What is Copernicus EMS - Mapping EMS - Early Warning System



LATEST NEWS + 2017-09-12 [[EMSR741] Hurricane Irma in Florida

EMS - HAPPING

- Service Overview
- Who can use the service
- How to use the service. .
- Products: Rapid Mapping
- Products: Risk and Recovery
- Quality control / Feedback
- User Guide

RAPED MARRING.

- List of Activations
- Map of Activations
- GeoRSS Feed

RISK AND RECOVERY

- List of Activations
- Map of Activations
- GeoRSS Feed.

- Map of Activations of Other Organizations
- Map Coverage Planner

EMSR243: Hurricane Maria in Puerto Rico and US Virgin Islands

Event Type: Storm (Tropical cyclone, hurricane, typhoon) Activation Time (UTC): 2017-09-19 18:07 Reference maps produced: 0 Delineation maps produced: 6 Grading maps produced: 0 Activation Status: Open Affected Countries/Territories: Puerto Rico Virgin Islands, United States

Authorized User:

EU Services [EEAS

Activation Reason:

Maria is the sixth humicane to have formed in the Atlantic Basin this season. Rainfall on many of the islands on Maria's path could cause life-threatening flash floods and mudslides. In the Dominican Republic, the National Emergency Operations Centre (NEOC) has convened in advance of Humicane Maria and has already placed 20. provinces on alert for hurricane conditions. Authorities are evaluating priority evacuation zones.



EMSR243 - Activation Extent Map Release: r01 - Version: v1 - Delivered: 2017-09-20 19:39 NAME AND CARDENALS AS AN ADDR. OF ADDR. DATE ADDR. WHEN A DATE OF ADDR.

DOS Media Note 6 Sept. 2017



U.S. cooperation with the European Commission, facilitated by the Department of State, allowed for rapid activation of the Copernicus Emergency Management Service (EME) over the Texas and Louisiana coasts affected by Category-4 Humbane Harvey, the largest recorded reinstorms even to hit the contiguous United States. This service has provided local, state, and facteral disaster managers with free, real-time, all-weather radar satellite images of the affected areas; we are grateful to our European partners, including the European Space Agency and the European Organisation for the European of Meteorological Satellites, for their assistance during this shallenging time.

Since August 21, Europe's Copermisus EMS, at no cost to the United States, has generated up to data, satellite based maps of the food extent. In combination with U.S. satellite data, these maps are pritical tools for relief operations by U.S. federal, state, and local disaster responders. With Humbane lima projected to reach the Caribbean Islands and the East Coast of the United States, the delivery of EMS produits will shift to addressing the response to that major storm.

State Dept. Dipnote Blog, 8 Sept 2017



Water from Addicks Reservoir flows into neighborhoods as floodwaters from Tropical Storm Harvey rise Tuesday, Aug. 29, 2917, in Houston, (AP Photo/David J. Phillip)

Eyes in the Sky and Diplomacy on the Ground: U.S.-EU Share Satellite Data in Response to Dangerous Hurricanes

By Judith G. Garber on September 8, 2017 On August 25, as Hurricane Harvey was bearing down on Texas, an urgent



Strengthening Disaster Risk Reduction Across the Americas A Regional Summit on the Contributions of Earth Observations

September 3 – 8, 2017 Buenos Aires with 20 countries over 300 stakeholders





5 Days to establish and strengthen the regional disaster risk reduction and resilience

Create a unique collaborative experience to build together the complete response and resilience cycle community







International to regional and national capabilities with satellites and other data sources

NASA DISASTERS program Argentine and national experiences;

- Data providers from CEOS, AmeriGEOSS,
- Planners and framers from UNISDR, SDGs,
- Science and technical status from hydrometeorology, global flood, and geohazards
- Data systems, standards and management
- Data quality and information systems
- Emergency management needs and capabilities
- Resilience and community context
- Communications and dissemination capabilities
- Rapid mapping and information tools
- Community roles and youth networks







Building capacity, learning the humanitarian role and understanding maps and tools

- Raising awareness and specialized training
- Role of the International Charter and Copernicus Services
- Flight, drones and other observing systems
- Decision tools and virtual networks for mapping and sourcing
- Delivery of Disaster management and resilience services
- Interpretive Support and Shared knowledge
- Strengthening understanding of mutual roles and dependencies
- Disaster Readiness







Disastrov has been wracked by a year long drought that culminated in wildfires just before monsoon season...







Summit Participants Pull Together to Save Disastrov

- Regional Recovery and Plans

Activity

Participants crafted draft input to integrated Americas Regional Work plans incorporate earth observations, risk reduction and resilience building

When/Where

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	Activity	Who	When/where	Desired outcome	
	1. To include satellite information and tools in the Universities' curricula in Latin America and the Caribbean	AmeriGEOSS, NASA, NOAA, CIIFEN CEPREDENAC, ESPOL, REDULAC	ECUADOR, SECOND SEMESTER 2018	Satellite tools and information are used in the curricula of at least 4 different countries' universities More BSc graduates go for MSc in Satellites Better informad	
	2. To foster the interaction in the Climate Outlook Fora between information and forecast providers	AmeriGEOSS, NASA, NOAA, CIIFEN CEPREDENAC, ESPOL, REDULAC	COSTA RICA, FIRST SEMESTER 2019 (Quaterly, meetings)	Better informed decision-makers Support for capacity building in Satellite management	

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ACTIVIDAD Teleconferencia de socialización y formulación de la propuesta.	- AmericaCOS (Angelica Gutierrez) - UNGRD (Lina Dorado, Paula Contreras) - NASA (David Green) - NOAA (Angelica Gutierrez) - KGAC (TBD)	Primera semana de octubre (Virtual).	Modelos digitales de elevación de la zona (1:2:000) Mapas de susceptibilidad y amenaza.
Ivaluación de las serramientas sistentes.	- <u>Academia</u> Nacional de Ciencias USA (Laurent Augustine) - SGC (Marta Calvache, Gloria Ruiz) - IDEAM (Diana Quimbay) - CMGRD Mocoa (TBD) - Universidad Nacional de Cotombia (Fernando Muñoz Carmona) - USAID	Primera semana de noviembre (Virtual)	Proceso de fortalecimiento institucional y Comunitario (comunicación, educación). Insumos para el Plan de Ordenamiento Territorial-POT. Aumento de la resiliencia (comunidad específica).

Desired Outcome





"Strengthening Disaster Risk Reduction across the Americas: A Regional Summit on the Contribution on Earth Observations," Buenos Aires, Argentina, Sept. 3-8, 2017







GED

NASA Disasters Program DISASTERS



OES/SAT, OES/PPO,

WHA, REO-Lima,

funded participants

from Brazil, Chile,

Colombia.

NASA and CONAE planned for 100, instead 380 people registered from 20 countries. New networks, id future projects, coordination + collaboration.



Summit Host: CONAE



NASA Disasters Program Leonardo Espinoza G. Encargado Unidad de Gestión de información Territorial Oficina Nacional de Emergencia

Ministerio del Interior y Seguridad Pública | Gobierno de Chile (56-2) 2252 4395 www.onemi.cl

GFP

Sobal Flood earthership



Open Geospatial Consortium



Committee on Earth Observation Satellites (CEOS) Group on Earth Observations (GEO)

Partnership (GFP)

Global Flood





Example: Regional Environmental Hubs

Regional environmental diplomacy from bases in Ghana, Ethiopia, Botswana, Denmark, Thailand, Fiji, Nepal, Jordan, Peru, Kazakhstan, Costa Rica, Hungary

> Regional glacier mass balance training participants in Yala Glacier Base Camp, Langtang, Nepal

Glocier Mass Balance on Yale Glocier, Languary Valley, Nepol



<u>Echavarriafr@state.gov</u>

Website: https://www.state.gov/key-topics-office-ofspace-and-advanced-technology/

• CONAE's SACOM-1a satellite, Cordoba, Argentina, 9-9-2017



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