



The Satellite Analysis Branch Hazard Mitigation Programs – Using Real Time GOES Imagery



For Today and Tomorrow

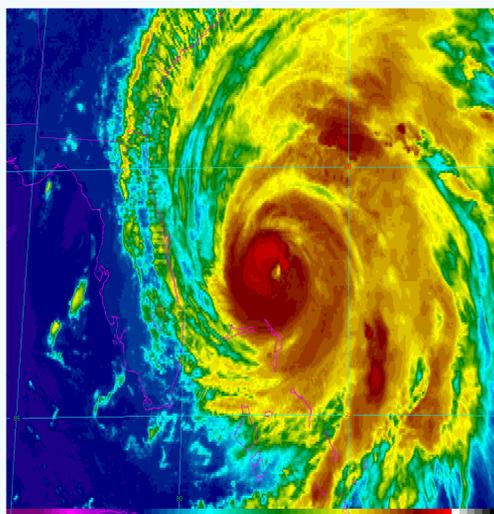
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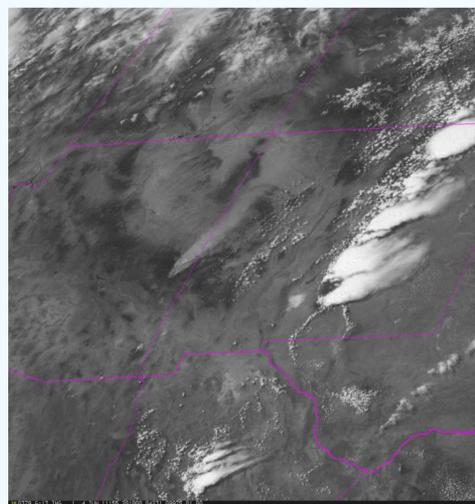
Satellite Analysis Branch

The Satellite Analysis Branch (SAB) serves as the operational focal point for real-time imagery products and multi-disciplinary environmental analyses within NOAA Satellite and Information Service (NESDIS). The Branch's primary mission is to use cutting edge satellite analysis techniques needed to support disaster mitigation and warning services for U.S. federal agencies and the international community. Environmental analyses are provided to National Weather Service (NWS) Warning and Forecast Offices, National Center for Environmental Prediction (NCEP), and to oceanographic and other environmental users of NESDIS satellite products.

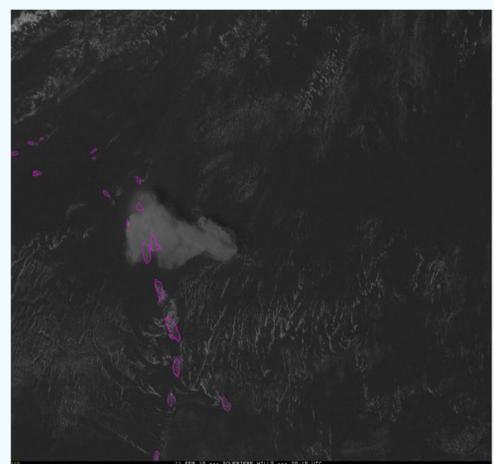
The SAB is staffed 24x7 to monitor and distribute products related to volcanic eruptions, ash extent and movement, global tropical cyclone analysis, wildfire detection and smoke emissions monitoring, and heavy precipitation nowcasting and analysis. The SAB relies heavily on GOES satellite imagery due to temporal resolution to produce real-time hazard mitigation products. This poster presents an overview of SAB operations, the major hazard categories, examples of output products, and the importance of using GOES satellite imagery of today and GOES-R of tomorrow.



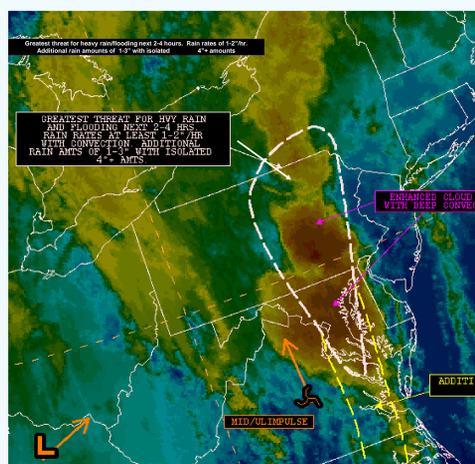
Hurricane Irene Aug. 2011



Wallow, Arizona Wildfire June. 2011



Eruption of Soufriere Hills Feb. 2010



Mid Atlantic Flooding Sept. 2011

Satellite Analysis Branch Smoke and Fire Program

The SAB produces a graphical analysis of fire hotspots and smoke utilizing data from GOES instruments, Polar orbiting instruments, and other non-NOAA satellites. The hotspots are meant to represent areas of active fires. Satellite analysts examine automatically derived hotspots and perform a quality control procedure, removing points that are felt to be false detects and adding points that the automated algorithms have not detected through visual analysis. Fires producing detectable smoke are noted and information is supplied as input to an air quality forecast model run by the NWS. The analysis is 365 days a year around over the contiguous 48 states, Hawaii, Mexico and southern Canada. Seasonal analyses are done over Alaska and the rest of Canada during the active fire season. The main focus and interest in the program over the last few years has been locating areas of smoke depicted with an approximation of density using GOES imagery. The temporal resolution of GOES imagery makes it ideal for locating smoke and possibly dust. The hope of GOES-R is the capability of analyzing more than just smoke, but determining other aerosols. Being able to distinguish different kinds of aerosols can not only help the program evolve, but be a benefit to our environment.

Smoke and Fire Products available at:
www.osdpd.noaa.gov/ml/land/hms.html

The Smoke and Fire Product



Satellite Analysis Branch Precipitation Program

The SAB provides quantitative satellite-derived precipitation estimates (SPENES) and satellite trend guidance to the NWS when heavy convective rain threatens to produce flash flooding over the lower 48 states, Puerto Rico, and Hawaii. Support is also provided for heavy rain and snow associated with winter storms, and for heavy lake effect snow. In addition to the quantitative satellite precipitation estimates, the SPENES message includes a discussion of satellite trends and briefings to HPC. GOES satellite imagery plays an important role in determining possible flash flooding because of the temporal resolution. The GOES-R era will play even a bigger role in this process of determining the potential for flash flooding. The capability to have satellite imagery ingesting every 5 minutes and possibly every 1 minute during RSO routines and multiple new products or improved products from current GOES will be a great benefit to our users.

Precipitation Products available at:
<http://www.ssd.noaa.gov/PS/PCPN/>

Satellite Analysis Branch Tropical Program

The SAB derives the position and intensity of tropical disturbances around the world using the internationally recognized Dvorak technique and cutting edge technologies provided by various research groups. Position and intensity estimates are derived every six hours. They are disseminated electronically via FTP (<ftp://ftp.tpc.ncep.noaa.gov/atcf>) through the Automated Tropical Cyclone Forecast to the Tropical Prediction Center, via the Satellite Products and Service Division (SPSD) Home Page to the Central Pacific Hurricane Center (CPHC) and via text bulletins to the Joint Typhoon Warning Center (JTWC) and Regional Specialized Meteorological Centers (RSMC) in the Eastern and Southern Hemispheres. The tropical program relies heavily on GOES satellite imagery during the development and weakening process of tropical systems. GOES-R will provide additional satellite data and products to help focus on these important trends. Overall, this should help improve forecast intensities and position confidence during the life cycle of a tropical system.

Tropical Products available at:
www.ssd.noaa.gov/PS/TROP

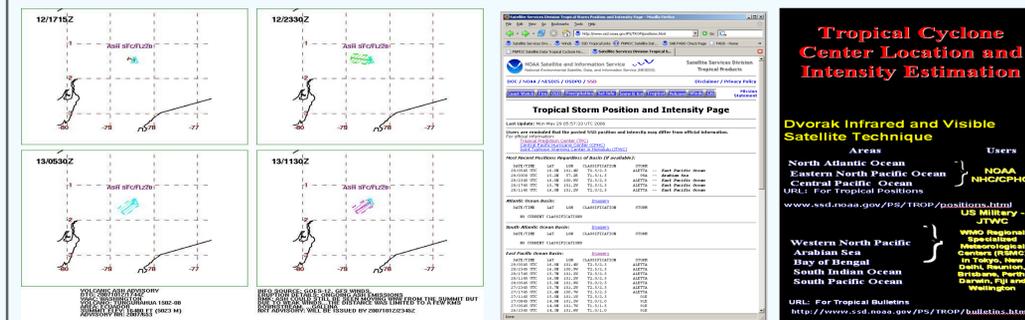
Satellite Analysis Branch Volcanic Ash Program

A Global volcanic ash monitoring program at SAB began in the 1970's and became official in 1987. The Washington Volcanic Ash Advisory Center (WVAAC) was established in 1997 in agreement with the International Civil Aviation Organization (ICAO). The main source of satellite imagery is GOES. Of any program at SAB, having the additional satellite images during the GOES-R era will be very important. Most of the volcanoes in the Washington VAAC area of coverage are not ash active, but can become active quite quickly. Imagery every 1-5 minutes over the continental US and every 15 minutes over Central and South America will be important for us and to our users.

Volcanic Ash Products

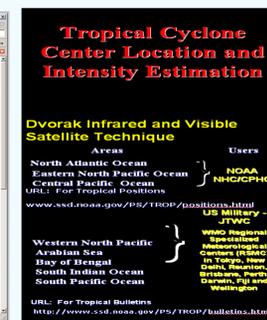
- Volcanic Ash Advisories (VAA) - containing eruption information, ash location, height, velocity and forecast.
- Volcanic Ash Graphic (VAG) - a graphic depiction of ash over an 18 hour period showing extent, movement and size.
- Volcanic Ash Forecast Transport and Dispersion model showing ash over 48 hours period.

Volcanic Ash Products available at:
www.ssd.noaa.gov/VAAC/



The Volcanic Ash Product

The Tropical Product



Tropical Cyclone Center Location and Intensity Estimation