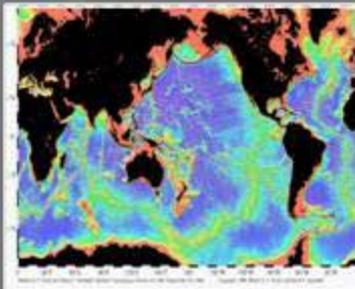


# NOAA Satellite and Information Service

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



August 2, 2012



# NOAA Satellite and Information Service (NESDIS)



**Our mission is to deliver accurate, timely, and reliable satellite observations and integrated products and to provide long-term stewardship for global environmental data in support of the NOAA mission.**



# Supporting NOAA's Mission: Why are satellite-based observations key?

- ✔ **Continuous imaging and sounding** of weather in the Western Hemisphere help save lives and minimize property damage from severe weather
- ✔ **Global imaging and sounding** for medium and long-range weather forecasting and climate analysis
- ✔ Assisting with **disaster mitigation** through monitoring
- ✔ **Impacting the general public** and their decision making
- ✔ Supporting a broad range of **environmental monitoring**





# Principal Activities

## Current Satellite Programs

- 24/7 Satellite operations and product processing
  - Geostationary satellites (GOES)
  - Polar-orbiting satellites (POES)
  - Defense Meteorological Satellite Program (DMSP)
  - Jason-2 Altimetry satellite (started in Fall 2008)





# Principal Activities

## NESDIS Data Centers

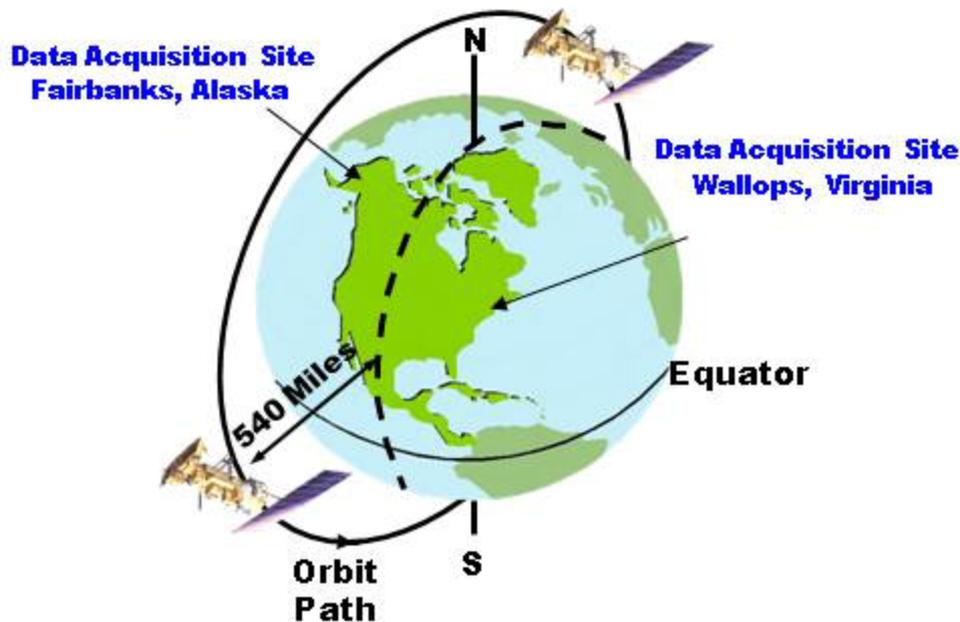
- ✓ National Climatic Data Center
  - ✓ The World's largest archive of weather and climate data
- ✓ National Geophysical Data Center
  - ✓ Manages over 850 geophysical data sets for the Nation
- ✓ National Oceanographic Data Center
  - ✓ Manages marine data and provides a record of Earth's changing environment





# 2 Orbits, 1 Mission

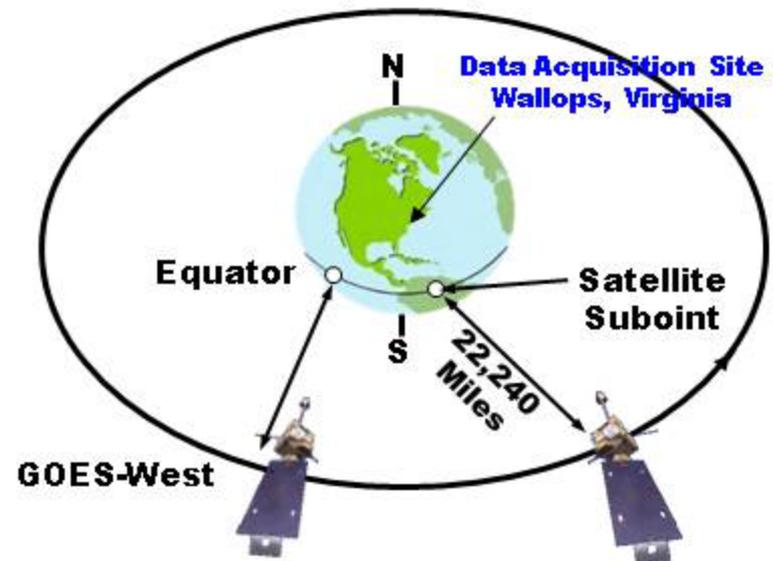
## Polar-orbiting Operational Environmental Satellites (POES)



Each satellite covers the Earth twice per day

- Each orbit is 102 minutes
- Global coverage every 12 hours with 1 satellite
- Images are global and include the poles
- Information is used for long-term weather forecasting and climate monitoring

## Geostationary Operational Environmental Satellites (GOES)



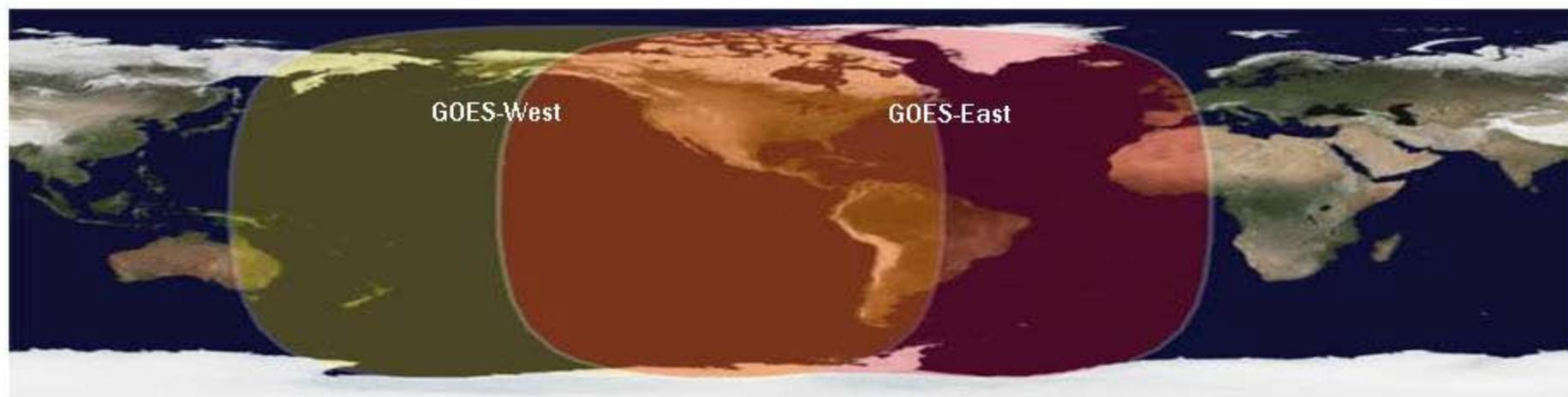
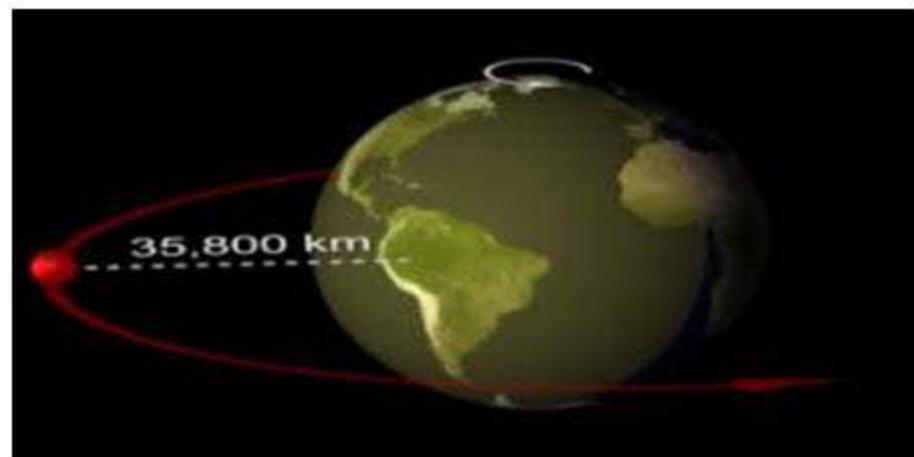
Continuously monitors the Western Hemisphere

- Same geographic image over time
- Full image every 30 minutes
- Northern Hemisphere imaged every 15 minutes
- Usable images between 60°N and 60°S
- Information is used for short-term weather forecasting and severe storm warning/tracking



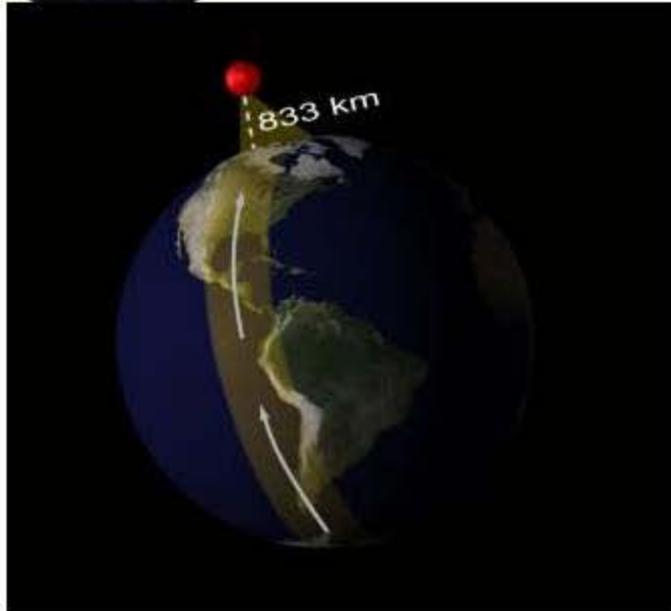
# Geostationary Operational Environmental Satellites (GOES)

- ✔ Orbits at 35,800 km above the Earth
- ✔ Satellite revolves around the Earth at the same speed as the Earth's rotation (geosynchronous orbit)
- ✔ Continuously observes the Western Hemisphere





# Polar-orbiting Operational Environmental Satellites (POES)



- Orbits at approximately 833 kilometers above the Earth, over the North and South poles, approximately every 100 minutes
- As the Earth rotates, POES images a new part of the globe
- Civil POES constellation is a two-satellite system; provides global coverage every 6 hours
- Each satellite covers the entire Earth, twice per day

Coverage by one POES in one rotation

Coverage by one POES over 6 hours

Coverage by two POES over 6 hours





# GOES-R Overview



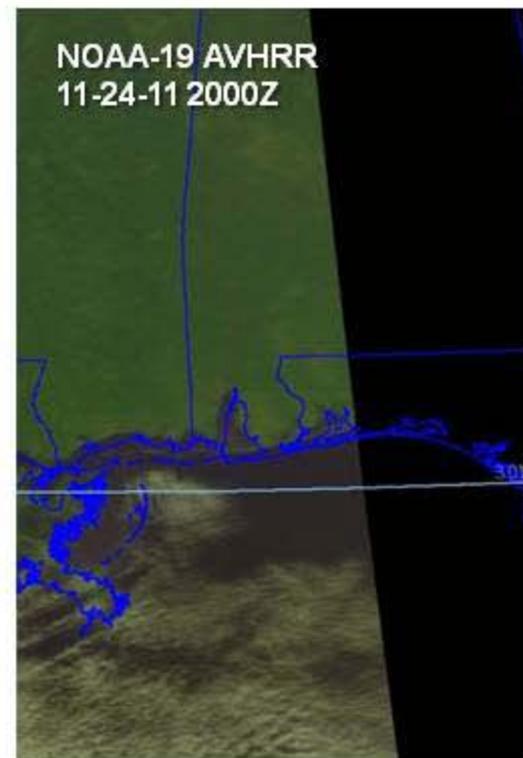
GOES-R Launch Readiness Date*	October 2015
Program Architecture	4 Satellites (GOES R,S,T&U), 10 year operational design life
Program Operational Life	FY 2017 – FY 2036
Program Life-cycle FY 2013 President's Budget	\$10.860 billion

\*Launch Readiness Date based on FY 2013 President's Budget Request





# Joint Polar Satellite System (JPSS)



Launch Readiness Date	FY 2017 (JPSS-1)*; FY 2021 (JPSS-2)
Program Architecture	2 Satellites (JPSS-1 and JPSS-2) & 2 free-flyer satellites
Program Operational Life	FY 2016 – FY 2028
Program Life-cycle FY 2013 President's Budget	\$12.9 billion

\*Launch Readiness Date based on FY 2013 President's Budget Request

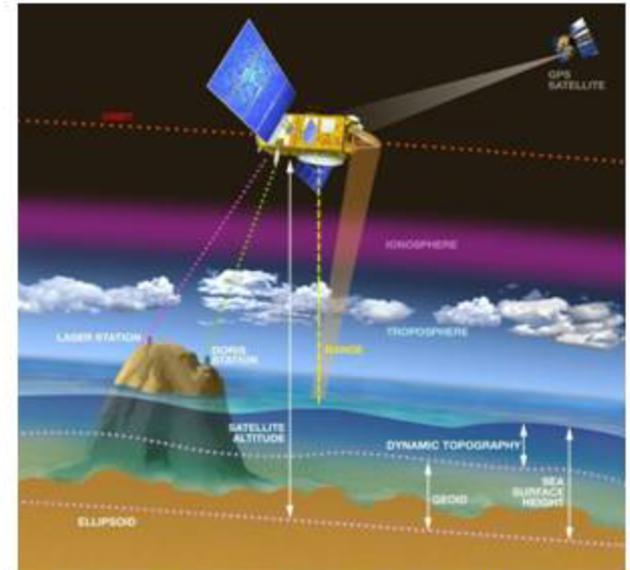




# Jason-3 Altimetry Mission

## JASON Benefits/Applications:

- Continue the time series of global sea level rise
- Seasonal, inter-annual and decadal ocean variability
- Coastal variability and its impact on ecosystems
- Ocean weather-operational oceanography
- Surface wave forecasting and evaluation
- Hurricane intensity forecasting
- Funding continues the development of the Jason-3 satellite, a partnership between NOAA and EUMETSAT, the European Meteorological Agency
- Jason-3 ensures continuity of space-based altimetry observations, and also provides data important to assessing and predicting hurricane intensity, surface wave forecasts and the monitoring of the development of El Niño/La Niña
- Launch readiness date will be updated once Launch Vehicle is selected
- Instrument development on target for completion and delivery to CNES for spacecraft integration in February 2013
- NOAA Ground System is progressing well, with ground system equipment installation in Suitland and Wallops complete and Fairbanks installation planned for completion in late July





# DSCOVER

## Advanced Warning of Solar Storms

### JASON Benefits/Applications:

- Solar wind disturbances cause geomagnetic storms
  - Measurements are continuity from ACE; no new science needed for utilization in alerts
  - Monitors the most destructive form of space weather that impact:
    - Power grids
    - Communications
    - Navigation
    - Potential damage in trillions \$
  - NOAA Space Weather Prediction Center (SWPC)
    - Solar wind data to issue 15-45 minute storm alerts
  - DSCOVER spacecraft continues solar wind observations
  - Research spacecraft past design life
    - Advanced Composition Explorer (ACE) launched 1997 with 2 year design life
- 
- Provides advanced warnings of geomagnetic storms that could affect power grids, telecommunications, satellite systems, and the health and safety of astronauts and airline passengers
  - NOAA has partnered with NASA and the Air Force to refurbish and launch DSCOVER as a space weather mission with a launch readiness date of 3<sup>rd</sup> Quarter FY14. USAF OSP-3 contract award expected this September
  - DSCOVER Project grassroots budget and schedule review completed and approved, project re-baseline review held June 18/19
  - DSCOVER spacecraft testing and completion of magnetic cleanliness analysis completed, awaiting testing report





# Current Challenges

- NOAA's satellite acquisition efforts include 2 major development efforts
- Congressional appropriations for satellites over the past several years have been below the President's budget request
  - FY12 funding received was critically important to allow major development efforts to move forward
  - President's FY13 Budget allows programs to remain on schedule – lower than anticipated funding in FY13 could lead to additional schedule delays, cost growth
- NOAA's working w/Administration officials to examine the Senate's proposal to transfer JPSS and GOES-R funding to NASA
- NOAA's examining how to add flexibility, decrease cost of our satellite and ground system architecture



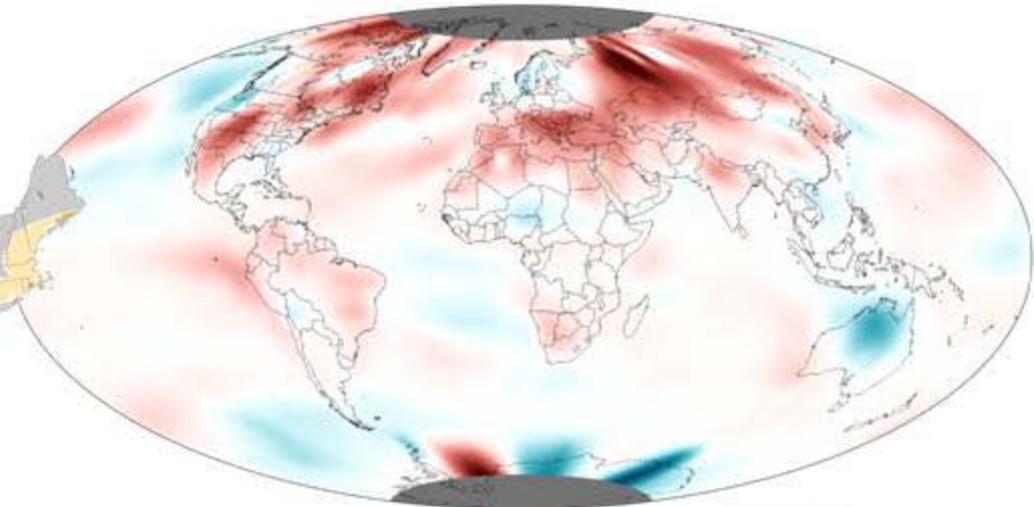


# Climate Adaptation and Mitigation

## U.S. Seasonal Drought Outlook - May 3-July 31, 2012

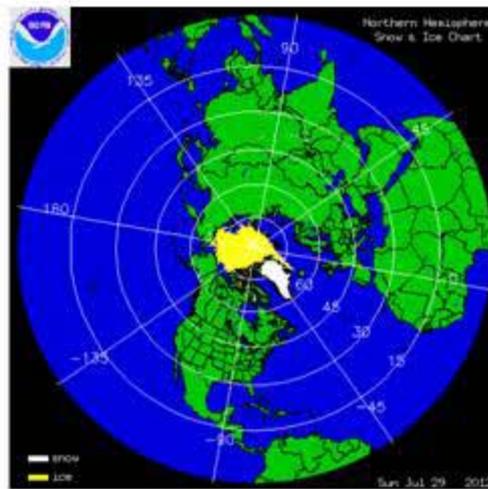


Drought Outlook  
Perseid Development Ongoing Improvement Improvement



June 2012 was  
4<sup>th</sup> Warmest on  
Record for the  
Globe

## Snow & Ice Chart





# Weather-Ready Nation



2011 Atlantic  
Hurricane Season



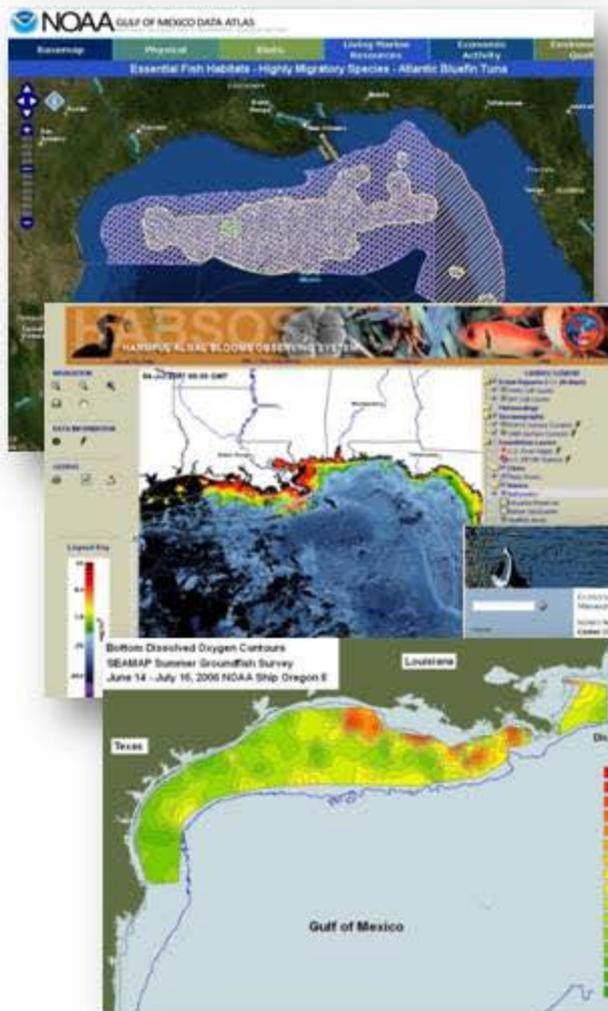
Derecho - July 2, 2012



# Resilient Coastal Communities and Economies



## Ocean Altimetry and Sea Surface Temperature



## Ecosystems Data Management

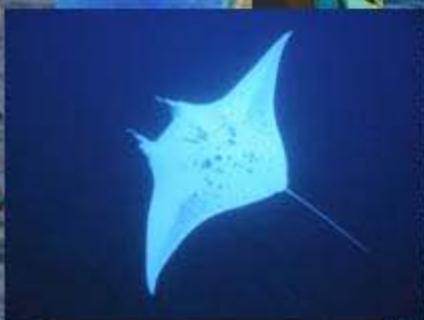
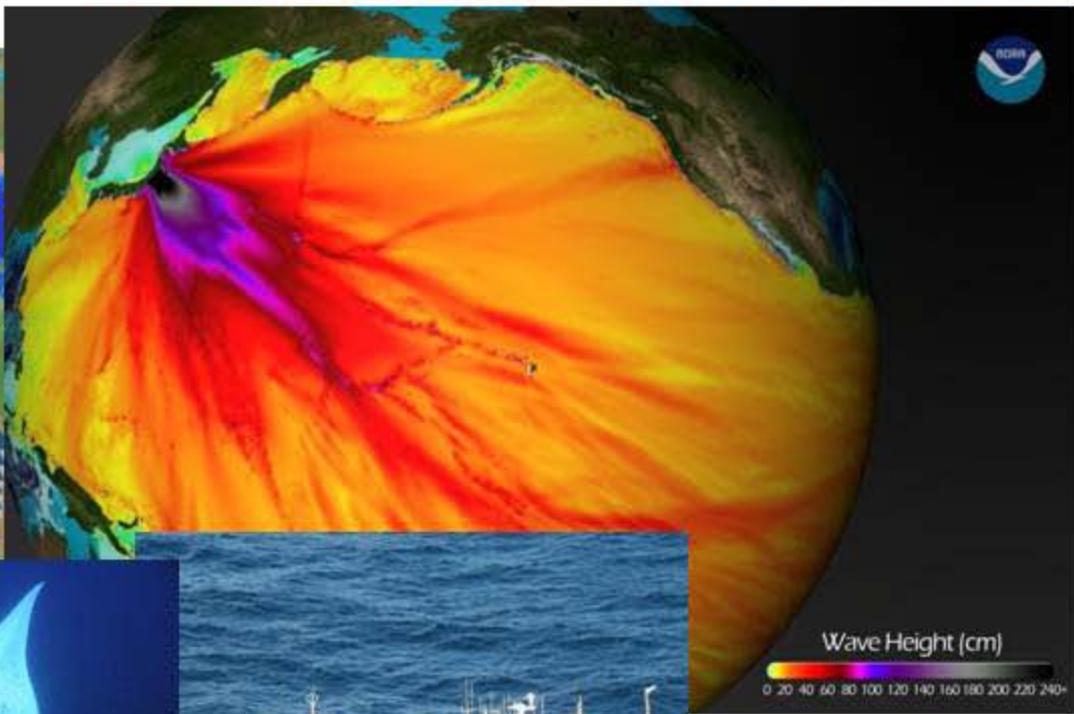
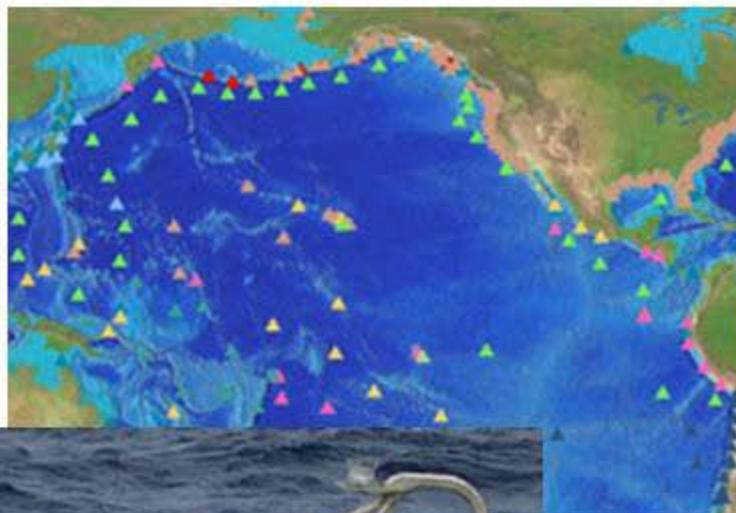




# Healthy Oceans

NOAA National Data Buoy Center

March 11, 2011 – Tsunami Wave Height Model



A satellite night-time photograph of the Eastern United States, showing city lights and state boundaries. The word "Questions?" is overlaid in a large, bold, blue font with a slight shadow effect. The text is centered horizontally and vertically, partially overlapping the state of Virginia and North Carolina. The background is a dark blue/black space with bright white and yellow lights from cities and towns. State boundaries are outlined in a thin white line. The Chesapeake Bay and Delaware Bay are visible in the lower right quadrant.

**Questions?**