

# Meteorological and Environmental Satellite Observing Systems...to 15 Years Ahead NOAA Outlook

**Mary E. Kicza**

Assistant Administrator for Satellite and Information Services  
National Oceanic and Atmospheric Administration

90<sup>th</sup> AMS Annual Meeting, Atlanta GA

6<sup>th</sup> Annual Symposium on Future National Operational Environmental Satellite Systems

January 19, 2010





# National Oceanic and Atmospheric Administration



Dr. Jane Lubchenco

## NOAA Mission

To understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our nation's economic, social, and environmental needs

## NOAA's Priorities

1. Ensure continuity of climate, weather, and ocean observations, both *in situ* and from space
2. Development of a National Climate Service
3. Improve weather forecasts & disaster warnings
4. Eliminate overfishing and ensure the sustainability of marine fisheries
5. Promote sustainable, resilient, and healthy coastal communities
6. Strengthen Arctic science and stewardship



## NOAA Satellite Operational Continuity Plans

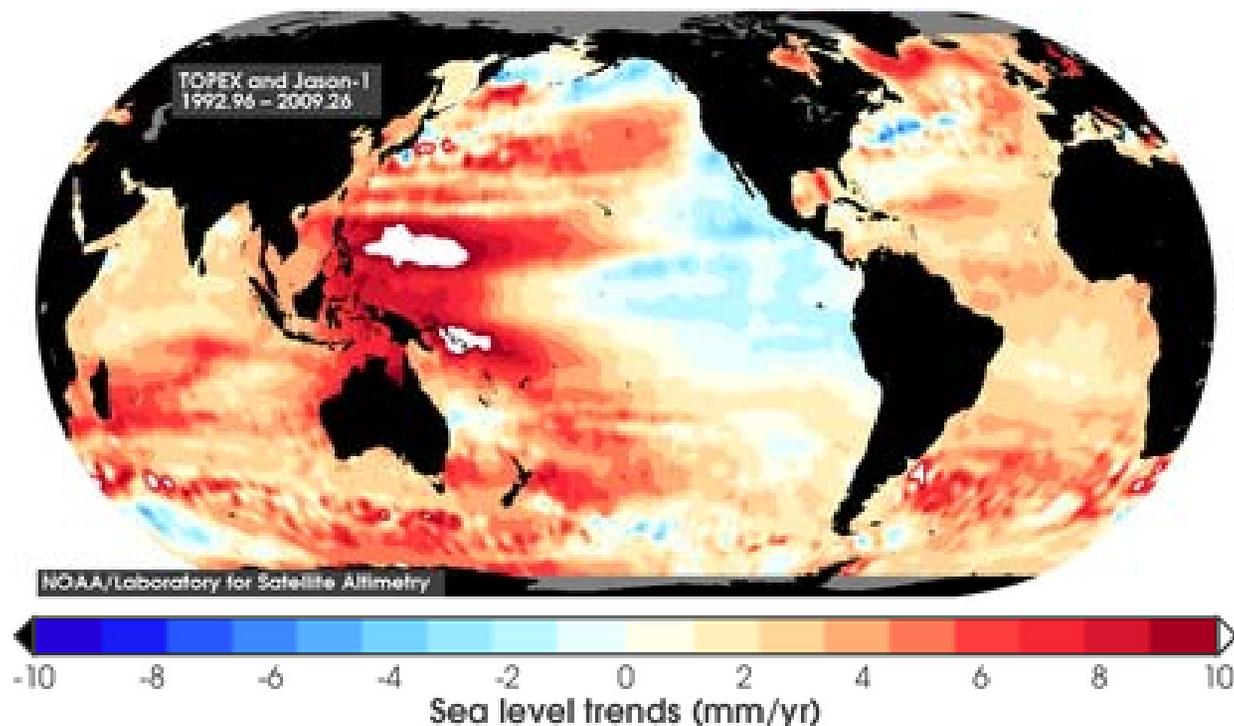
- In 2007, a NOAA/NASA team developed a Satellite Strategic Plan
  - Examined NOAA’s documented Earth observation requirements and means by which requirements were currently being met; outlined detailed strategy for addressing NOAA’s requirements for the future
- The plan recommended that NOAA:
  - **Continue the current programs**
    - GOES-N, GOES-R, POES, NPOESS, and Ocean Altimetry
  - **Ensure climate data continuity**
    - Deliver climate sensors to NPP and NPOESS
    - Long term strategy defined by 2010
  - **Pursue “Research to Operations” transitions**
    - Pursue high priority measurement candidates for research to operations (R2O) transition and incorporate into budget submissions as they are ready
      - Ocean altimetry, solar wind, radio occultation measurements for atmospheric temperature and humidity profiles, ocean surface vector winds
    - Identify future measurement candidates and partnerships for R2O transitions
    - Continue work with commercial sector for possible purchase of satellite products and services

## Continuity of Current Programs

- **Geostationary Satellites**
  - GOES-N and -O launched (now GOES-13 and -14), GOES-P scheduled for launch early March 2009
  - GOES-R contracts for space segment and ground segment awarded, work underway, with first launch planned for early 2015
- **Polar-orbiting Satellites**
  - POES-N Prime launched (now NOAA-19)
  - NPOESS development continues

## Continuity of Climate Data

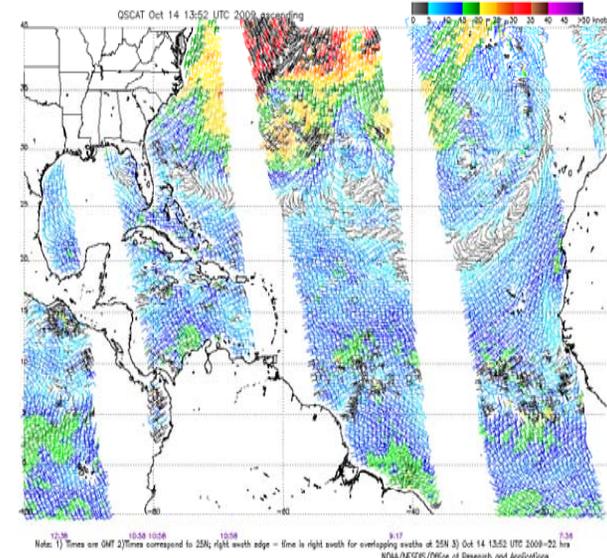
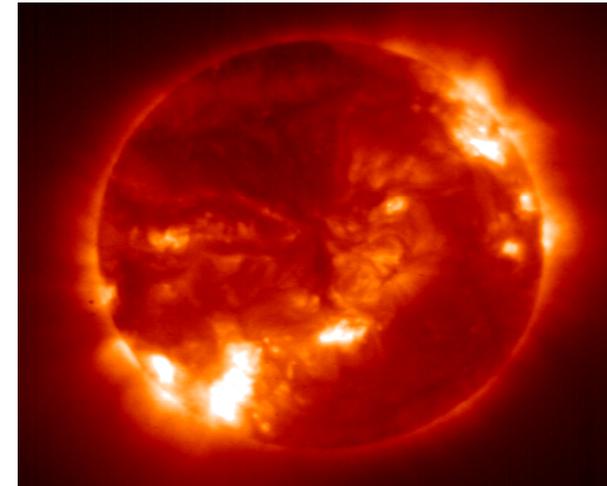
- Climate sensors (ozone and Earth radiation budget) have been delivered to NPP and are under development (Earth radiation budget and total solar irradiance) for NPOESS C1
- Options for continuity beyond NPOESS C1 are being examined
  - Includes CERES, TSIS, OMPS and APS
  - NPOESS, government and/or commercial free flyers under consideration
- Funds have been appropriated for the Jason-3 Ocean Altimetry in the FY10 budget





## Research to Operations Transitions

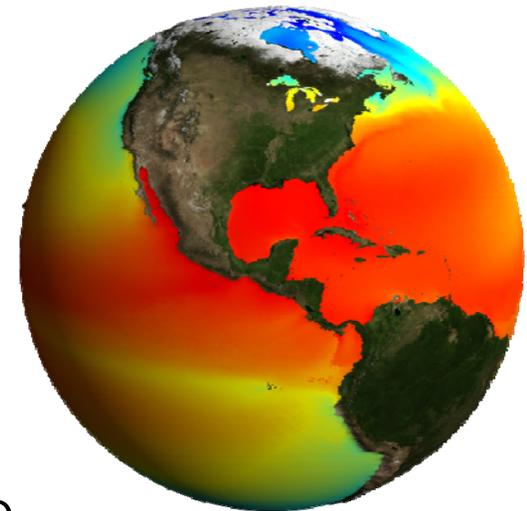
- **Solar Wind**
  - Proposed partnership to refurbish and fly existing DSCOVR satellite and subsequent follow-on mission
- **GPS Radio Occultation**
  - Proposed partnership for follow-on to existing COSMIC mission, including possible industry opportunities
- **Ocean Surface Vector Winds**
  - Proposed partnership with the Japanese Space Agency to fly dual frequency scatterometer on JAXA's GCOM series of spacecraft
  - Letter of intent signed with Indian Space Research Organisation for data sharing for Oceansat-2





## Planning for Future Research to Operations Opportunities

- NOAA scientists are participating on NASA science teams and public workshops for future NASA Earth Science missions
  - Global Precipitation Mission
  - Glory -- Total Solar Irradiance, Aerosol Polarimetry
  - Aquarius – Sea-surface Salinity
  - NRC Decadal Survey
    - SMAP -- Soil Moisture
    - ICESAT 2 – Ice Sheet Climatology
    - DesDynI – Ice Concentration
    - CLARREO – Absolute calibration standard, GPSRO
    - ACE -- Polar-orbiting atmospheric properties and ocean color
    - GeoCAPE – Geostationary Atmospheric Composition and Ocean Color
    - SWOT – Altimetry
- NOAA is providing supplemental funding to JPL microwave imager / sounder development for potential future flight on geostationary satellite mission
  - GeoSTAR (Instrument Incubator Program)



## Exploring Commercial Alternatives

- Request for Quotation (RFQ): Price Validation and Technical Feasibility studies for commercial services to meet earth and space weather observation requirements
- To date, three sets of contract awards issued totaling \$550,000
  - Set A for Total solar irradiance, solar wind, Coronal Mass Ejection, GPS Radio Occultation
  - Set B for Earth Radiation Budget, Ocean Color, Altimetry, and Geostationary advanced soundings
  - Set C for Aerosol Polarimetry and Ozone Profiles
- Final reports for Set A and Set B studies were received and have been evaluated. Set C final reports were submitted in December 2009
- Based on study results to date, we expect opportunities for commercial partnerships



## Civil Space International Capabilities: Coordination of International Earth Observations

- **Group on Earth Observations (GEO)**
  - Membership consists of 76 countries and the European Commission, over 56 participating organizations and observers
- **U.S. Group on Earth Observations (USGEO)**
  - 25 participating U.S. Government Department and Agency members including two White House offices
  - Standing subcommittee of the National Science and Technology Council Committee on Environment and Natural Resources
- **Committee on Earth Observation Satellites (CEOS)**
  - 27 members (Space Agencies), 21 Associates (UN Agencies, Agencies with space programs in conceptual design phase and/or Agencies with supporting ground facilities)
  - CEOS serves as the “space arm” of GEO, implementing high priority GEO actions requiring space-based Earth observation
- **Unifying Principle: Global Earth Observation System of Systems (GEOSS)**
  - Coordinating strategies and observation systems
  - Linking platforms: *in situ*, aircraft, and satellite networks
  - Identifying gaps in our global capacity
  - Facilitating exchange of data and information
  - Improving decision makers’ abilities to address pressing policy issues

