

# ***Earth Observation Investment Decisions for the Future***

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# National Oceanic and Atmospheric Administration



Dr. Jane Lubchenco

“To develop an informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions.”

## NOAA's Priorities

1. Enhance NOAA's climate services and support the establishment of a National Climate Service
2. Support comprehensive marine spatial planning
3. Ensure the sustainability of marine fisheries
4. Strengthen Arctic science and stewardship
5. Sustain satellite-based Earth observations





# NOAA Satellite Operational Continuity Plan

- In 2007, a multi-disciplinary NOAA/NASA team developed a Satellite Strategic Plan
  - Examined NOAA's documented Earth observation requirements and the means by which these requirements were currently being met and outlined a 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 in the near term, with the long term strategy defined by 2010
  - **Pursue “Research to Operations” transitions**
    - Pursue high priority measurement candidates for research to operations transition and incorporate into budget submissions as they are ready
      - Ocean altimetry, solar wind, ocean surface vector winds, radio occultation measurements for atmospheric temperature and humidity profiles
    - Identify future measurement candidates and external partnerships for research to operations transitions
    - Continue analysis of alternatives and simulation studies to determine best approaches for future transitions
    - Continue work with commercial sector for possible purchase of satellite products and services meeting NOAA requirements



# Continuity of Current Programs

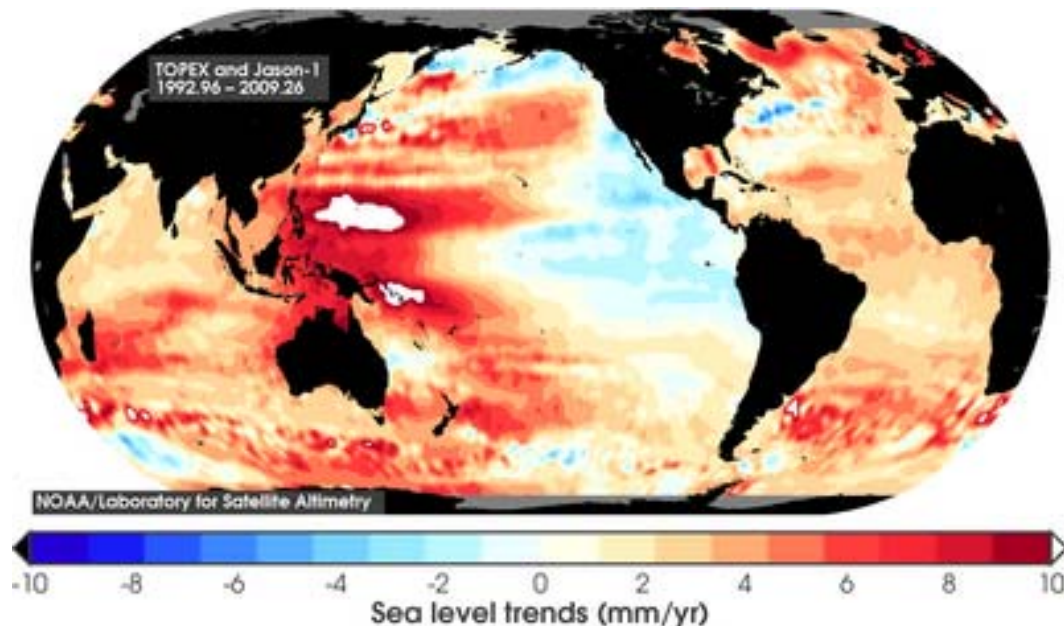
- Geostationary Satellites
  - GOES-N and -O launched (now GOES-13 and -14), GOES-P scheduled for launch April 2010
  - GOES-R contracts for space segment and ground segment awarded, work underway, with first launch planned for early 2015
- Polar-orbiting Satellites
  - POES-N Prime launched (now NOAA-19)
  - NPOESS development continues



GOES-14 Launch, June 27, 2009

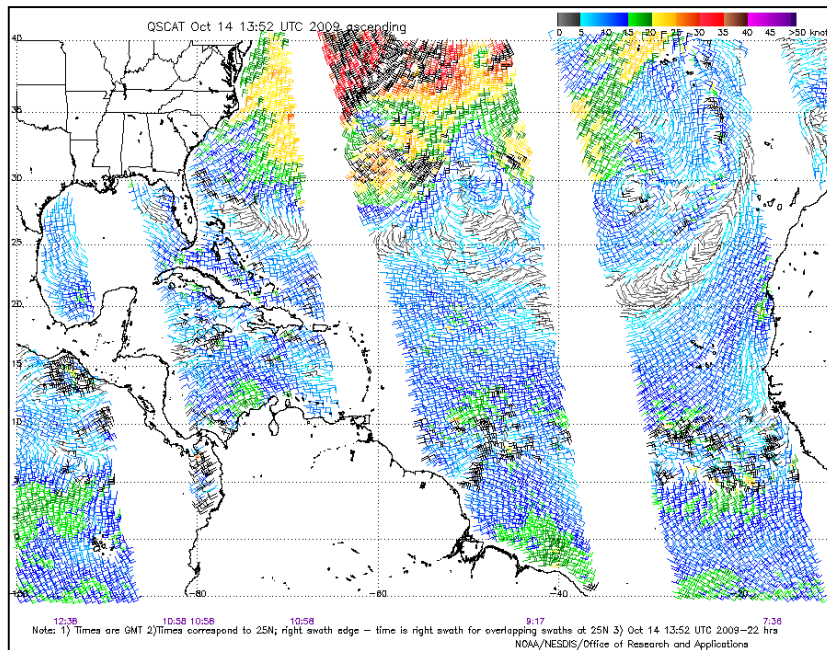
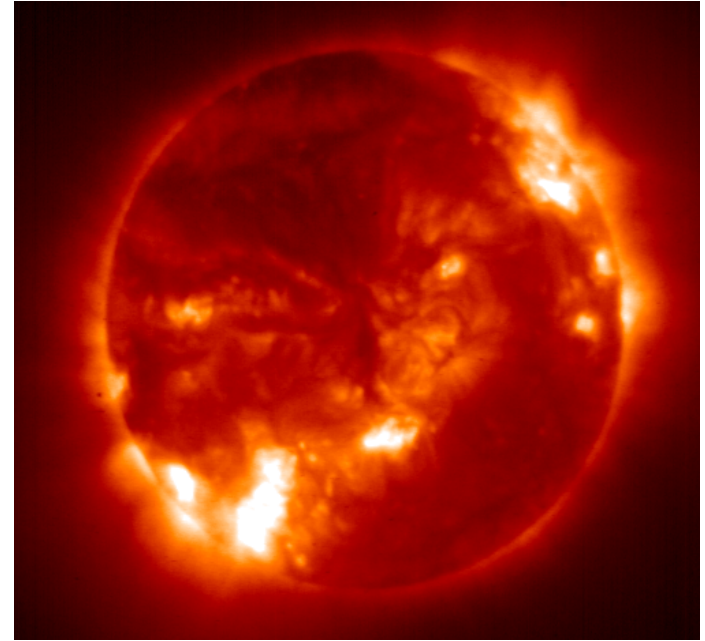
# Continuity of Climate Data

- Climate sensors (ozone and Earth radiation budget) delivered to NPP and 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
- Jason-3 Ocean Altimetry mission in President's FY10 budget request



# Research to Operations Transitions

- Solar Wind
- GPS Radio Occultation
- Ocean Surface Vector Winds



OSVW from QuikSCAT – October 14, 2009



# Planning for Future Research to Operations Opportunities

- NOAA scientists are participating on NASA Science teams and Public workshops for future NASA Earth Science missions
  - Aquarius – Sea-surface Salinity
  - Glory -- Total Solar Irradiance, Aerosol Polarimetry
  - Global Precipitation Mission
  - 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, and Ocean Surface Vector Winds
  - 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 are being evaluated. Set C studies are due by end of 2009
- Based on the results of the first sets of studies, we expect opportunities for future 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
  - Next GEO Plenary -- Washington, D.C., November 2009
- **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

