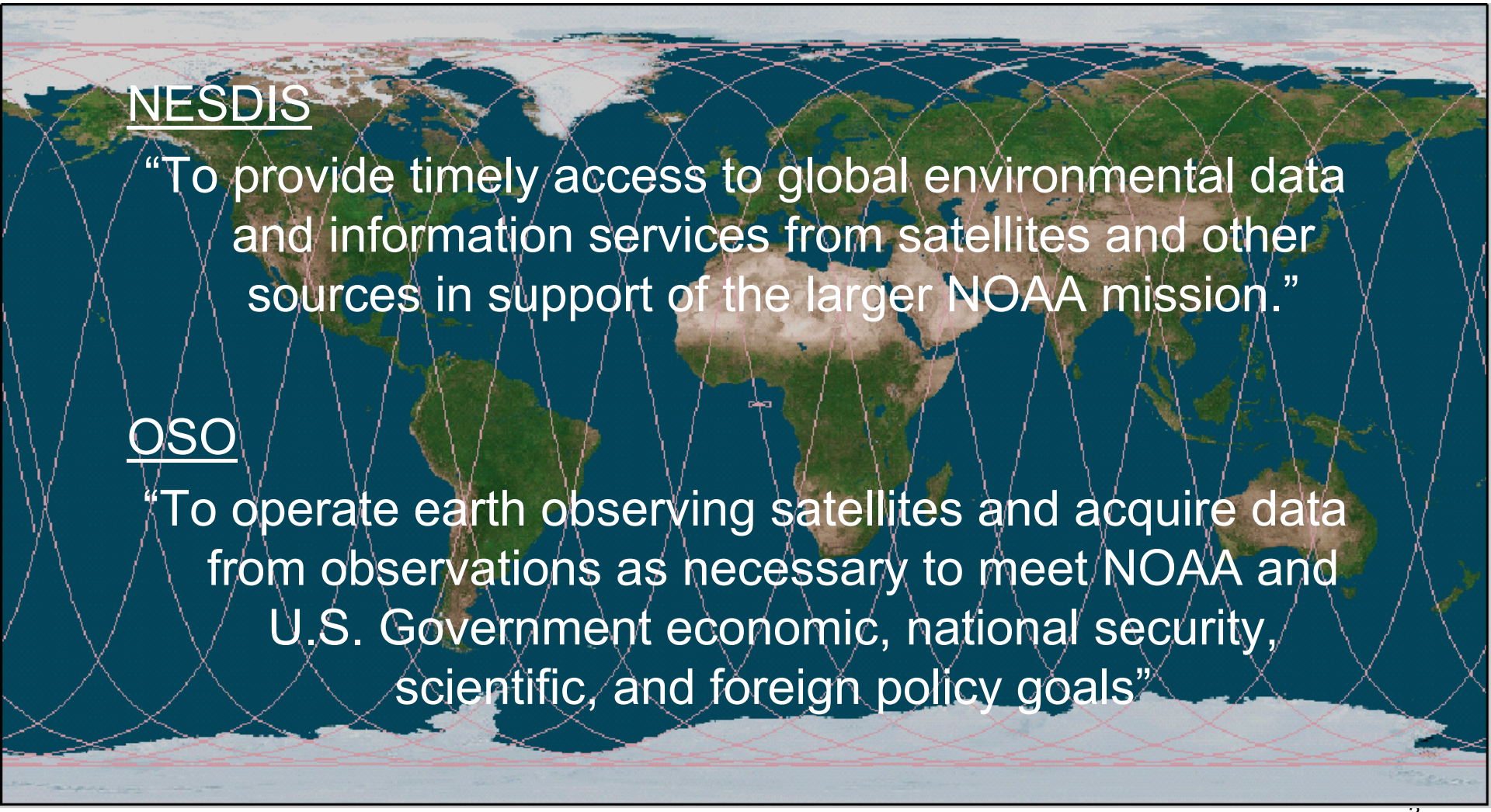
2003 Near Earth Network Conference

NESDIS OSO Operational Overview

Kathy Kelly

Director – Office of Satellite Operations

Mission



NESDIS

"To provide timely access to global environmental data and information services from satellites and other sources in support of the larger NOAA mission."

OSO

"To operate earth observing satellites and acquire data from observations as necessary to meet NOAA and U.S. Government economic, national security, scientific, and foreign policy goals"

OSO Overview

- Operational responsibility for the Satellite Operations Control Center (SOCC) at Suitland, MD and Command and Data Acquisition (CDA) facilities at Wallops, VA and Fairbanks, AK to command and control satellites, track satellites, and acquire their data
- Supports launch, activation, and evaluation of new satellites and the in-depth assessment of satellite and ground systems anomalies
- Prepares plans and procedures for responding to satellite and ground anomalies, and establishes and coordinates the schedules for satellite operation and data acquisition to meet users' needs
- Evaluates the technical performance of the satellites and maintains current information and future prediction on satellite orbits and attitudes
- Evaluates the effectiveness of the operational facilities and procedures in terms of the quality, quantity, coverage, and timeliness of the data acquired

OSO Antenna/Comm Assets*

	Antenna	% Util	Communications (Between CDA & Suitland)	% Util
WCDAS	Polar: 1 - 26m), 1 - 14.2m, 2 - 13m Geo: 2 - 18m, 2 - 16.4m, 1 - remote 16.4m (GSFC), 1 - 13m, 7.2m for Meteosat Second Generation (MSG)	25 50	DOMSAT: 1 – 1.33 Mbps (POES) Terrestrial: 5 – T1s S-band/Terrestrial: 4 – T1s	10 50 35
FCDAS/ Barrow	Polar: 2 - 26m (1 NASA's VLBI), 3 - 13m, 1 - 4m remote Tx (Barrow FY04), 1 – 3m remote COTS HRPT system (Barrow), 2 – VHF Tx, 1 – VHF Rx, 2 – SARSAT LUT Geo: 1 – 21m	45 100	DOMSAT: 2 – 3.22 Mbps (DMSP and Coriolis), 1 – 1.33 Mbps (POES), 1 – T1 (POES, GOES), 1 – 2.11 Mbps (GOES) Terrestrial: 3 – T1s Suitland (POES, GOES, Coriolis), 1 – T1 Shriever AFB (DMSP)	25 35

* Capable of supporting launch, day-to-day, and contingency (back-up) operations

Current Status

- Polar and Geostationary operations in SOCC have been moved to new control room facilities; the Launch Control Room (LCR) can be used by both satellite systems
  - Launch can be supported from FCDAS or WCDAS
- FCDAS and WCDAS are in process of multiple upgrades
  - X-band multi-mission receivers will be evaluated and procured during the 4th Quarter of FY03
    - The receivers will be fully programmable and capable of supporting X-band missions up to 400 Mbps
    - NASA EOS program will assist with performance evaluation by comparing X-band receivers with data received from Poker Flats stations
  - Signal and data processing equipment upgrades
  - Control software upgrades supporting remote operations
  - WCDAS 26-meter antenna converted from hydraulic to electric drives; FCDAS 26-meter conversion planned

Planned Upgrades

- Antenna
  - One 4m transmit antenna was shipped from WCDAS to FCDAS. The antenna will be refurbished for eventual shipment and installation in Barrow, Alaska during the winter of 2003/2004. This system will ensure once-per-orbit command coverage for all POES satellites
- Networks
  - Metop Support: Combined 12 Mbps capability between EUMETSAT (Darmstadt) and Suitland
  - JASON: TBD networks between Suitland, CNES, JPL, and EUMETSAT
  - Meteosat Second Generation (MSG): T1 between Darmstadt and WCDAS
  - T1 between Barrow and FCDAS
  - 2 T3s from WCDAS to Wisconsin through CEMSCS

NASA Network Interfaces

- SOCC OPS LAN (Flight Dynamics) to Building 28 at GSFC
- SOCC interface to NASCOM
- WCDAS fiber interface to NASA Wallops Flight Facility (Buildings 162 and M16)
- WCDAS 56Kbps circuit to NASCOM
- Fiber connectivity from Poker Flats to NASA Ground System Interface processing Facility (GSIF) at FCDAS; 52 Mbps DOMSAT link from FCDAS to Building 32 at the GSFC
- Two 256Kbps circuits between FCDAS and Bldg 32 at GSFC for GSIF remote control
- VLBI 64 Kbps circuit between FCDAS and JPL
- Dark fiber being installed between Suitland (OSDPD) and GSFC

Interoperability Opportunities

- CCSDS Space Link Extension (SLE)
  - NOAA WCDAS SLE testing with the Air Force CERES control center using Air Force satellite planned in June to September 2003 time period
    - Completed equipment installation and in the early checkout phases
    - Monitored NASA Wallops COBE downlink pass in early June
- NASA to NOAA / Research to Operations
  - NASA/JPL is transitioning Ocean Surface Topography Mission (OSTM) operations to NOAA after the launch of JASON 2
  - National Academy of Sciences, National Research Council (NAS/NRC) studies are laying the foundation for future operational mission transitions

Interoperability Opportunities

- NOAA can use excess capability to take data from commercial satellites, spacecraft of foreign governments and U.S. government satellites on a cost reimbursable basis, assuming certain policy and administrative requirements are satisfied
  - Primary ground station
    - Command and Control (e.g., OSTM/JASON-2)
    - X-band Receive Operations
      - FCDAS is primary X-band receive site for Windsat/Coriolis
  - Backup ground station
    - Available on a contingency basis (e.g., Metop)
    - New X-band receivers will be fully programmable and compatible with GSIF at FCDAS. The receivers can be interfaced to the GSIF input matrix switch using available input ports
    - NOAA stations have excess capacity and could provide support on a non-interference basis

Business Process

- Identify need (i.e., functional, performance, and programmatic requirements)
- Assess operational, technical, legal, and cost implications
- Negotiate agreement/develop MOU
  - NASA and NOAA MOU in place for GSIF operations and maintenance
  - NASA VLBI program at FCDAS since 1985

Mission Support

Current Missions

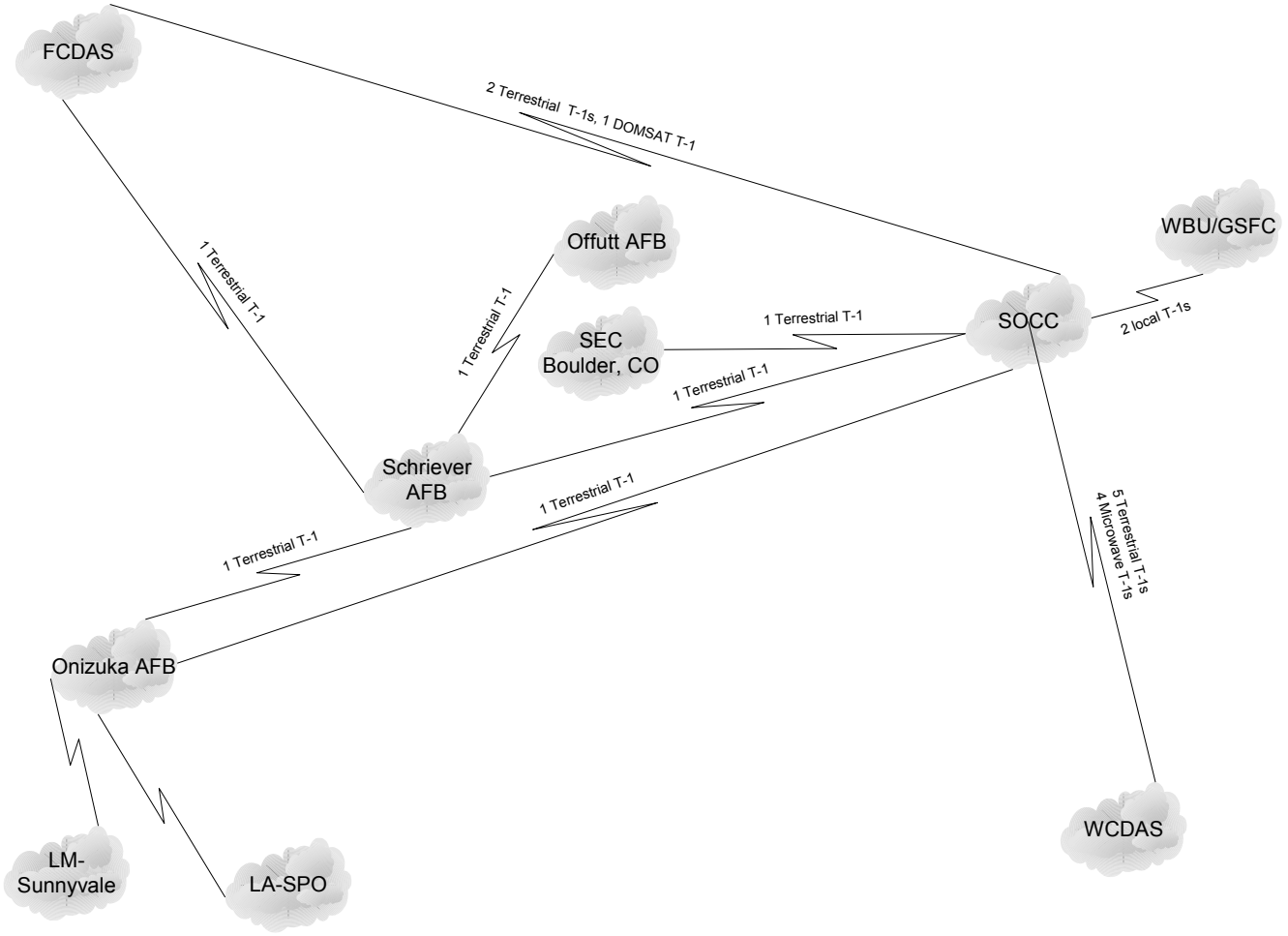
- GOES I-M
- POES
- DMSP
- Coriolis
- METEOSAT - 7
- Meteosat Second Generation (MSG)
- ACE
- IMAGE

Future Missions

- GOES – NO/P
- GOES – R
- POES – N,N'
- OSTM
- ENCOUNTER
- METOP
- ACE-Follow On
- GEOSTORM
- Space Link Extension (SLE) Missions of Opportunity

NESDIS Operational Satellite Network Architecture

(Supports GOES and Polar Spacecraft Operations)



Discussion

- Open Discussion

Backup Slides

Future of NESDIS Ground System

- NOAA has been directed not to commercialize its weather satellites by the Land Remote Sensing Policy Act (Public Law 102-555). Section 5671 states: “Neither the President nor any other official of the Government shall make any effort to lease, sell, or transfer to the private sector, or commercialize, any portion of the weather satellite systems operated by the Department of Commerce or any successor agency.” NOAA’s interpretation of this language is that:
  - NESDIS cannot commercialize its CDA ground receiving stations by selling or providing its assets to a commercial firm to operate
  - NESDIS cannot commercialize its CDASs by supporting its operations through the sale of its data or data collection services (versus being supported by appropriations)
  - NOAA can use excess capability of its CDASs to take data from commercial satellites, spacecraft of foreign governments and U.S. government satellites on a cost reimbursable basis, assuming certain policy and administrative requirements are satisfied