

Status of Operational Environmental Satellite Operations at NOAA

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**SATellite Environmental Processing System
(SATEPS)**



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Agenda

- **SATEPS – ESPC News; OSDPD Updates**
- **NOAA Satellite Operations Facility Update**
- **Current GOES Missions**
- **GOES-9 and MTSAT-1R**
- **Meteosat-7, Meteosat-5, MSG**
- **Other GEO items of interest**
- **POES Constellation, Metop, IJPS**
- **NPP and NPOESS**
- **GOES-N,O,P and GOES-R**



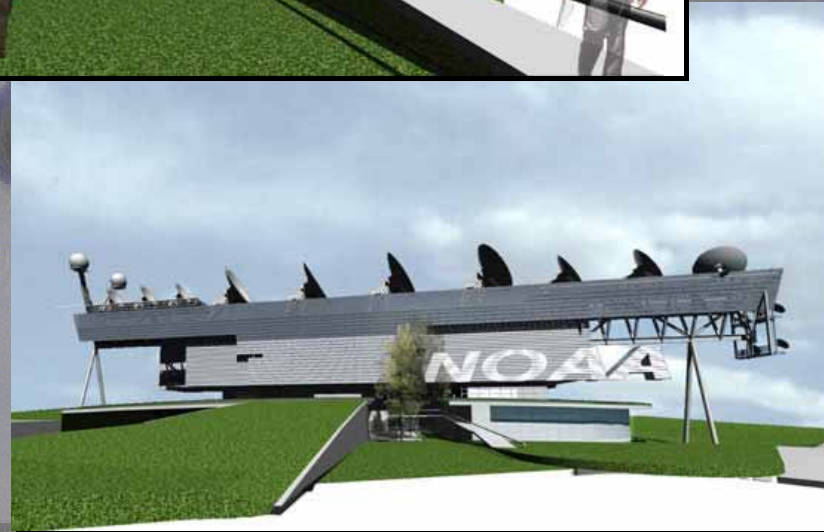
SATEPS Update

- **New Contract November 1, 2005**
 - QSS Group
- **Consolidation of SATEPS and CEMSCS**
 - **ESPC: Environmental Satellite Processing Center**
 - **GOES, POES, and Non-NOAA Processing**
 - All IT Functions to NSOF (IPD)
 - Products and Services at SSD
 - **Help Desk to be a mix of COB and QSS**
 - **Realignment of OSDPD**
 - Services to SSD (SARSAT, DCS, ARGOS)
- **SPSRB Process Improvement**
 - **Streamline Research to Operations**



NOAA Satellite Operations Facility (NSOF)

- To be completed 2006
- On campus of Suitland, MD Federal Center
- House IT Functions of ESPC
 - SATEPS move to NSOF in June 2006
- Office of Satellite Operations
 - SOCC will have O/M for GVAR and DOMSAT antenna



Current GOES Missions

- **GOES-12 at 75° West**
 - Fully Operational
 - SEM Yellow
 - SXI Red
- **GOES-10 at 135° West**
 - Yaw Flip Mode
 - Inclination increasing
 - Fuel concerns (14 kg)
 - Possible use for South America?
- **GOES-9 at 155° East**
 - Extended until Mid November 2005
 - Concerns with MTSAT-1R Navigation
- **GOES-11 in Storage**
 - Summer 2005 Test
 - Replacement to GOES-10?
- **GOES-N Launch**
 - N.e.t. 11/5/05



GOES-9 and MTSAT-1R

- **GOES-9 Supporting JMA**
 - DoD asking for extension until Mid November 2005
 - Imager momentum wheel
 - IMC Off since 10/2003
- **MTSAT-1R at 140° East**
 - JMA reported Ground Processing problems leading to INR errors
 - Temporary fix on 6/27
 - Permanent fix (star scanning) in October
 - NOAA currently receiving the HiRID (10 bit) stream
 - Funding in the works for ground system to ingest HRIT by March 2007

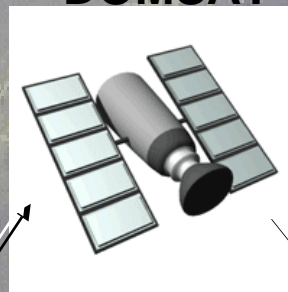


MTSAT-1R Receipt

MTSAT-1R at
140° East

HiRID/HRIT
Broadcast

DOMSAT



NWS Pacific
Tsunami
Warning Center
(HI)/Keana
Point, HI



Americom Uplink
Central Park



DOMSAT
Downlink

Suitland MD
ESPC

Users:
OSDPD
AFWA
ORA

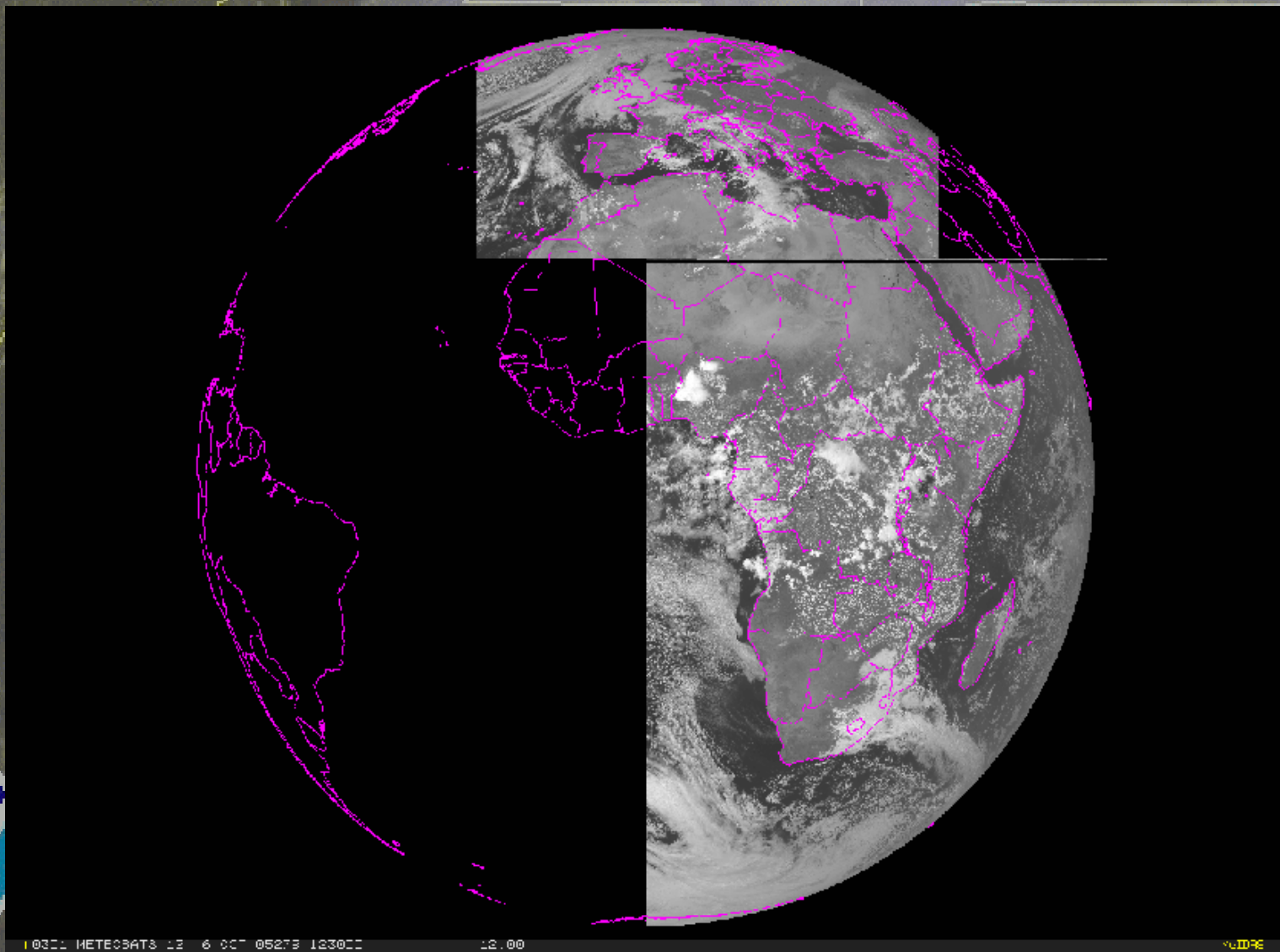


Meteosat

- **Meteosat-7 at 0°**
 - Termination of services June 14, 2006
- **Meteosat-5 at 63° East**
 - Recent change from the HRI to the OpenMTP file formats (9/6) caused sub-satellite point problem in McIDAS
 - IPD instituted a change to the McIDAS formatter on 9/13 to have the OpenMTP file navigation match the HRI.
- **Meteosat-8 (MSG-1) at 0°**
 - Currently non-operational at NOAA
 - Working on backup ingestor (VCS or SSEC?)
 - Will carry Met-7 until successful commissioning of MSG-2 (Meteosat-9: launch December 20, 2005)
 - NOAA requested a change in the lower HRV window to cover East Atlantic tropical area.



Meteosat-8 HRV Lower Window Configuration change



10301 METEOSAT8 L3 6 OCT 05273 123012 12.00

NOI00E

GOES-N,O,P and GOES-R

- **GOES-N**
 - Launch 11/14-16/05
 - Same Instruments as GOES-12
 - No eclipse/boomsnap
 - Limited KOZ
- **GOES-O**
 - Launch April 2007
 - 13.3 μm @ 4 km
- **GOES-P**
 - Launch Oct 2008
- **GOES-R**
 - 2012-2015
 - ABI/HES



Other Geo Items

- **FY2C (China)**
 - 105° East
 - 5 ch Imager (1.25 km Vis, 5 km IR)
 - Existing SPSRB request to acquire data
- **Kalpana-1 (INSAT)**
 - 74° East
 - 3 ch Imager (2 km Vis, 8 km IR/WV)
 - Navigation issues
 - NOAA is funding comms links to acquire data; no long term solution yet



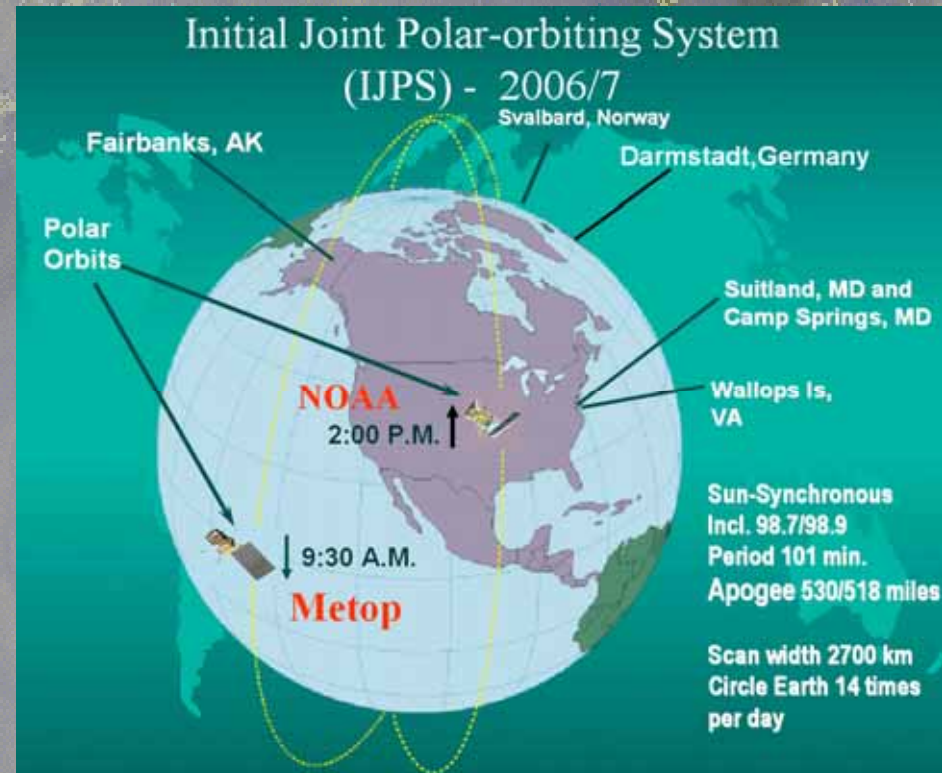
POES Constellation

- New Level 1b format for NOAA-15, 16, and 17 implemented on April 28, 2005
- NOAA-15 HIRS failure on April 17, 2005
 - Soundings degraded
- AVHRR scan motor issues on NOAA-14 and NOAA-16
 - “Bar Code” effect
- NOAA-18 successfully launched May 20, 2005
- NOAA-18 declared operational August 30, 2005
 - Most products declared operational
- NOAA-18 Primary PM Satellite
- NOAA-18 issues:
 - HIRS increased noise in longwave channels
 - Soundings being generated in “No HIRS” mode
 - APT frequency change
 - Due to interference with pagers in UK



Metop/IJPS

- **IJPS – Initial Joint Polar orbiting System**
 - **PM orbit NOAA-18/N'**
 - N' launch Dec 2007
 - **AM orbit METOP**
 - METOP-2 launch June 20, 2006
 - METOP-1 launch 2010



Metop/IJPS

NOAA-18/N' Instruments

- NOAA Provided:
 - AVHRR/3
 - HIRS/4
 - AMSU-A
 - SEM
 - SARSAT
- EUMETSAT Provided:
 - MHS
- ARGOS
- NOAA Unique:
 - SBUV/2

METOP Instruments

- NOAA Provided:
 - AVHRR/3
 - HIRS/4
 - AMSU-A
 - SEM
 - SARSAT
- EUMETSAT Provided:
 - MHS
- ARGOS
- EUMETSAT Unique:
 - IASI
 - ASCAT
 - GOME-2
 - GRAS



IJPS NOAA Blind Orbital Processing (2006-2015)

- NOAA Blind Orbits: orbits where Wallops or Fairbanks can not take stored data dump (3-5 satellite orbits a day)
 - Orbital data available to users 1-6 hours sooner
 - Other DOMSAT users will need to arrange for access to NOAA 18/N' blind orbits from NESDIS



NOAA 18/N'



**Command and
Data Acquisition
(Svalbard,
Norway)**



**Satellite Control &
Product Processing
(Darmstadt, Germany)**



**Product
Processing
(Suitland)**



Users

NPP and NPOESS

- **NPP will be launched in April 2008**
 - Data receive terminal at Svalbard, Norway
 - 2.4 TB of data received per day
 - A risk reduction and data bridge mission for NPOESS that will be managed by the IPO and NASA
 - Provides an opportunity to demonstrate and validate new sensors, algorithms, and operational processing capabilities at NOAA and AFWA
 - Interface Data Processors (IDPs) will be installed at NOAA and AFWA
 - Products produced by these IDPs will help facilitate the transition from DMSP and POES sensor products to NPOESS sensor products; output will be HDF-5
 - NPOESS Data Exploitation (NDE) will refine products from the IDPs according to user requirements (e.g., new formats, map projections, etc.)
 - NPP will be placed in a 2230 local time, ascending node

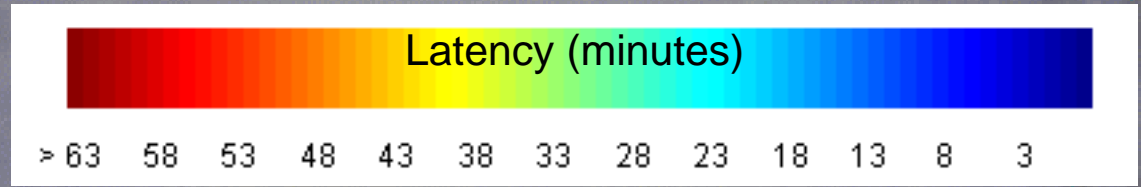
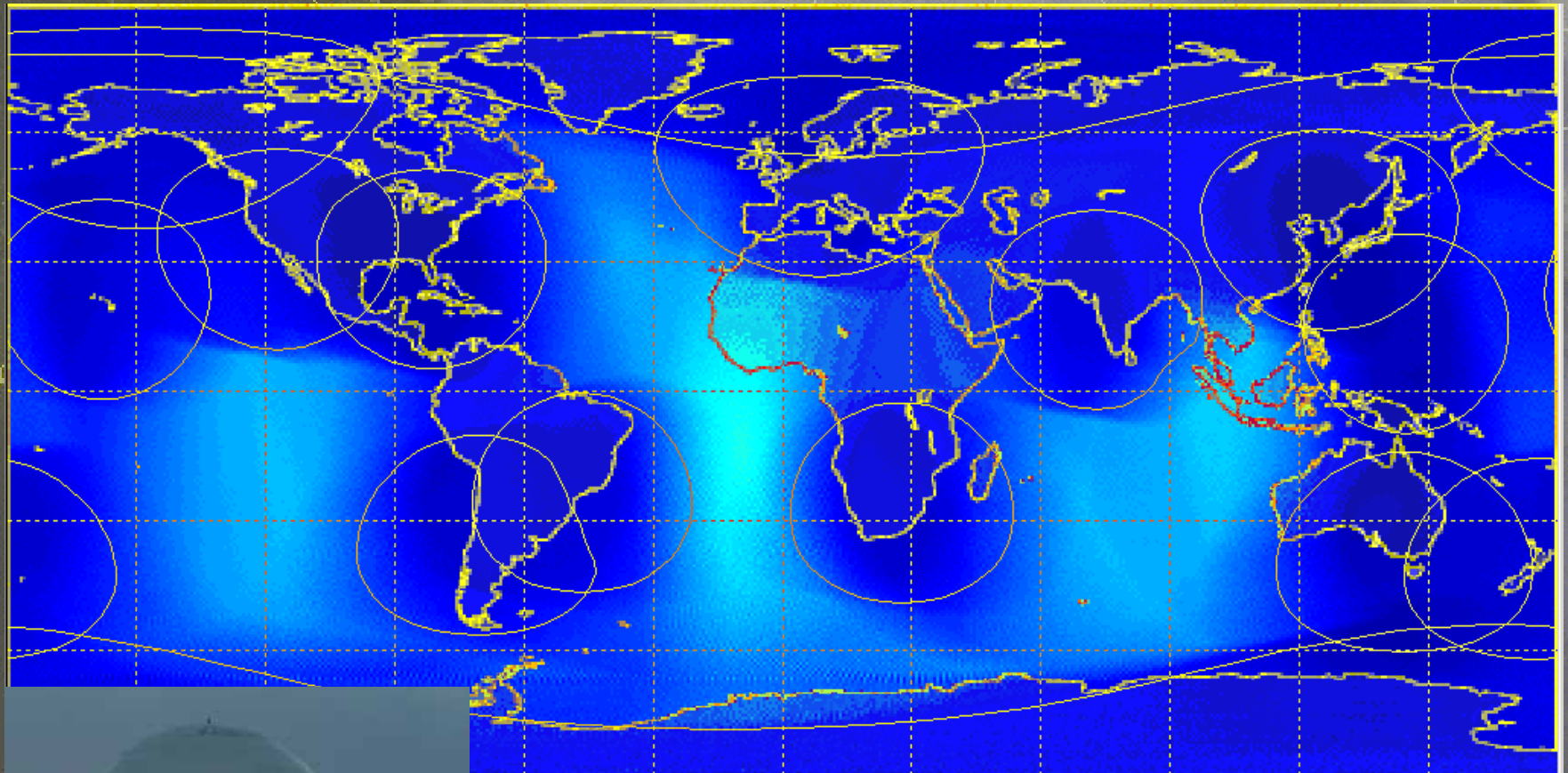


NPP and NPOESS

- **NPOESS launch scheduled for 2010; probably delayed until 2012**
 - Will be downlinked at 15 ground receive sites around the globe to make the data more timely; data latency no more than 30 minutes
 - 8.1 TB of data received per day per satellite
 - IDPs will be located at NESDIS, AFWA, FNMOC, and NAVO
 - Operational Algorithm Team (OAT) will produce code to generate products using the IDPs; output will be HDF-5
 - OAT comprised of appointed and selected personnel from Government agencies and laboratories, Cooperative Institutes and Academia
 - NDE will also refine products for the user community
 - Three NPOESS constellation planned (1330, 1730, and 2130 local times, ascending node)



NPOESS Average Latency



Backup Slides



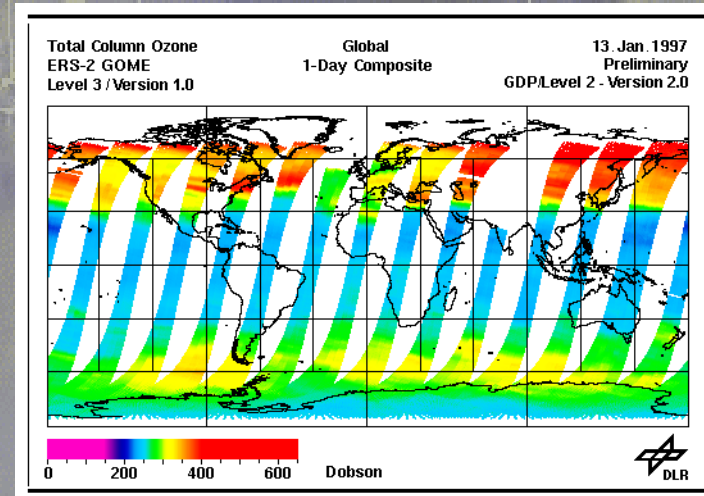
Infrared Atmospheric Sounding Interferometer (IASI)

- Fourier Transform Spectrometer based upon a Michelson Interferometer (8461 channels)
- Benefits
 - Provides highly accurate atmospheric temperature and moisture information for assimilation into numerical weather model support mission
 - Provides atmospheric temperature and moisture data to NWS field offices and Department of Defense to support weather forecasting and warning mission areas
- NESDIS products will include thinned radiances, principal component scores, cloud cleared radiances, carbon products, temperature, moisture, ozone profiles



GOME-2

- Total Ozone Product (Dec 2006)
 - Improved Ultraviolet (UV) Index forecast
 - Improved total ozone in numerical weather prediction (NWP)
- Profile Ozone Product (2007)
 - More coverage for ozone profiles in NWP
 - Better boundary conditions for air quality
- Exploring additional atmospheric chemistry products including NO₂ and SO₂ column amounts.



GOME-1 Total Ozone Product

GOME-2 has better horizontal resolution and cross-track coverage

