

# **OCEANSAT-2**

## **Meeting Global Demand**



**Presentation by ISRO, India**

**at the**  
**53<sup>rd</sup> Session of UNCOPUS - Vienna**

**June 9-18, 2010**



# PSLV- C14 / OCEANSAT-2 Mission



**15<sup>th</sup>**  
consecutive  
successful  
flight of PSLV

**7** satellites in a  
single mission

**Lift-off:**  
**11.51 Hrs; 23<sup>rd</sup> September 2009**



# OCEANSAT-2 Mission



## Orbital Parameters

Parameters	Preflight (Specification)	Flight (Achieved)
Perigee (km)	725	718.5
Apogee (km)	725	723.9
Inclination (deg)	98.28	98.33

**Spacecraft Mass**

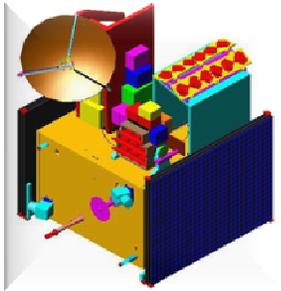
**: 956 kg**

**Orbit**

**: 720 km SSO**



# OCEANSAT-2 Mission

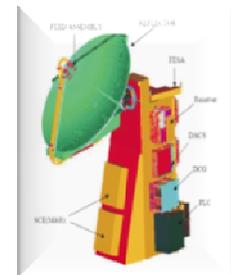


## OCEANSAT-2: A global mission

- Configured to cover global oceans,
- Provide continuity in Ocean Color data with global Wind Vector and characterization of lower atmosphere and ionosphere

## INSTRUMENTS

- An 8-band Ocean Colour Monitor (OCM) with 360 m spatial resolution
- A Ku-Band Pencil beam SCATTEROMETER with a ground resolution of 50 km x 50 km
- Radio Occultation Sounder for Atmospheric studies (ROSA) - Developed by the Italian Space Agency (ASI)



## APPLICATIONS:

- Potential Fishing Zone Advisories
- Ocean State Forecasting
- Ocean and coastal studies

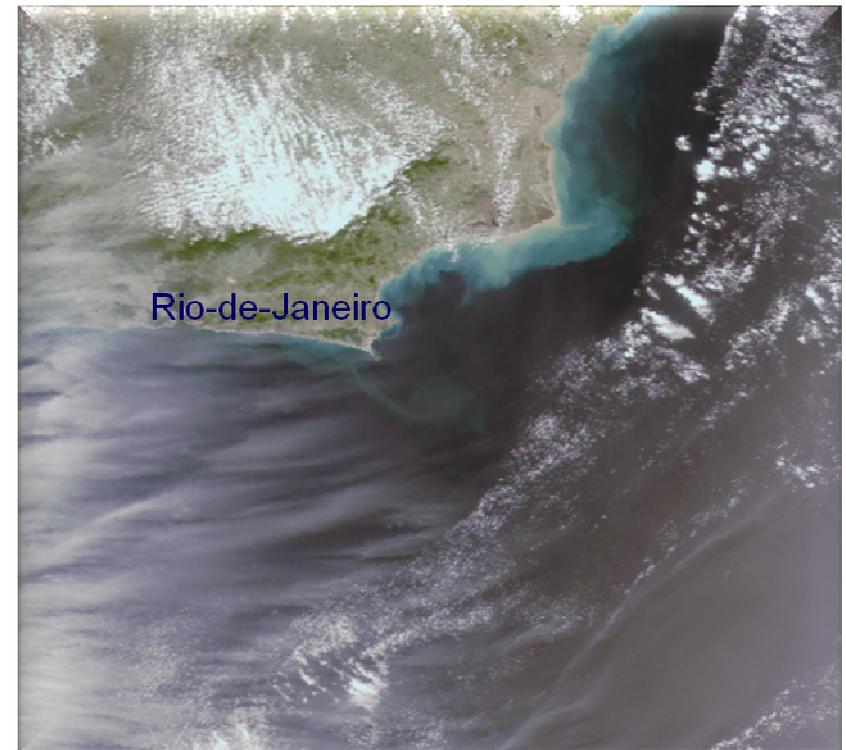


# Oceansat-2 OCM Modes of Operation

## LAC Coverage

360 m Spatial Resolution

Real time transmission



## GAC Coverage

1 Km/ 4 Km Spatial resolution

Onboard recording and Playback



# Oceansat-2 OCM Data Products

## LEVEL-1

### Basic Data Products

L1A RAW Products

L1B Radiance Product

L1C Radiometrically & Geometrically corrected

## LEVEL-2

### Geo-Physical Parameters

Chlorophyll-A concentration

Total Suspended Matter (TSM)

Diffused Attenuation Coefficients ( $K_d$ -490 nm)

Aerosol Optical Depth (AOD) at 865 nm

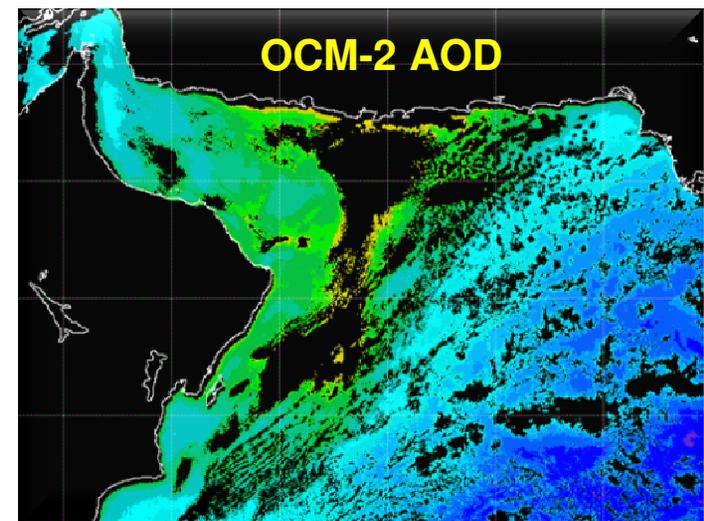
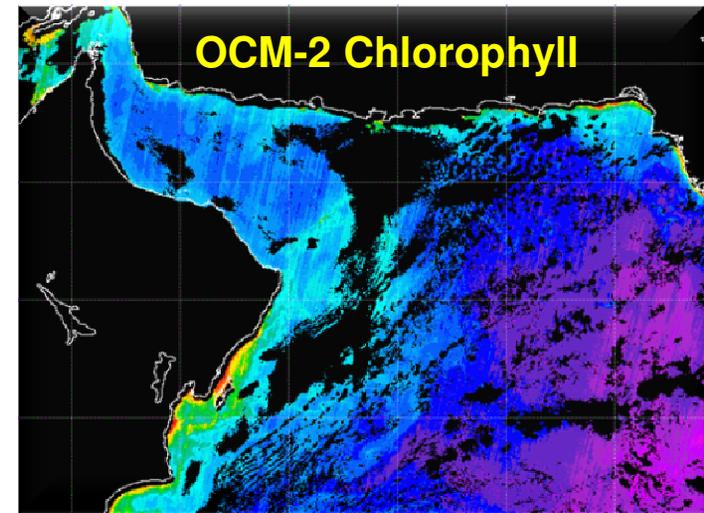
## LEVEL-3

### Binned Products (4 km)

Weekly

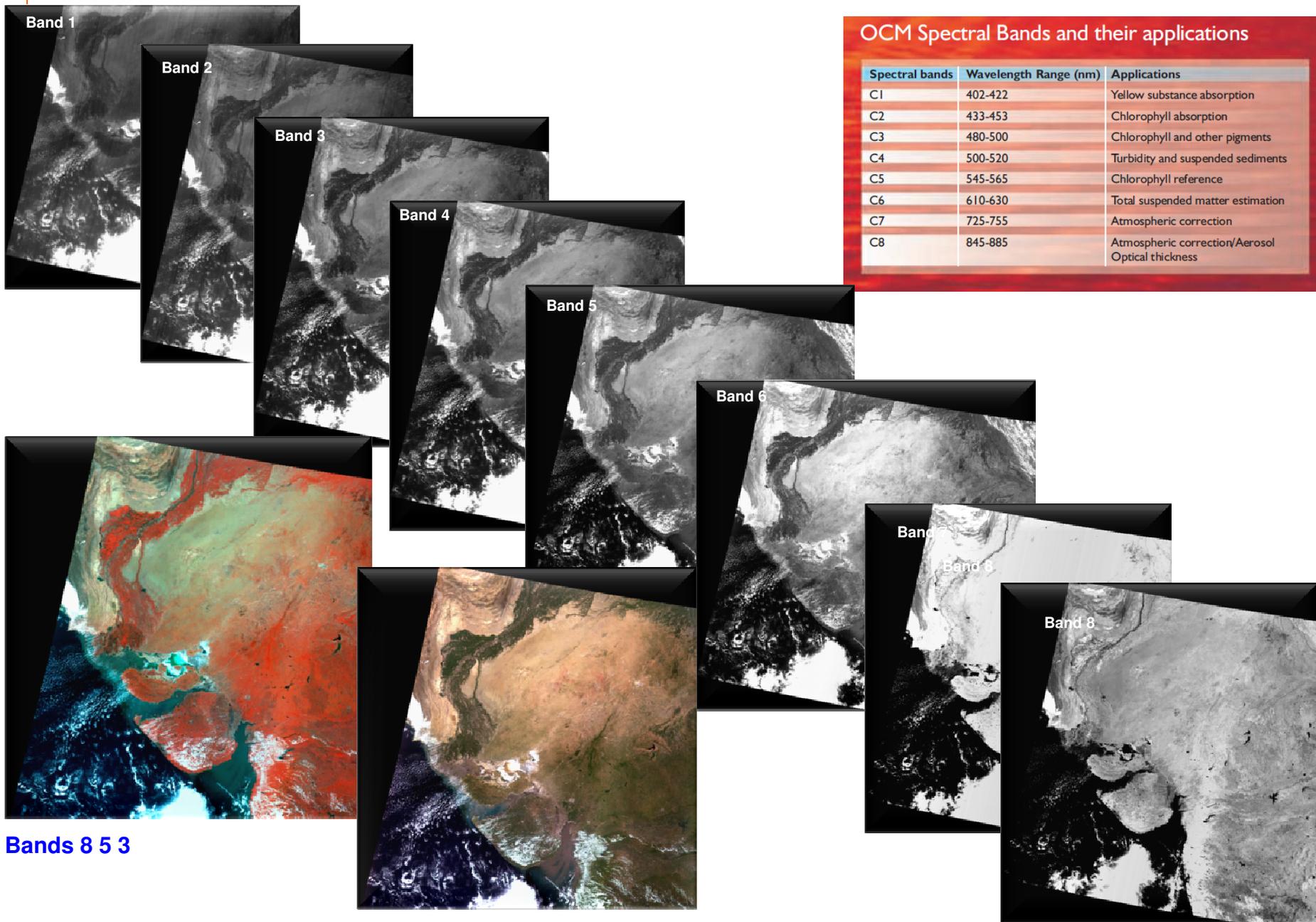
Monthly

Yearly





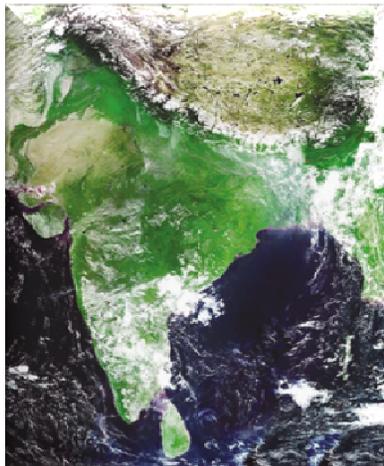
# OCEANSAT-2 OCM Data Products



Spectral bands	Wavelength Range (nm)	Applications
C1	402-422	Yellow substance absorption
C2	433-453	Chlorophyll absorption
C3	480-500	Chlorophyll and other pigments
C4	500-520	Turbidity and suspended sediments
C5	545-565	Chlorophyll reference
C6	610-630	Total suspended matter estimation
C7	725-755	Atmospheric correction
C8	845-885	Atmospheric correction/Aerosol Optical thickness

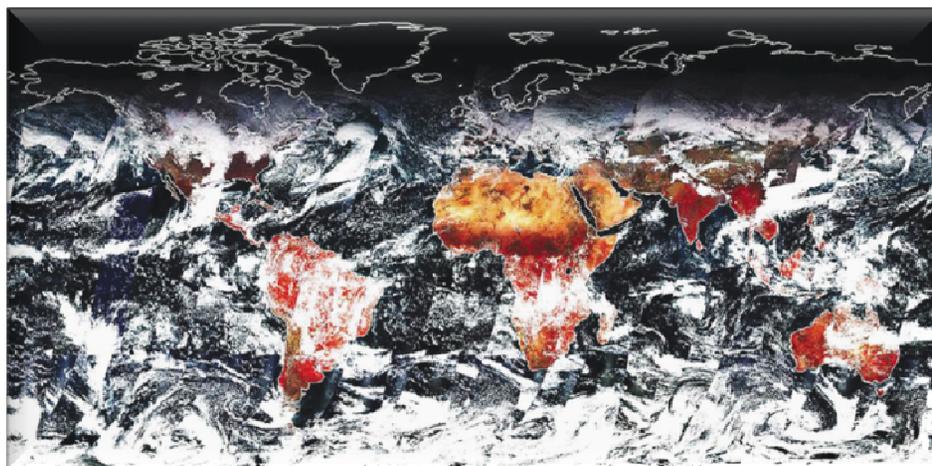


## OCM-2: Meeting Global Demand



- OCM LAC Data - downloaded over Indian & International Ground Stations (USA, South Korea, Europe, Malaysia, Thailand, Australia)
- OCM Data Products, esp. PFZ, is distributed to Indian fishing community within 3 hrs of data download

**OCM GAC Data (all orbits) downloaded, data products uploaded onto NRSC/ ISRO website for global users within 30 minutes of data download**



**Oceansat-2 OCM is a part of the virtual constellation of satellites on Ocean Colour Radiometry (OCR) under CEOS**

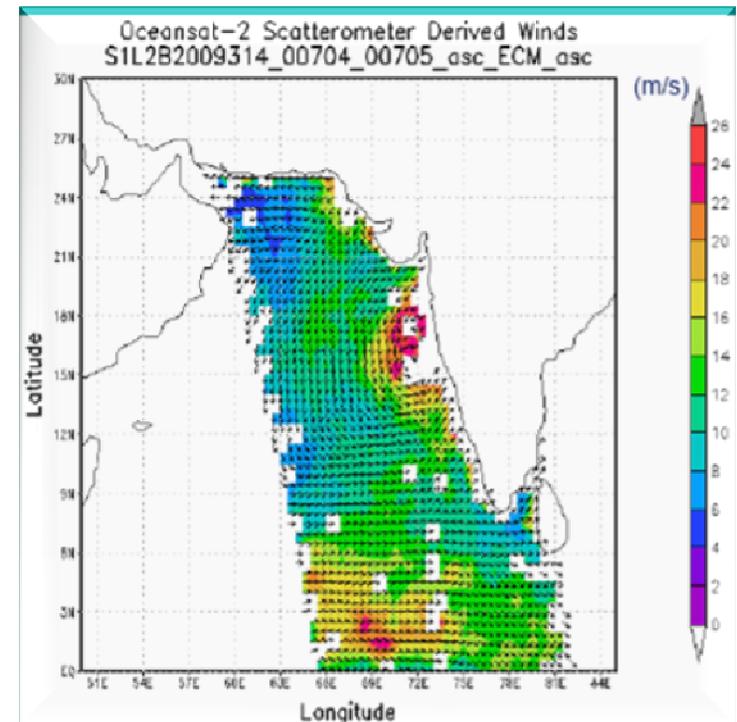


# OCEANSAT-2 Scatterometer Data Products

Processing Level	Parameter	Cell Size	Availability
Level 2A	Sigma-0 (for each orbit)	50x50 km <sup>2</sup>	Selected users
Level 2B	Wind vector (for each orbit)	50x50 km <sup>2</sup>	Global users through Web
Level 3S	Sigma-0 (Global)	0.5°x0.5°	Global users through Web
Level 3W	Wind vector (Global)	0.5 x0.5°	Global users through Web

**Oceansat-2 Scatterometer is part of virtual constellation of satellites on Ocean Surface Vector Wind (OSVW) under CEOS**

## Oceansat-2 Scatterometer derived Wind vectors



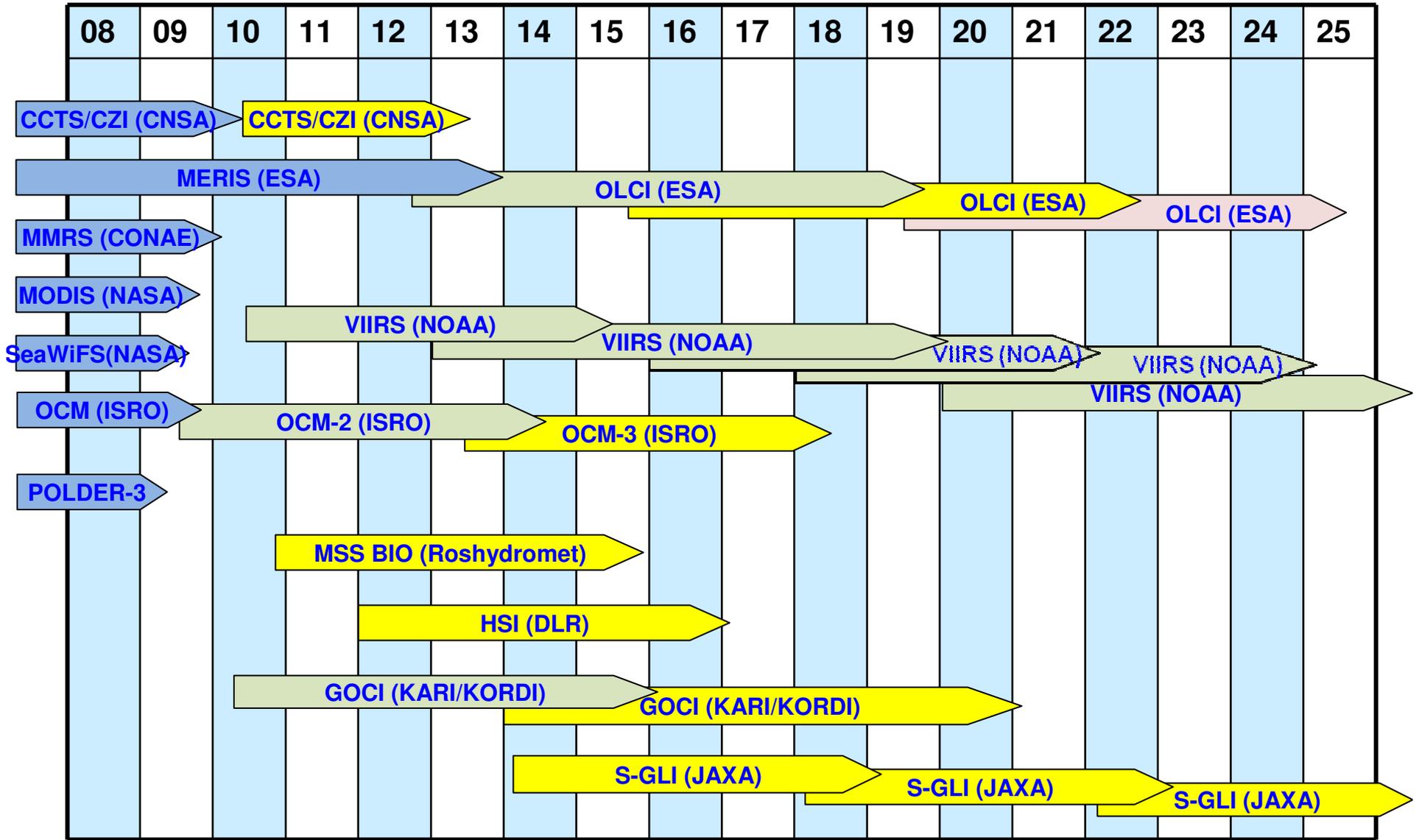
**November 10, 2009; 19 GMT  
Phyan Cyclone**



# Scatterometer: Meeting Global Demand

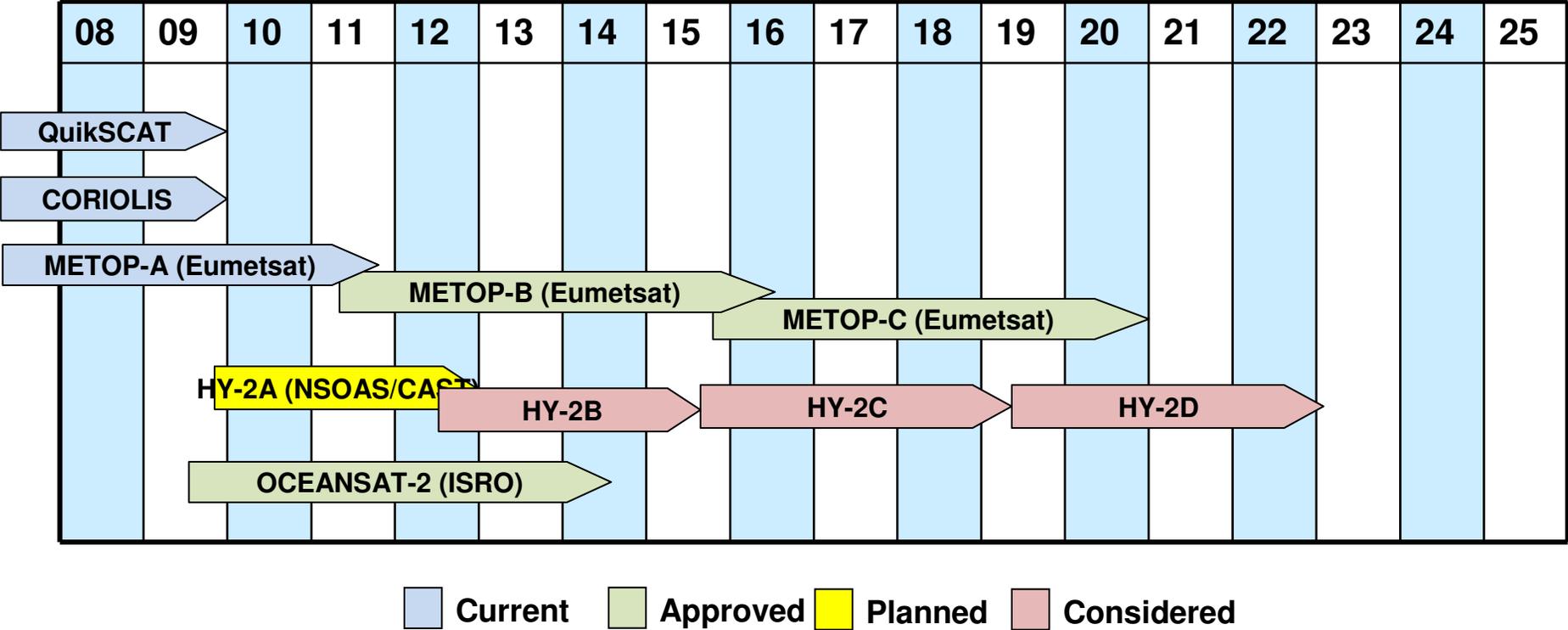
- **Requirement of Global community: Scatt wind product - within 180 minutes of data acquisition, achieved thru'**
  - Data download over Svalbard, Norway - for every orbit, within 2 min
  - Transfer of data to Shadnagar/ NRSC, Hyderabad, India using high-speed communication link (45 Mbps) in ~ 2 min
  - Data processing, products generation within 25 min
  - Level-2 data products (wind vector) are uploaded to NRSC web portal within 153 min of acquisition
  - Same data products are disseminated to EUMETSAT, Darmstadt via ISRO Data Exchange Gateway at Svalbard thru' 45 Mbps link in about 5-7 min
  - Subsequently, upload to EUMETCast for dissemination to EUMETSAT users in Europe, US & South Africa within 160 min
  - The data products are also disseminated to NASA/ NOAA from EUMETSAT via 45 Mbps link

# OCM-2 and Ocean Colour Missions



Current
  Approved
  Planned
  Considered

# Ocean Surface Vector Wind Missions





**... thank you all**