



OCM 2 E SCAT: data and products

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Ocean Colour Monitor (OCM-2)

- Oceansat-2 will carry three payloads including an Ocean Colour Monitor (OCM-2), similar to the device carried on Oceansat-1
- OCM-2 is a solid-state camera operating in push broom scanning mode using linear array Charge Coupled Devices (CCDs) as detectors
- 8 bands multi-spectral: visible and near infrared bands
- The camera can be tilted up to $\pm 20^\circ$ in the along track direction to avoid sun glint.
- OCM data will be available in two spatial resolutions:
 - Local Area Coverage (LAC) of 360 m
 - Global Area Coverage (GAC) of 4 km
- Data availability:
 - LAC data \rightarrow direct broadcast and/or "selective recording"
 - GAC data \rightarrow recorded onboard Solid State Recorder (SSR) and played back at the ground reception station at National Multimission Centre (Matera, Italy) and National Remote Sensing Agency (NRSA) at Hyderabad (India).
- On-board recording of LAC data (where there is no Ground station) will be on **a restricted basis** since both LAC and GAC cannot be recorded simultaneously
- Complete global coverage in GAC mode: 4 days (6 days in worst case)

Main specifications of OCM

Parameters	Specifications
IGFOV	360m X 236m
Swath	1420 km
Repetitivity	2 days
No. of bands	8
MTF at Nyquist	> 0.26
Quantisation	12 bits
Along track steering	$\pm 20^\circ$
Weight	78 kg
Power	134 W
Data rate	20.8 Mbps

OCM spectral band and applications

Spectral Band	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

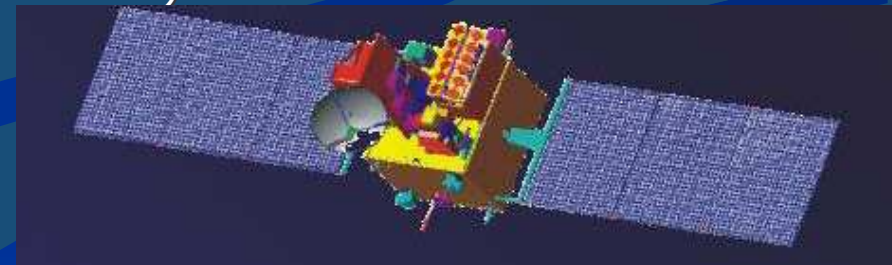
Data products from OCM

Standard LAC data products of OCM (360 m resolution):

- Level 1B LAC : Radiance product
- Level 1C LAC : Geo-referenced (Radiometrically and geometrically corrected) product
- Level 2C LAC : Geometrically corrected geo-physical parameters
 - Chlorophyll concentration product
 - Total Suspended Matter concentration product
 - Aerosol optical depth at 865 nm
 - Diffuse attenuation coefficient (Kd-490 nm)

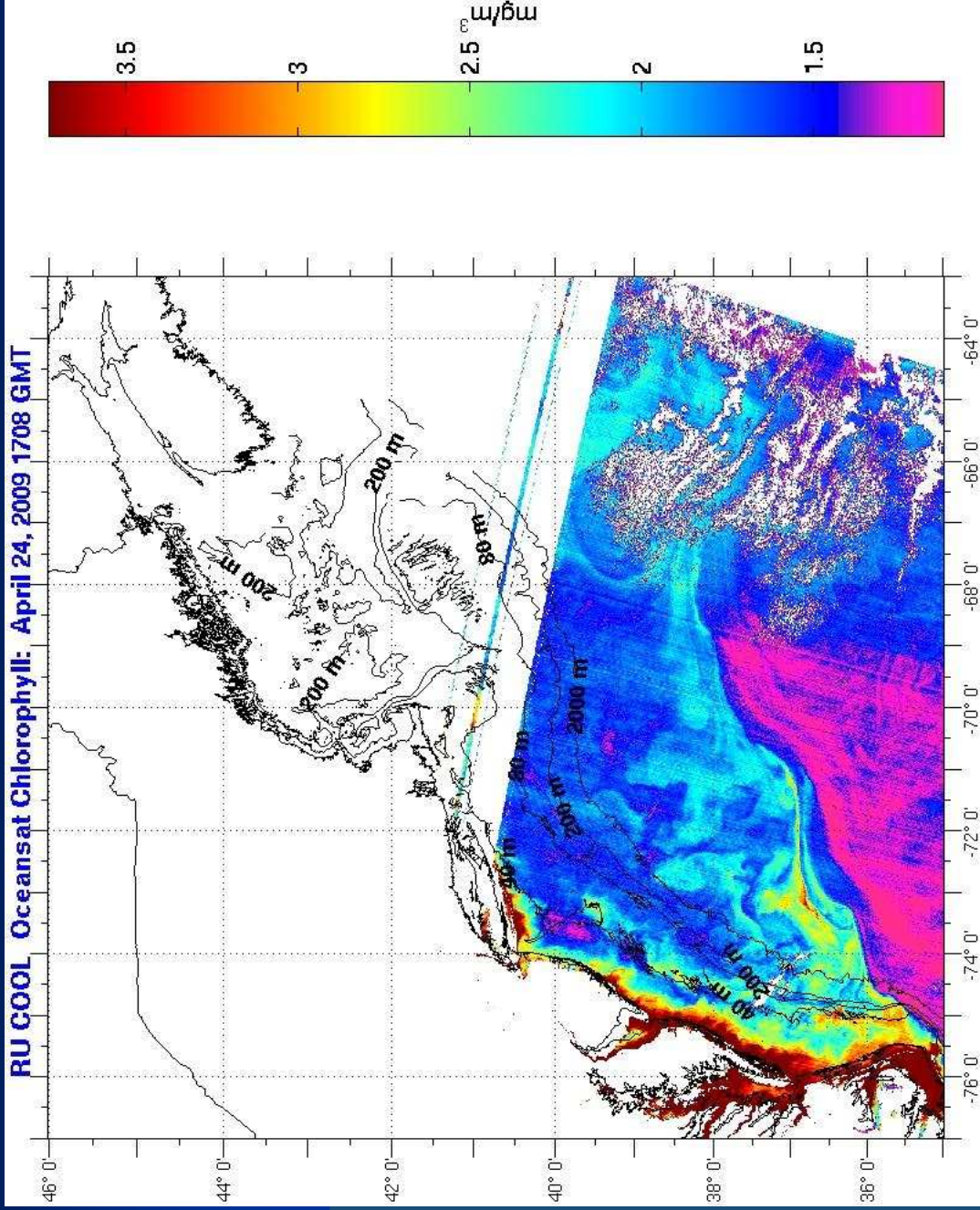
Standard GAC data products of OCM (approximately 4 km resolution):

- Level 1B GAC : Strip based/ Scene based Radiance product
- Level 2B GAC : Geo-physical parameters:
 - Chlorophyll concentration product
 - Total suspended matter concentration product
 - Aerosol optical depth at 865nm
 - Diffuse attenuation coefficient (Kd-490 nm)
- Level 3 GAC : Binned products
 - Weekly
 - Monthly
 - Yearly



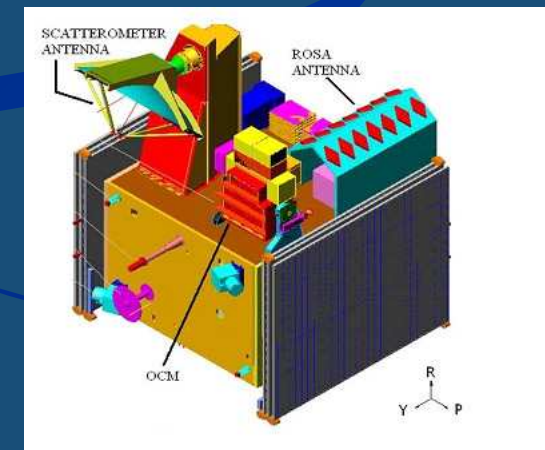
SPECIFIC AREAS OF INTEREST: Ocean Colour Monitor-2

- Algorithm development for atmospheric correction of OCM data
- Regional bio-optical algorithm development with special emphasis in case-II waters
- Inversion techniques to derive inherent optical properties using OCM data
- Validation of OCM derived geophysical parameters
- Inter-sensor data comparison and data merging
- Ocean primary productivity modeling
- Assimilation of ocean-colour data in eco-system models
- Models for quantitative estimation of suspended sediments
- Bio-geochemical cycle of Carbon and Nitrogen
- Algal bloom detection
- River plumes and coastal productivity
- Climate change and ocean colour
- Synergistic use of ocean colour and scatterometer winds
- Characterization of absorbing aerosols over oceans
- Innovative technique development for ocean colour feature extraction
- Ocean colour and sustainable fisheries management
- Impact of agricultural practices on coastal water productivity
- Aerosol characterization and transport over ocean



Scatterometer

- Principal objective: retrieval of the near surface wind vectors over the ocean surface.
- Ku-band Pencil beam scatterometer: active microwave radar operating at 13.515 GHz
- The scatterometer system is made of:
 - 1-m parabolic dish antenna
 - dual feed assembly to generate two pencil beams
- Inner beam → HH polarization
- Outer beam → VV polarization
- The backscatter energy is received back at the antenna → on board range compression → transmission to the ground



Major specifications of the scatterometer (1/2)

Parameter	
Altitude	720km
Frequency	13.515 GHz
PRF	200Hz
Wind Speed range	4 to 24 m/sec
Wind Speed Accuracy	Better than 20% (rms)
Wind direction accuracy	20° (rms)
Wind direction cell size	50km x 50km

Major specifications of the scatterometer (2/2)

Parameter	Inner Beam	Outer beam
Polarization	HH	VV
Swath	1400km	1840 km
Elevation angle	42.62°	49.38°
Incidence angle	48.90°	57.60°
Footprint	26x46km	31x65km
Scanning rate	20.5rpm	

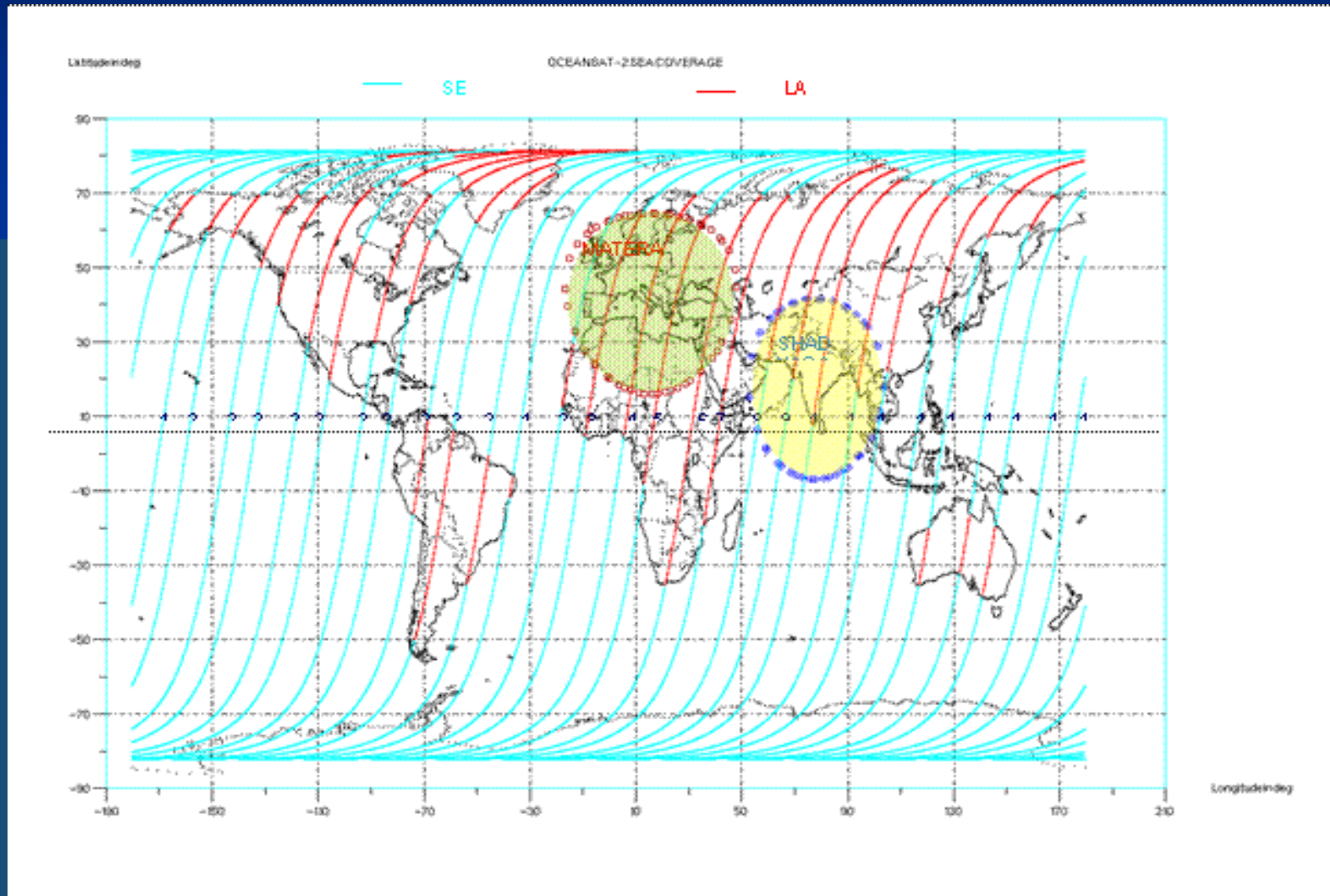
Data products from scatterometer

- Level 2A : Sigma-0 product in swath grid with 50 km spacing
- Level 2B : Wind vector in swath grid with 50 km spacing
- Level 3W : Global wind vector with grid spacing of 0.5°
- Level 3S : Global sigma-0 product with grid spacing of 0.5°

Scatterometer: SPECIFIC AREAS OF INTEREST

- Validation of wind vectors
- Monsoon Onset
- Tropical cyclone tracking
- Short and Medium range weather prediction
- Rain estimation over oceanic region
- Ocean state forecast: wave, circulation
- Forecasting ocean surface wind vector
- Air-sea interactions
- Ocean process studies: MLD studies
- Ocean surface wind stress and its impact
- Ocean surface pressure fields
- Climate change studies
- Land applications: Land cover, Agriculture
- Sea ice cover

OCEANSAT 2 acquisition areas



DATA AVAILABILITY

- Data will be made available to the scientific community after the commissioning phase → **6 months after launch.**
- Projects would be provided at no cost after evaluation
- All the GAC products from OCM-2 and products 2B, 3W and 3S from Scatterometer will be hosted on the NRSA website as soon as the data is received at the primary reception station.
- Additional data required by the PIs such as LAC data from OCM-2 and Level 2A product from Scatterometer will be supplied within 15 days of its reception.
- Direct reception of LAC data can be made through their X-band receiving stations by entering into a commercial agreement with **Antrix Corporation, India (commercial wing of ISRO)**
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