

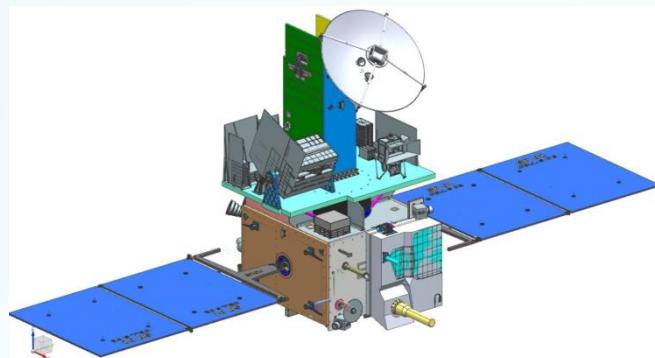
### EOS-06 Composite Value Added Data Products

The EOS-06 (Oceansat-3), mission launched by ISRO in November 2022, aims to maintain the continuity of services provided by Oceansat-2 (OSCAT) and SCATSAT-1 missions while offering enhanced payload specifications and expanded application areas. As the third-generation satellite in the Oceansat series, EOS-06 is equipped with three payloads. Firstly, the Ocean Colour Monitor (OCM-3) offers improved radiometric and spectral performance, featuring a greater number of VNIR bands compared to its predecessor, Oceansat-2. Secondly, the scatterometer (SCAT-3) is an advanced version with enhanced features in comparison to OSCAT and SCATSAT, providing higher resolution and more comprehensive and accurate data. Lastly, the Sea Surface Temperature Monitor (SSTM-1) is a new payload specifically designed for this mission.

The EOS-06 is envisaged to provide critical observations related to ocean colour, sea surface temperature and wind vector data to use in Oceanography, meteorological and climatic applications.

**Table 1: EOS-06/Oceansat-3 Scatterometer Specifications:**

EOS-06/Oceansat-3 SCAT system parameters		
Parameter	Inner Beam	Outer Beam
Spacecraft Altitude	720 km (nominal)	
Frequency	13.51 GHz	
Swath / Polarization	1400 km / HH	1800 km / VV
One Way 3dB Foot Print at Equator (Azi. X Ele.)	29.5 km X 20 km	38 km X 22 km
Scan Rate	16 rpm	
Antenna Diameter	1.4 m	
Wind speed range	3 to 30 m/s	
Wind direction range	0° to 360°	
Wind speed accuracy	1.8 m/s rms or 10% whichever is higher	
Wind direction accuracy	20° rms	
Wind vector cell size	12.5km X 12.5km and 25 km x 25 km (LRScat) and 5 km x 5 km (HRScat)	



**EOS-06/Oceansat-3 Satellite**

**Table 2: EOS-06/Oceansat-3 OCM Band Specifications:**

OCM-3 Band description and their applications			
Band#	Central WL (nm)	Band-width	Primary Application
B1	412	20	Differentiate yellow substance from chlorophyll
B2	443	10	Chlorophyll absorption maximum; low chlorophyll
B3	490	10	Moderate chlorophyll
B4	510	10	High chlorophyll; Total Suspended Matter (TSM)
B5	555	10	Reference baseline for Chlorophyll
B6 *	566	10	Phycocyanin absorption, Trichodesmium bloom detection
B7	620	10	Turbidity in coastal Case 2 waters, Phycocyanin absorption
B8*	670	10	Baseline for fluorescence line height (FLH), chl secondary absorption
B9 *	681	10	Chlorophyll fluorescence
B10 *	710	10	Baseline for FLH, vegetation - chlorophyll fluorescence; atmospheric Correction
B11	780	10	Atmospheric correction; avoids O2 absorption Band
B12	870	20	Atmospheric correction; good assessment of spectral scattering
B13 *	1010	20	Atmospheric correction in turbid waters, aerosol - white foam discrimination

★ **New Bands in OCM-3**

Web links:

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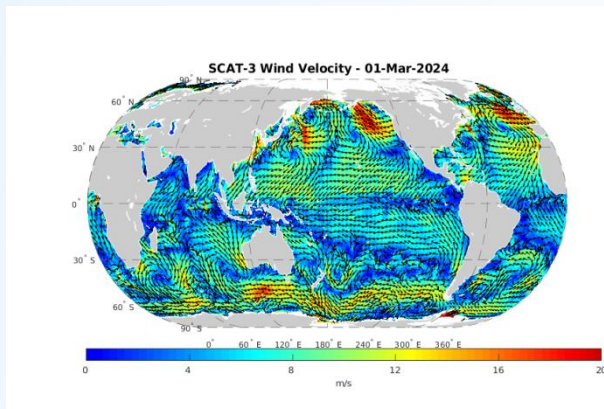
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## EOS-06 Composite Data Products

Apart from the operational swath based Level-2 products which are regularly disseminated through Bhoonidhi portal, other value added products are also generated such as gap free gridded composite products facilitating ease of usage by the non-expert user community .

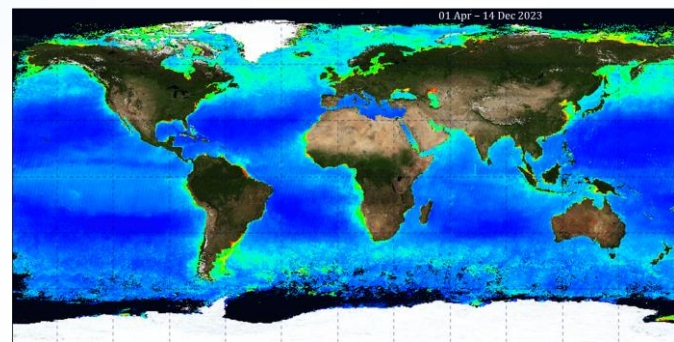
Accordingly, a new methodology has been developed to generate global gap free wind velocity fields as 2-day, 7-day and 15-day composites using the L2B swath based wind vector data retrieved from Scatterometer payload. This innovative approach employs a rolling average technique across multiple time periods-2 days, 7-days, and 15-days providing insights into wind behavior at different temporal scales. The rolling average calculation incorporates both today's data and the previous day's data, with a gradual decrease in weight given to older observations. This meticulous process ensures a smoothed representation of wind velocity, effectively filtering out short-term fluctuations and highlighting broader trends over time.



Two Day Global gap free Composite wind field for 29<sup>th</sup> Feb 2024 to 1<sup>st</sup> March 2024 from EOS-06 SCAT data

In particular, the 7-day and 15-day products offer extended analyses, capturing medium term variations in wind patterns. In meteorology and climatology, they can facilitate trend analysis, aiding in understanding seasonal changes and climate dynamics. Moreover, the accuracy of the 2-day wind products has been validated with buoy data, demonstrating reliable performance with low RMSE values for both wind speed (1.32 m/s) and wind direction (16 degrees). Available in netCDF formats at different resolutions, these products are accessible through the Bhoonidhi portal of NRSC for browse and download (<https://bhoonidhi.nrsc.gov.in/bhoonidhi/home.html>), enabling users to leverage accurate and comprehensive wind velocity information for diverse applications.

The current binned algorithms used for generating the Level-3 binned products are generated as per IOCCG protocols for 2-day, 8-day and monthly scales over the global oceans. These products will be used for estimating the ocean productivity, biogeochemical modelling of primary production and the carbon cycle studies.



Monthly binned Global Surface Chlorophyll Concentration (4km) from EOS-06 OCM3, April- Dec 2023

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