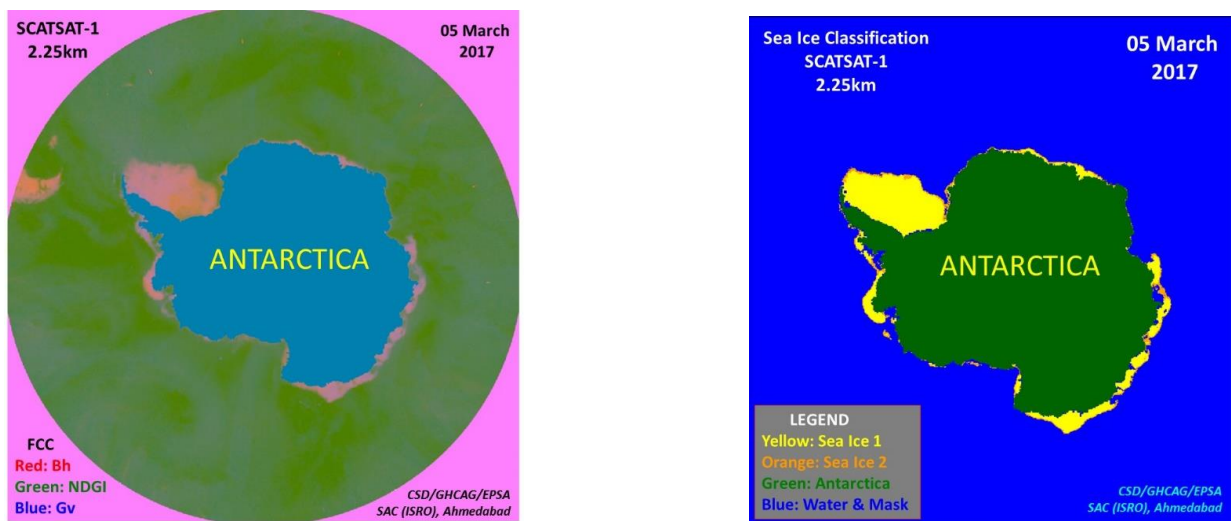


## Scatsat-1 Data Captured Record Minimum Antarctic Sea Ice

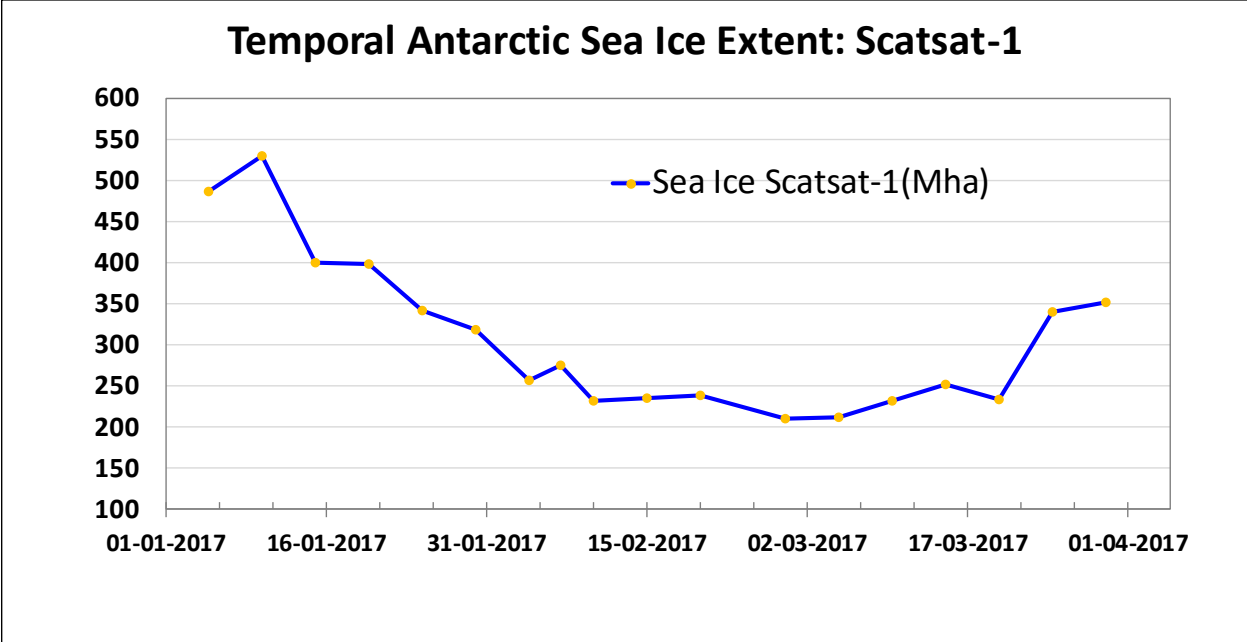
At present, Scatsat-1 (launched in September 2016) provides the finest super resolution space-based scatterometer (Ku band) data at 2.25km. Scatsat-1 is a continuity mission for Oceansat-2 Scatterometer to provide wind vector data products for weather forecasting, cyclone detection and tracking and many other services to global scatterometer community. Scatterometer provides the precise measurement of the normalized radar cross section of the surface by emitting a microwave pulse aimed at the surface and measuring the reflected energy.

Space Applications Centre (SAC), Ahmedabad monitors the Antarctic sea ice using Scatsat-1 data. The Normalized Difference Gamma $\theta$  Index (NDGI) and Normalized Difference Brightness Temperature Index (NDBI) derived from the Scatsat-1 data products were used to discriminate sea ice against water. Antarctica boundary mask and 36years Sea Ice Occurrence Probability (SIOP36 available at MOSDAC and VEDAS) data are the two inputs used in the analysis. NDGI and NDBI are defined as  $[(Gv- Gh)/(Gv+ Gh)]$  and  $[(Bv- Bh)/(Bv+ Bh)]$ , respectively. Here, Gv (Gamma $\theta$  vertical) and Gh (Gamma $\theta$  horizontal) are Gamma $\theta$  in the two polarizations; and Bv (BT vertical) and Bh (BT horizontal) are Brightness Temperature (BT) in the two polarizations.

The temporal variation of Sea Ice Extent (SIE) shows that the seasonal pattern of sea ice reduction upto first week of March 2017 and then growth was picked up well. The sea ice images were compared with sea ice cover from sea ice concentration products of AMSR2. On comparing the current years SIE estimated derived from the Scatsat-1 data with the previous data from 1978 onwards, we found that during 1<sup>st</sup> week of March 2017 the sea ice was at record minimum at around 2.11 Million hectares. Figure 1 shows (i) Scatsat-1 FCC (R:Bh, G:NDGI, B:Gv), and (ii) Sea Ice map (Yellow & Orange are sea ice, Green is Antarctica and Blue is water + mask), both for March 05, 2017. Figure 2 shows the temporal variation of the Antarctic sea ice from January to March 2017. The Antarctic sea ice images will be available on VEDAS (Visualisation and Earth Observation Data and Archival System) website, shortly.



**Figure 1.** Scatsat-1 FCC (Left) and Sea Ice Image (Right) over the Antarctic for March 5, 2017.



**Figure 2.** Temporal variation in the Antarctic sea ice from January to March 2017 derived from Scatsat-1 data at 2.2km.

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