

Ren, S., X. Fang, N. Niu and W. Song, 2023: The application of FY-3D/E meteorological satellite products in south china sea summer monsoon monitoring. *J. Meteor. Soc. Japan*, **101**, 347-365.

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**Plain Language Summary:** The onset of the summer monsoon indicates that the atmospheric circulation changes from winter to summer and the primary rainy season begins. Based on the vertical atmospheric sounding system carried by the FY-3D meteorological satellite (FY-3D/VASS) and the new wind radar instrument carried by the FY-3E meteorological satellite (FY-3E/WindRAD) the applications of these satellite datasets in South China Sea summer monsoon (SCSSM) monitoring was evaluated. The temperature, humidity, and wind reversal during the onset of the SCSSM in 2022 were well-monitored by the FY-3D/E-derived  $\theta_{se}$  and OWV dual indices, which are consistent with the SCSSM onset date, the third pentad in May, issued officially by the National Climate Center, China Meteorological Administration.

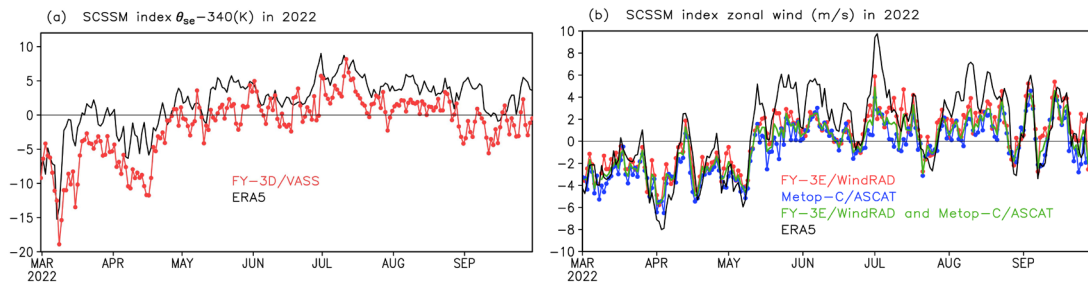


Fig.1. The time series of daily mean  $\theta_{se}$  (unit: K) at 850 hPa from FY-3D/VASS and ERA5 (a) and ocean surface zonal wind (unit: m s<sup>-1</sup>) from FY-3E/WindRAD, Metop-C/ASCAT, and ERA5 (b) in the SCSSM region from 1 March to 30 September 2022.

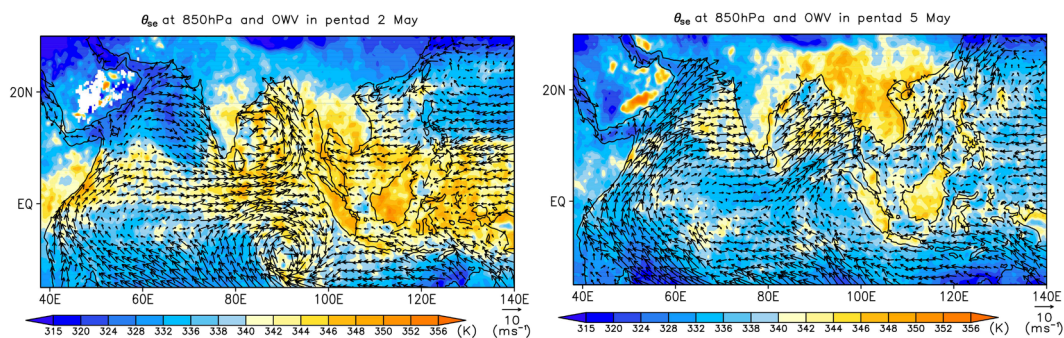


Fig.2. Average pentad of FY-3D/VASS  $\theta_{se}$  at 850 hPa (shaded, unit: K) and FY-3E/WindRAD OWV (vector) before and after the SCSSM onset in 2022 (the second and fifth pentads in May).

### Highlights

- This paper focuses on the evaluation of the applications of the FY orbiting meteorological satellite's retrieval of temperature, humidity, and ocean surface wind data in SCSSM monitoring.
- The monitoring indices of the SCSSM, using FY-3D/VASS and FY-3E/WindRAD, are very good at monitoring the pseudo-equivalent potential temperature and zonal wind reversal during the onset of the SCSSM.