

CFOSAT SWIM instrument changes acquisition macrocycle

On December 2, 2024, the CFOSAT SWIM instrument changed from the acquisition macrocycle 0, 2, 4, 6, 8, 10 to 0, 2, 10, 10, 10. The so-called macro cycle is the illumination sequence of the incident beams used to perform SWIM measurements. Since the beginning of the mission, all available beams (see Fig. 1) have been used for the measurements. After six years, the CFOSAT SWIM project team has decided to switch to an alternative acquisition mode, favoring the 10° beam, which shows the best performance in retrieving wave spectra. This instrument configuration was tested during 2 orbital cycles from 12 January to 7 February 2024 to qualify the compatibility of the processing chains. First analyses of the data set showed that there was no degradation of the spectral data produced and highlighted the possibility of using this macrocycle to work on cross-spectra and improve speckle noise correction. It also opens up possibilities for azimuthal resolution of the spectra. Fig. 2 shows the acquisition geometry for the spectral beams with the previous nominal macrocycle and the new one, and also the schematic of the footprint overlap.

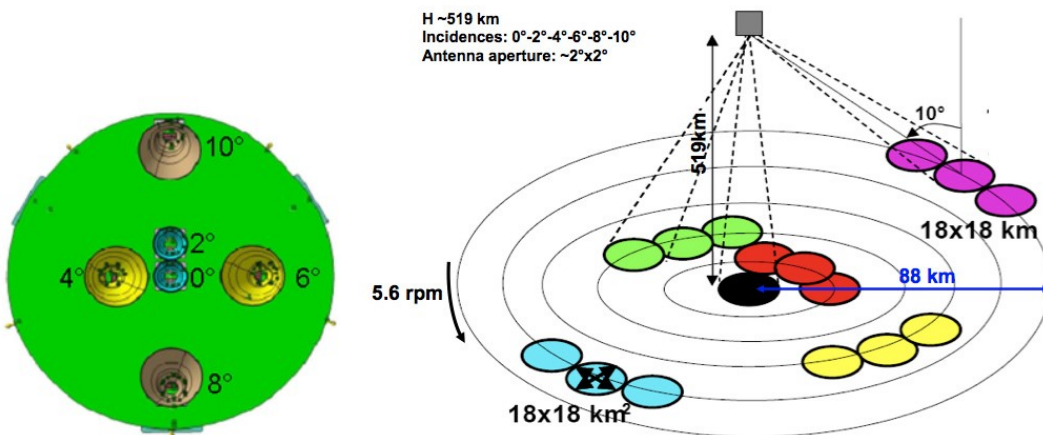


Fig.1: (left) SWIM emission horns accommodation, (right) schematic of the spots at the surface in the acquisition mode 0-2-4-6-8-10 for 3 successive macrocycles

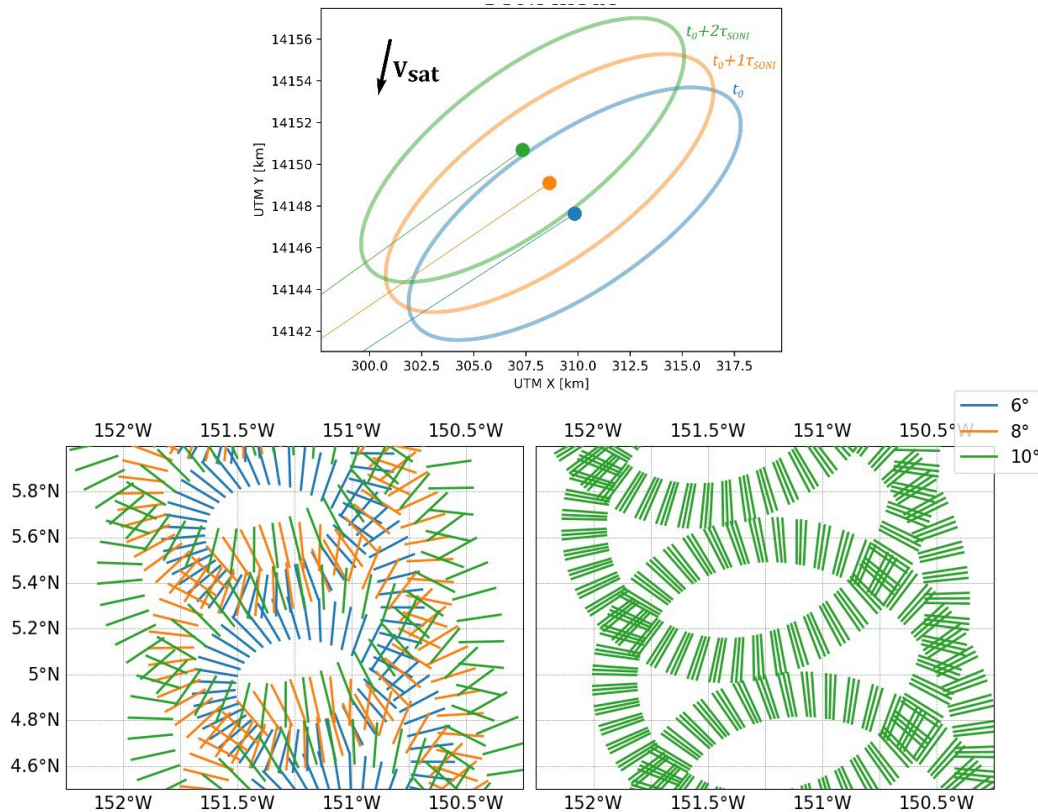


Fig.2: (top) schematic of the 10° beams footprint overlap for macrocycle 0, 2, 10, 10, 10. Acquisition geometry for spectral beams: (bottom left) macrocycle 0,2,4,6,8,10 (spectral beam 6,8 and 10 plotted); (bottom right) macrocycle 0, 2, 10, 10, 10.