

The EUMETSAT Polar System - Second Generation (EPS-SG) Microwave Imaging Missions: MicroWave Imager (MWI) and Ice Cloud Imager (ICI)

C. Accadia¹, V. Mattioli¹, F. De Angelis¹, R. Ekelund², P. Schlüssel¹, P. Colucci¹, A. Canestri¹.

¹ EUMETSAT, Eumetsat-Allee 1, 64295 Darmstadt, Germany

² HE Space Operations GmbH, Robert-Bosch-Straße 7, 64293 Darmstadt, Germany

The second generation of the EUMETSAT Polar System (EPS-SG) will include two conical scanning microwave and sub-millimetre radiometer imaging missions: the Microwave Imager (MWI) and the Ice Cloud Imager (ICI).

MWI will have 18 channels ranging from 18 to 183 GHz. The frequencies at 18.7, 23.8, 31.4 and 89 GHz provide continuity to key microwave imager channels in the mid-morning for weather forecast, with information on precipitation and sea ice and snow cover, total column water vapour and cloud liquid over ocean. Channels near 50–60 GHz and the innovative set at 118 GHz will enhance sensitivity to weak precipitation and snowfall.

ICI is designed for the remote sensing of cloud ice. ICI will cover the mm/sub-mm spectrum from 183 GHz to 664 GHz, with 11 channels in the water vapour absorption lines (around 183, 325 and 448 GHz) and in the atmospheric windows at 243 and 664 GHz. The ICI channels will provide an innovative characterisation of clouds, with information on humidity and ice hydrometeors, particularly the bulk ice mass. ICI mission will provide operational services in support of climate monitoring.

MWI and ICI have the same requirements for incidence angle, foreview observation and rotation speed. Combined, the MWI and ICI radiometers will provide an unprecedented set of microwave passive measurements, from 18.7 GHz up to 664 GHz.

Due to the novelty of the missions, an overview of these two EPS-SG instruments and current development status will be provided. The channels and the scanning characteristics of the instruments will be detailed. Activities related to the planned operational products and the preparation of the ground segment test data for the centrally-generated L1B products will be discussed.