

NORSAT-1: Total Solar Irradiance, Space Weather and Ship Detection

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In 2012, the Norwegian Space Centre selected the NORSAT-1 mission as part of the National Space Programme. NORSAT-1 has two objectives: 1) investigating solar radiation and space weather and 2) the development of new methods for detection and management of ship traffic. NORSAT-1 will include two scientific instruments. A Compact Light-weight Absolute Radiometer (CLARA) is provided by the Physical Meteorological Observatory/World Radiation Centre (PMOD/WRC, Davos, Switzerland) and is partly funded through the ESA PRODEX programme. CLARA will measure the TSI at the highest cadence of any space radiometer built to date, making it attractive also for helioseismological investigations of the solar atmosphere at high frequencies. The Langmuir Probe instrument consists of 4 individual probes each mounted at the end of a boom (4 booms total). The instrument will measure electron density and the platform floating potential along the orbit. The probes and associated electronics will be provided by the University of Oslo.

The Satellite will also carry an AIS receiver for performing ship detection from space – to follow the very successful Norwegian satellite AISSat-1 launched in 2010. The new AIS receiver on NORSAT-1 will be more advanced and employed to test out new detection algorithms. NORSAT-1 launch is tentatively planned in the first half of 2015, and the planned mission duration is 36 month. The University of Toronto Institute for Aerospace Studies (UTIAS), Space Flight Laboratory, will construct the platform for the satellite and integrate the payloads before launch. The Norwegian Space Centre will coordinate the development and the integration of the instruments for the new satellite platform.