

**PMOD/WRC press release** to the launch of CLARA/NorSat-1 14.7.2017

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## CLARA on NorSat-1 was successfully launched 14 July 2017 06:36 UTC.

The Compact Lightweight Absolute Radiometer (CLARA) will monitor the Sun's energy input to the Earth in the coming years.

The "Total Solar Irradiance" is the energy coming from the Sun, which is keeping the Earth on a temperature that makes life possible. Before mankind started to influence the state of our climate, there was natural climate change. So far, there is not yet hard scientific evidence of what is the main reason for these historical climate variations but a commonly accepted key suspect is the Sun. Long-term natural variations of the state of the climate are assumed to be due to small changes of the solar output of energy. We know from measurements during the time of the satellite era, i.e. since about 1980, that the recent solar variations we have observed were not sufficiently large to affect the terrestrial climate. However, it is expected that in the next 50 to 100 years the Sun enters again a grand minimum state that might resemble the solar minimal activity level in the 17<sup>th</sup> century, which is called "Maunder minimum". This solar grand minimum coincides with a climate anomaly termed "little ice age", which e.g., implied very cold winters in Europe at that time. If such a scenario should become reality, we expect the Sun during its next 11-yr solar cycle minimum in about 2020 to show a first tiny, but measurable reduction of about 0.02 % compared to its previous level in 2009. Eventually, if the Sun reaches a new grand minimum, reduced irradiance onto Earth could imply a small reduction of global warming – optimistic estimates predict a reduction of the predicted 2 to 4°C global warming until the end of this century by about 0.5°C by this natural influence.

Given the potential importance of the Total Solar Irradiance, this quantity is listed by the World Meteorological Organization as "Essential Climate Variable". CLARA, built by PMOD/WRC and flown on the Norwegian satellite NorSat-1, is the newest radiometer contributing to this world task of keeping an eye on the Sun. Two of the four presently operational space experiments measuring Total Solar Irradiance are in space for 14 and 22 years and cannot be expected to operate much longer. CLARA/ NorSat-1 is intended to continue the solar monitoring task as long as the radiometer and the space craft are technically healthy.

First light of CLARA is planned for the week of 21. August 2017.

Complementary information:

- Fact sheet of CLARA
- Fact sheet NorSat-1 and NorSat-2 (see also <https://www.romsenter.no/eng>)

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For more information please contact

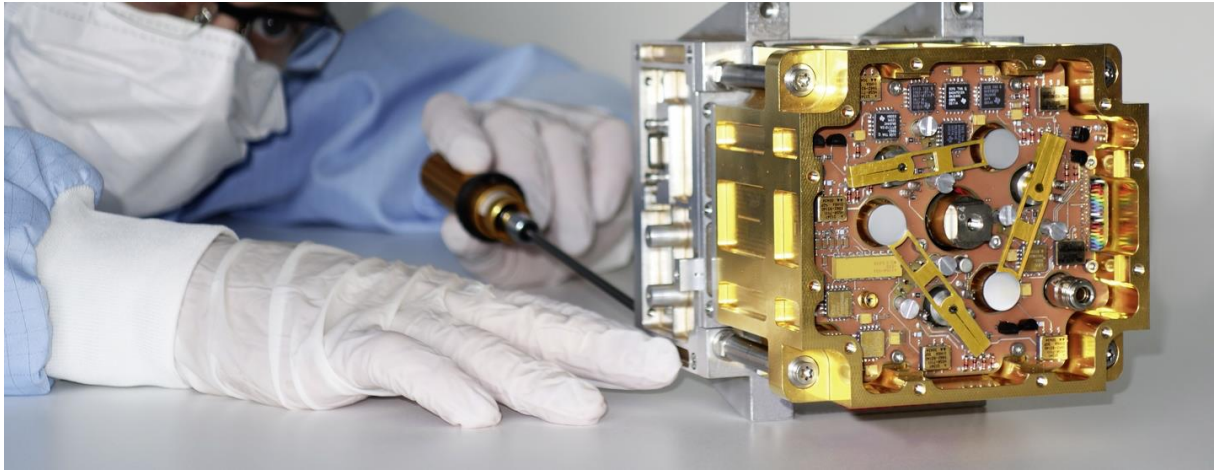
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Picture. The Compact Lightweight Absolute Radiometer (CLARA), a payload on board the Norwegian NorSat-1 nano-satellite. CLARA is a new generation of radiometers to measure the Total Solar Irradiance which continues the long-term involvement of the PMOD/WRC in space and solar research. CLARA was funded by Swiss PRODEX.