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Long Term Solar Changes

May 19, 2014, 10h-14h

Workshop conveners: Steven Dewitte, Stany Stankov

Solar climate research has until now been dominated by the observation of its 'founding father' Jack Eddy that there was a correspondence between the Sun's Maunder Minimum - which was an extended period of low solar activity around 1700 - and the Earth's Little Ice Age - which was an extended period of low temperatures on earth. The most obvious explanation seemed to be that a long term variation of the Total Solar Irradiance (TSI) - which quantifies the radiative energy input to the earth from the sun - was responsible for the temperature drop during the little ice age. Numerous long term reconstructions of the TSI have been made, which all had to postulate a long term variation of the so-called 'quiet sun' TSI level in order to explain the Little Ice Age.

Recent progress 1) in TSI measurements from space, 2) in the long-term characterisation of solar activity through the sunspot record, and 3) an unexpected behaviour from the sun itself during the current solar cycle 24, leads us suggest that we need a paradigm shift in solar climate research. The amplitude of the 11 year solar cycle seems to vary not according to a long term increase from the Maunder Grand Minimum to a Modern Grand Maximum, but rather according a long term oscillation with a period around 100 years. With the current solar cycle 24 we seem to be near a minimum of the long term 100 year cycle, undermining the 'classical' Modern Grand Maximum point of view.

In this workshop we want to start to re-investigate the long term sun-earth relationship grasping the opportunity of the minimum of the 100 year cycle.

Program

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|-------------|---|
| 10:00-10:15 | Welcome |
| 10:15-10:45 | Total Solar Irradiance measurements and reconstruction
by <i>Steven Dewitte</i> |
| 10:45-11:15 | Results from Sovap and revision of the value of the Solar Constant
by <i>Els Janssen</i> |
| 11:15-11:45 | Solspec Spectral Solar Irradiance measurements
by <i>David Bolsee</i> |
| 11:45-12:15 | Long-term solar changes - influence on geomagnetic, cosmic ray and ionospheric parameters
by <i>S. Stankov, D. Sapundjiev, T. Verhulst, A. Gonsette, J.C. Jodogne</i> |
| 12:15-12:45 | Solar- and Terrestrial- radiation recorded by the Bolometric Oscillation Sensor aboard the PICARD microsatellite
by <i>P. Zhu</i> |
| 12:45-13:00 | Wrap up |
| 13:00-14:00 | Sandwich Lunch in the canteen of the RMI |

Registration & Logistics

Registration is free and can be done by adding your name [in this google document](#). All participants are offered a free lunch and coffee.

Venue: Meridian Room - Royal Observatory of Belgium, Ringlaan - 3 - Avenue Circulaire, B1180 Brussels [see on a map](#)

This meeting is supported by the Solar-Terrestrial Centre of Excellence (STCE).

