

# **The 9th International HEPPA-SOLARIS Meeting**

**Monday 16 September 2024 - Friday 20 September 2024**

**University of Leeds, UK**

## **Scientific Programme**

The 9th International HEPPA-SOLARIS meeting has been organized under the following session topics.

## **Solar Irradiance and Particle Variability**

Chairs: Margit Haberreiter, Hilde Nesse

Solar irradiance is the primary input of energy to the Earth climate system. Precise estimates of the absolute irradiance and how it varies are essential for understanding the dynamics of the Earth's atmosphere and its role as natural forcing agent on the terrestrial climate. The Sun's electromagnetic spectrum changes on all timescales, from seconds, daily, annual, solar cycle timescales, and longer. We welcome contributions describing recent successes in solar irradiance observations, composite datasets, modelling the solar atmosphere and reconstructing solar irradiance. Moreover, the particle flux emitted by the Sun, driven by dynamical processes in the solar wind and the Earth's magnetosphere, is also a key component in the Earth's atmosphere. We invite the latest advances in theory, observations, and modelling of the precipitating electron and proton fluxes over the full energy spectra from keVs to MeVs.

Confirmed speakers: Maarit Korpi-Lagg (Aalto University), Dedong Wang (GFZ Potsdam)

## **Stratosphere / mesosphere / thermosphere response and coupling of atmospheric layers**

Chairs: Pekka Verronen, Miriam Sinnhuber

We invite contributions on all topics related to solar SSI and energetic particle precipitation impacts on the middle and upper atmosphere: model and observation-based studies on primary processes within the middle/upper atmosphere, middle/upper atmosphere decadal and short-term solar variability, and coupling within the middle/upper atmosphere and to the atmospheric layers above and below.

Confirmed invited speakers: Ilkka Virtanen (University of Oulu), Amanda Maycock (University of Leeds)

## **Climate response / Earth Radiation Budget / S2S prediction**

Chairs: Wenjuan Huo, Gavin Schmidt

This session welcomes presentations on all topics related to solar influence on climate, Earth radiation budget, and near-term prediction (from annual to decadal), including but not limited to the following points:

- Observed and simulated solar signal in the Earth's climate system
- Possible mechanisms for solar influence on climate
- Interaction with other natural/anthropogenic forcings and natural climate modes
- S2S / decadal prediction

Confirmed invited speakers: Adam Scaife (Met Office), Stergios Misios (Academy of Athens)

## **New missions and tools relevant to detection and attribution of solar signals and particle impacts**

Chairs: Craig Rodger, Dan Marsh

This session welcomes presentations on new approaches for undertaking HEPPA-SOLARIS research. The session includes new spacecraft missions, spanning the entire range from initial concept stage through to newly produced datasets. We also welcome presentations on new tools and analysis approaches for assessing Solar and Particle Influences, including measurements, models, and techniques.

Confirmed invited speakers: Ian Mann (University of Alberta), Daniel Gerber(RAL Space), Björn-Martin Sinnhuber (Karlsruhe Institute of Technology)

## **CMIP-7 forcing and implementation in Earth system models**

Chairs: Bernd Funke, Doug Kinnison

We invite contributions using the new CMIP7 solar forcings (TSI, SSI, and EPPs) in Earth System Models (with and without interactive chemistry). This includes solar impacts on troposphere climate (e.g., temperature, clouds, and sea ice distributions); and stratosphere / MLT heating rates and chemistry.

Confirmed invited speakers: Markuz Kunze (IAP Kuehlungsborn, Germany), Michaela Hegglin (FZ Juelich, Germany)

## **Working Group Meetings**

The following working groups (WGs) were defined at SOLARIS-HEPPA meetings in 2022 (SPARC newsletter 59, 2022, p. 36). If you are interested in participating in one of the WGs, please get in touch with the respective WG leaders or contact Bernd Funke <bernd\_at\_iaa.es> or Wenjuan Huo <whuo\_at\_geomar.de>. These sessions are open to all and all are encouraged to attend and participate in the discussions.

### **WG1: Solar and geomagnetic forcing datasets**

Co-leads: Bernd Funke, Dan Marsh and Natalie Krivova

### **WG2: Solar influence on climate (solar signals, possible mechanisms and processes) and near-term prediction**

Co-leads: Wenjuan Huo, Tobias Spiegl, and Timo Asikainen

## **WG3: Statistical analysis and methodological aspects**

Lead: Aleš Kuchař