

TSIS News

Total & Spectral Solar Irradiance Sensor – NASA missions to study solar irradiance



October 2024

2025 Sun-Climate Symposium –

Please mark your calendar today to join us in late March 2025! Our focus topic for this 4-day symposium is *“Exploring the Sun’s Role in a Changing Cryosphere”*. This meeting is sponsored by the Sun-Climate Research Center – a joint venture between NASA GSFC and LASP at the University of Colorado.

Call for Abstracts ☀ Due January 31

The abstract form and submittal instructions are available on the meeting website. We encourage your participation and hope that you will send in an abstract and share this announcement with your colleagues. Invited speakers will be posted to the website as they accept. Join us for a great meeting in a beautiful location!

Science Overview

The Sun plays a central role in Earth’s climate system, including in the sensitive and rapidly changing cryosphere. This 2025 science conference titled “Exploring the Sun’s Role in a Changing Cryosphere” will focus on five key science topics. First, understanding solar-variability measurements and models over all timescales are important for more accurate estimates of the solar influences on Earth’s climate systems, such as on temperature variations and atmospheric and ocean circulation changes on both global and regional climate patterns. Second, the changes of snow and ice cover in polar regions are key indicators of global climate change, and understanding their climatic variability and complex feedbacks are crucial for predicting future climate scenarios. Third, polar region measurements from field and satellite observations are providing evidence that the polar environment is undergoing significant transitions in the current climate epoch. Fourth, diverse paleoclimate data records, such as ice core samples and tree rings, can highlight natural climate variability and the drivers of climate change over extended timescales and can reveal how solar activity, volcanic activity, and other climate drivers have influenced global and regional climate patterns over centuries to millennia. Finally, new developments in observational remote-sensing techniques and climate modeling are essential for advancing our understanding of Earth’s climate system that includes improved understanding of solar variability and cryosphere / polar climate changes.

Sessions and Descriptions

The agenda for this interactive meeting consists of invited and contributed oral and poster presentations. Five sessions will focus on the five key science topics.

1. Solar Variability and Earth-Climate Influences

The Sun’s main influence on the Earth’s climate systems is via solar irradiance. Variations in solar irradiance have been measured from space for 46 years and found to be predominantly due to solar-surface magnetic-flux emergence and decay. Models link solar irradiance variability to historical solar records, enabling irradiance reconstructions over the past thousands of years. This session will discuss solar-variability measurements and models over all timescales and their corresponding influences on Earth’s climate systems, such as temperature variations and atmospheric and ocean circulation changes.

Fairbanks, Alaska
March 31 – April 4, 2025

<https://lasp.colorado.edu/meetings/2025-sun-climate-symposium>

Join us! Submit your abstract today!

2. Dynamics of Polar Climate: Variability, Feedback, and Solar Influence

The polar regions are key indicators of global climate change, and understanding their climatic variability is crucial for predicting future climate scenarios. This session explores how changes in snow and ice cover, and terrestrial and oceanic processes coupled with the atmosphere, interact and contribute to the overall variability of the polar climate. For example, we want to investigate the importance of impurities and melt dynamics for the solar spectral absorption in snow and ice and its effects on albedo, which influences the energy balance and feedback mechanisms in polar regions. This session will bring together experts from solar radiation, cryospheric, atmospheric and oceanic sciences to identify critical knowledge gaps that need to be addressed to improve our understanding of polar climate dynamics.

3. Polar Region Measurements: field and satellite observations

A number of field missions have been conducted over the past decade to investigate the amplification of climate change over the polar regions. Satellite observations, some of which were specifically designed to probe the complex energy exchange between atmosphere and cryosphere, have provided additional observational evidence that the polar environment is undergoing significant transitions in the current climate epoch. This session invites papers on recent satellite observations and field missions directed toward polar climate research.

4. Paleoclimate Studies (centuries to millennia)

Diverse paleoclimate data records, such as ice core samples and tree rings, can highlight natural climate variability and the drivers of climate change over extended timescales. These records can reveal how solar activity, volcanic activity, and other climate drivers have influenced global and regional climate patterns over centuries to millennia. Results from paleoclimate studies are important for placing current climate change in a broader historical context and refining future climate projections.

5. Future Observations and Modeling for Advancing Climate Science

This session will focus on new developments in observational remote-sensing techniques and climate modeling that are essential for advancing our understanding of Earth's climate system that includes improved understanding of solar variability and cryosphere / polar climate changes. Improvements in both observational data and model simulations (e.g., spatial resolution, spectral content, radiometric calibration, and observation cadence and coverage) are critical for more accurate characterizations, attributions, and predictions. We will explore the role of new satellite missions and ground-based observations for monitoring climate variables and assess the integration of these new data sources into climate and Earth-system models.

Location / Venue

Located in beautiful Fairbanks, Alaska during the heart of the Aurora Season. At 65 degrees north latitude, the sky takes on a capricious life of its own – a canvas for the aurora borealis, the midnight sun, and sunsets and sunrises that last forever. There are serious mountain ranges, pristine rivers and lakes, abundant wildlife, and a certain poignant solitude found nowhere else on Earth!

<https://www.explorefairbanks.com/>



Logistics and Registration

The 2025 symposium will be held at the Wedgewood Resort and Conference Center in Fairbanks. Please note that we have an early reservation cut-off date at the hotel on January 29, 2025. Please be sure to make your travel plans early!



Join us for our welcoming reception on March 31, 2025 at 5pm at the Fountainhead Auto Museum located on the grounds of Wedgewood Resort.



Please visit the 2025 Sun-Climate Symposium website for logistical information, including maps and transportation options. Note that this meeting is planned as an in-person meeting.

<https://lasp.colorado.edu/meetings/2025-sun-climate-symposium>

***Please mark your calendar today to join us
March 31 to April 4 in 2025 for this interesting
symposium!***