2018 Sun-Climate Symposium

"The State of the TSI and SSI Climate Records at the Junction of the SORCE & TSIS Missions"

March 19-23, 2018 * Lake Arrowhead, California

Agenda and Presentations
(as of Jan. 23, 2018)

Monday, March 19

5:30 – 6:30 pm **Welcoming Reception**
6:30 – 8:00 pm **Dinner – Lake Arrowhead Dining Room**

Tuesday, March 20

7:30 – 8:30 am **Breakfast Buffet – Lake Arrowhead Dining Room**

8:30 – 9:00 am **Welcome/Introduction – TSIS/SORCE Status Overview**
Peter Pilewskie and **Tom Woods,** LASP, University of Colorado – Boulder

Session 1. The creation, significance, and applications of accurate CDRs

9:00 – 9:30 am **Bruce Wielicki (Invited),** NASA Langley Research Center, Hampton, VA
Designing the Climate Observing System of the Future

9:30 – 9:55 am **Alexei Pevtsov (Invited),** National Solar Observatory, Boulder, CO
Continuity and Preservation of Long-Term Synoptic Observations of the Sun

9:55 – 10:10 am **Serena Criscuoli,** National Solar Observatory, Boulder, CO
Properties of Magnetic Elements Derived from HMI Data Compensated for Scattered-Light

10:10 – 10:25 am **Andrés Munoz-Jaramillo,** Southwest Research Institute, Boulder, CO
Uncertainty, Under-counting, and Survey Inconsistency: Overlooked Issues while Working with Sunspot Area Data

10:25 – 10:40 am **Break**

10:40 – 11:05 am **John Bates (Invited),** John Bates Consulting, Inc., Arden, NC
Climate Data Records – History, Status, and Future

11:05 – 11:20 am **Charles Ichoku,** NASA Goddard Space Flight Center, Greenbelt, MD
Potential of Satellite SSI Measurements in Ground-based Remote Sensing of Atmospheric Aerosols and Trace Gases

11:20 – 11:45 am **Ann Windnagel (Invited),** National Snow and Ice Data Center in CIRES, University of Colorado, Boulder
Sea Ice Concentration CDR at the National Centers for Environmental Information

11:45 – 12:00 pm **David Kratz,** NASA Goddard Space Flight Center, Greenbelt, MD
TSI Data for the CERES CDR and the FLASHflux Environmental Data Record

12:00 – 1:00 pm **Lunch Buffet**

Special Guest

1:00 – 1:35 pm **Wenda Cao (Invited),** Big Bear Solar Observatory, Big Bear, CA
Big Bear Solar Observatory – Cool Toys for Observing Our Warm Star

Session 2. The state of the TSI and SSI climate records near the end of the SORCE Mission

1:35 – 2:00 pm **Werner Schmutz (Invited),** Physikalisch-Metorologisches Observatorium / World Radiation Center (PMOD/WRC), Davos Dorf, Switzerland
PREMOS/PICARD TSI Data Version 2 and New TSI Absolute Value from First Light of CLARA/NorSat-1

2:00 – 2:15 pm **Claus Fröhlich,** Davos Wolfgang, Switzerland
Twenty-One Years of Total Solar Irradiance from VIRGO on SoHO

2:15 – 2:30 pm **Greg Kopp,** LASP, University of Colorado – Boulder
The TIM Trilogy

2:30 – 2:55 pm **Thierry Dudok de Wit (Invited),** LPC2E, CNRS and University of Orléans, France
Methodology for Creating a TSI Composite

2:55 – 3:10 pm **Break**

3:10 – 3:25 pm **Erik Richard,** LASP, University of Colorado – Boulder
TSIS SIM Solar Spectral Irradiance: First Light and Early Observations

3:25 – 3:50 pm **Natalie Krivova (Invited),** Max Planck Inst. for Solar System Research, Göttingen, Germany
Update on the SATIRE Model

3:50 – 4:05 pm **Romaric Gravet,** LPC2E, CNRS and University of Orléans, France
Observational Constraints on Irradiance Models in the Ultraviolet

4:05 – 4:20 pm **Mija Lovric,** University of Rome, Tor Vergata, Italy
The Solar Ultraviolet Spectral Slope during the Last 270 Years

4:20 – 4:35 pm **Odele Coddington,** LASP, University of Colorado – Boulder
The NOAA/NCEI Solar Irradiance Climate Data Record: Recent Advances and Comparisons with Independent Datasets

4:35 – 4:50 pm **Tom Woods,** LASP, University of Colorado – Boulder
Decoupling Solar Variability and Instrument Trends using the Multiple Same-Irradiance-Level (MuSIL) Analysis Technique

4:50 – 5:15 pm **Margit Haberreiter (Invited),** PMOD/WRC, Davos Dorf, Switzerland
The New Observational Solar Spectral Irradiance Composite, Updates and Related Activities

5:15 – 5:30 pm **Sergey Marchenko,** Science Systems & Applications Inc. (SSAI); NASA GSFC, MD
Improved Long-Term Spectral Irradiance Record from Aura/OMI

5:30 – 5:55 pm **Luc Damé (Invited),** Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS), France
New Solar Reference Spectrum SOLAR-ISS and Variability from SOLAR/SOLSPEC – Nine Years of Observations of Solar Cycle 24

6:30 – 8:00 pm **Dinner – LACC Dining Room**

Wednesday, March 21

7:30 – 8:30 am **Breakfast Buffet**

Session 3. Next generation of solar and atmospheric observations

8:30 – 8:55 am **Elizabeth Weatherhead (Invited),** NOAA and CIRES, University of Colorado – Boulder
Optimizing Climate Observations for Targeted Results

8:55 – 9:20 am **Jeremy Werdell (Invited),** NASA Goddard Space Flight Center, Greenbelt, MD
The Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) Mission: Status, science, advances

9:20 – 9:45 am **Dave Diner (Invited),** Jet Propulsion Laboratory, California Inst. of Technology, Pasadena
Multi-Angle Imager for Aerosols (MAIA): Observations, measurements, and science

9:45 – 9:55 am **Break**

9:55 – 10:20 am **Dave Harber (Invited),** LASP, University of Colorado – Boulder
The Compact SIM (CSIM) and Compact TIM (CTIM) Instruments

10:20 – 10:35 am **Bill Swartz,** Johns Hopkins University/Applied Physics Lab, Laurel, MD
The RAVAN CubeSat Mission: On-orbit results

10:35 – 10:50 am **Wolfgang Finsterle,** PMOD/WRC, Davos Dorf, Switzerland
Absolute Radiometers on Upcoming TSI and Future EO Missions

10:50 – 11:05 am **Charles Kankelborg,** Montana State University, Bozeman
A FURST Look at the VUV Sun as a Star

11:05 – 11:30 am **Candace Carlisle and David Considine,** NASA GSFC and NASA Headquarters
Total and Spectral solar Irradiance Sensor (TSIS) NASA Project Status

11:30 am – 1:00 pm **Lunch Buffet**

Big Bear Solar Observatory

12:15 pm **Bus #1 departs LACC (arrives BBSO 1:15 pm)**

1:00 pm **Bus #2 departs LACC (arrives BBSO 2:00 pm)**

2:45 pm **Bus #1 departs BBSO (arrives LACC 3:45 pm)**

3:30 pm **Bus #2 departs BBSO (arrives LACC 4:30 pm)**

4:30 – 6:30 pm **Poster Session #1**

6:30 – 8:00 pm **Dinner – LACC Dining Room**

Thursday, March 22

7:30 – 8:30 am **Breakfast Buffet**

Session 4. Impacts of solar variability on the terrestrial environment during SC24

8:30 – 9:00 am **Lesley Gray (Invited),** University of Oxford, United Kingdom
Impact of the 11-Year Solar Cycle at the Earth's Surface

9:00 – 9:25 am **Gabriel Chiodo (Invited),** Columbia University, New York, NY
Logged Correlation between the NAO and the 11-Year Solar Cycle: Forced response or internal variability?

9:25 – 9:40 am **Jae Lee,** University of Maryland, Baltimore County, Baltimore, MD
Solar Cycle Variations in Mesospheric Carbon Monoxide

9:40 – 9:55 am **Dong Wu,** NASA Goddard Space Flight Center, Greenbelt, MD
Long-Term Variations in Terra/MISR Angular Radiance Differences: Solar or Aerosol Influences on Polar Cloudiness?

9:55 – 10:10 am **Shuhui Wang,** JIFRESSE, University of California, Los Angeles, CA
The 11-Year Solar Cycle Signal in Global NO_2 Measurements from NDACC Stations

10:10 – 10:35 am **Break**

10:35 – 11:00 am **Gavin Schmidt (Invited),** NASA Goddard Institute for Space Studies (GISS), New York, NY
Improvements in Coupled Ocean-Atmosphere Model Responses to Solar Activity

11:00 – 11:15 am **Liang Zhao,** IAP, Chinese Academy of Science (CAS), Beijing, China
Responses of the East Asian Monsoon to Solar Cycle

11:15 – 11:30 am **King-Fai Li,** University of Washington, Seattle; and University of California, Riverside
Quasi-biennial Oscillation and Solar Cycle Influences on Arctic O_3 Simulated by the WACCM4 Model

11:30– 11:45 am **Alexander Ruzmaikin,** Jet Propulsion Laboratory, California Inst. of Technology
The Solar Influence on the Earth's Climate at the Centennial Time Scale

11:45 – 12:00 pm **Robert Leamon,** University of Maryland, Baltimore; and NASA GSFC, Greenbelt, MD
Terminators: The Death of Solar Cycles and La Niña 2020

12:00 – 1:00 pm **Lunch Buffet**

Session 5. Stellar variability and connections to the Sun

1:00 – 1:30 pm **Jeffrey Hall (Invited),** Lowell Observatory, Flagstaff, AZ
The Variability of Sun-like Stars

1:30 – 1:55 pm **Travis Metcalfe (Invited),** Space Science Institute, Boulder, CO
Magnetic Evolution of Sun-like Activity Cycles

1:55 – 2:20 pm **Federico Spada (Invited),** Max-Planck Institute, Goettingen, Germany
Modeling Intrinsic Luminosity Variations Induced by Internal Magnetic Field in the Sun and in Solar-like Stars

2:20 – 2:35 pm **Veronika Witzke,** Max Planck Institute for Solar System Research, Göttingen, Germany
Long-Term Brightness Variability of Sun-like Stars

2:35 – 3:00 pm **Alexander Shapiro (Invited),** Max Planck Inst. for Solar System Res., Göttingen, Germany
How Typical is the Sun as a Variable Star

3:00 – 3:20 pm **Break**

3:20 – 3:35 pm **Richard Radick,** National Solar Observatory, Sunspot, NM
Activity and Variability Patterns for the Sun and Sun-like Stars

3:35 – 4:00 pm **Adam Kowalski (Invited),** National Solar Observatory and Univ. of Colorado, Boulder
Magnetic Activity and Flares in the Near-UV Exoplanet Host Stars

4:00 – 4:15 pm **Nina-Elisabeth Nemec,** Max Planck Institute for Solar System Research and Institute for Astrophysics, Georg-August-University; Göttingen, Germany
Solar Brightness Variations as they would be Observed by Kepler Telescope

4:15 – 4:30 pm **Miha Černetič,** Univ. of Ljubljana, Slovania; and Max Planck Inst., Göttingen, Germany
Fast Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models

4:30 – 4:55 pm **Eric Wolf (Invited),** LASP and ATOC, University of Colorado – Boulder
Climate and Habitability of Earth-like Extrasolar Planets

4:55 – 6:30 pm **Poster Session #2**

6:30 – 8:00 pm **Dinner Buffet – with special guest speaker**

Gary Rottman, LASP, University of Colorado – Boulder
How the Sun abandoned the Incas during the Maunder Minimum

Friday, March 23

7:30 – 8:30 am **Breakfast Buffet**

Session 6. What are the expectations for the next solar minimum and SC 25?

8:30 – 9:00 am **Scott McIntosh (Invited),** National Center for Atmospheric Res. / High Altitude Observatory, Boulder, CO
140 Years of the "Extended" SC: Predictability, Expectations for SUNSPOT Cycle 25…

9:00 – 9:25 am **Paul Charbonneau (Invited),** Département de Physique, Université de Montréal, Canada
Mechanisms of Solar Cycle Fluctuations

9:25 – 9:40 am **Leif Svalgaard,** Stanford University, Stanford, CA
Prediction of Solar Cycle 25

9:40 – 10:05 am **Frank Hill (Invited),** National Solar Observatory, Boulder, CO
Solar Cycle Activity Related to Local & Global Helioseismology

10:05 – 10:35 am **Break**

10:35 – 11:00 am **Ken Tapping (Invited),** National Research Council, Penticton, British Columbia, Canada
Solar Behavioural Changes as Identified Through Comparison of F10.7 with Other Indices: An Update

11:00 – 11:25 am **Dick Mewaldt (Invited),** California Institute of Technology, Pasadena
Galactic Cosmic Ray Intensities During the Space Age and the Holocene

11:25 – 12:00 pm **Meeting Wrap-Up / Summary**

12:00 – 1:00 pm **Lunch Buffet**

1:00 pm **Symposium Adjourned**

2018 Sun-Climate Symposium – Poster Sessions

Poster Session I: Wednesday, March 21, 4:30 – 6:30 pm
Poster Session II: Thursday, March 22, 4:55 – 6:30 pm

In alphabetical order (as of 23 January 2018):

1) **Logan S. Bayer,** BASIS Flagstaff Charter School and Lowell Observatory, Flagstaff, AZ
The Solar-Stellar Spectrograph: A 25-year Retrospective

2) **Stéphane Béland,** LASP, University of Colorado – Boulder
Update to the Whole Heliosphere Interval (WHI) Reference Spectrum

3) **Francesco Berrilli,** University of Rome, Tor Vergata, Italy
Impact of Solar Activity on Thermospheric Density during ESA's Gravity Mission GOCE

4) **Odele Coddington,** LASP, University of Colorado – Boulder
(SIST) How does the Sun's Spectrum Vary: A Summary of NASA SIST Research Activities

5) **Angela Cookson,** San Fernando Observatory, California State University, Northridge
The Future of Full-Disk Photometry at the San Fernando Observatory

6) **Angela Cookson,** San Fernando Observatory, California State University, Northridge
SFO Solar Indices, Irradiance Variation, and New TSI Composite – an Update

7) **Serena Criscuoli,** National Solar Observatory, Boulder, CO
Comparing Radiative Transfer Codes for Synthesis of Solar and Stellar Irradiance

8) **Luc Damé,** Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS), IPSL/CNRS/UVSQ, Guyancourt, France
The SoSWEET-SOUP (Solar, Space Weather Extreme EvenTs and Stratospheric Ozone Ultimate Profiles) Dual Constellation Mission

9) **Matthew DeLand,** Science Systems and Applications Inc. (SSAI), NASA GSFC, Greenbelt, MD
(SIST) Creation of the V2 Composite Solar Spectral Irradiance Data Set

10) **Leonid Didkovsky,** Space Sciences Laboratory, Univ. of Southern California, Los Angles
A Long-Term Dissipation of the EUV He II (30.4) Segmentation in the Full-Disk Solar Images

11) **Thierry Dudok de Wit,** LPC2E, CNRS and University of Orléans, France
Identifying and Extracting Undocumented Trends from Solar Irradiance Records

12) **Thierry Dudok de Wit,** LPC2E, CNRS and University of Orléans, France
Long-term Variability of the Spectral Irradiance cannot be Reconstructed from its Short-term Response

13) **Joshua P. Elliott,** LASP, Univ. of Colorado – Boulder
High-Spectral Resolution SORCE SOLSTICE Degradation Model and Improved Irradiance Data Products

14) **Wolfgang Finsterle,** Physikalisch-Metorologisches Observatorium / World Radiation Center (PMOD/WRC), Davos Dorf, Switzerland
A Concept for the Measurement of the Earth Radiation Imbalance

15) **Claus Fröhlich,** Davos Wolfgang, Switzerland
New Characterization of the PMO6V Radiometer of VIRGO/SoHO

16) **Romaric Gravet,** LPC2E, CNRS and University of Orléans, France
How can the Sun Explain the Correlations between CaII and Hα Emissions of Stars?

17) **Songyan Gu,** National Satellite Meteorology Center, Beijing, China
Introduction to China FY-3 Satellite Plans and SSIM (Solar Spectral Irradiance Monitor)

18) **Jerald Harder,** LASP, University of Colorado – Boulder
(SIST) Construction of a SORCE-based SSI Record for Chemistry Climate Models

19) **Jerald Harder,** LASP, University of Colorado – Boulder
Morphology and Time Evolution of Dark Facular regions in Cycle 23 and 24

20) **Cristoph Jacobi** (presented by Margi Haberreiter), Physikalisch-Metorologisches Observatorium / World Radiation Center (PMOD/WRC), Davos Dorf, Switzerland
Earth Energy Imbalance Explorer (EAGER)

21) **Andrew Jones,** LASP, University of Colorado – Boulder
New Solar EUV Irradiance Measurements from GOES-16

22) **Matthieu Kretzschmar,** LPC2E, CNRS and University of Orléans, Orléans, France
An Empirical Model of the Variation of the Solar Lyman-α Spectral Irradiance

23) **Mustapha Meftah,** Université Paris Saclay, CNRS, Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS), Guyancourt, France
SOLAR/SOLSPEC Ultraviolet SSI Variability from 5 April 2008 to 15 Feb. 2017

24) **Stergios Misios (presented by Lesley Gray),** University of Oxford, UK; and Aarhus University, Denmark
Observed and Modelled Influences of the 1-Year Solar Cycle on the Walker Circulation

25) **Jin Qi,** National Satellite Meteorological Center, Beijing, China
In-flight Performance of Solar Irradiance Monitor-II on-board FY-3C and its TSI data

26) **Erik Richard,** LASP, University of Colorado – Boulder
(SIST) Recalibration and Re-evaluation of the SORCE SIM Data Record

27) **Laura Sandoval,** LASP, University of Colorado – Boulder
The Latest SORCE-SIM Solar Spectral Irradiance Data Release and Initial Comparison with TSIS-SIM Measurements

28) **Martin Snow,** LASP, University of Colorado – Boulder
The Magnesium II Index: Continuing Progress on the Facular Proxy in the GOES-R Era

29) **Martin Snow,** LASP, University of Colorado – Boulder
(SIST) Solar Spectral Irradiance: lyman Alpha, MagnEsium II, and Sigma k proxiEs (SSIAMESE)

30) **Ken Tapping,** National Research Council, Penticton, British Columbia, Canada
A Multi-Wavelength Solar Flux Monitor

31) **Luis Eduardo Antunes Vieira,** Instituto Nacional de Pesquisas Espaciais, São José dos Campos, São Paulo, Brazil
Estimate of the Solar Luminosity Variability for Cycles 23 and 24

32) **Bob Weber,** Lower Peninsula, MI
The Solar Cycle Influence: TSI/Insolation causes Ocean Warming/Cooling

33) **Richard Willson,** ACRIM Team
Resolution of the Decadal Trend Differences between the ACRIM and PMOD Total Solar Irradiance Composite Time Series of Satellite Observations

34) **Jia Yue,** (presented by Jae Lee), Hampton University, Hampton, VA
Solar Cycle and Trend Global Gravity Waves Derived from 14 Years of SABER Temperature Observations (2001-2015)