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
Main Lodge – Pineview Room (Oral) and Lakeview Room (Posters)
(as of March 8, 2018)

Monday, March 19
5:30 – 6:30 pm Welcoming Reception (Main Lodge)
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 – A TSIS & SORCE Status Overview
Peter Pilewskie and Tom Woods, LASP, University of Colorado – Boulder

Session 1. The creation, significance, and applications of accurate CDRs
Session Chair: Odele Coddington & Peter Pilewskie, LASP, University of Colorado
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 – 10:40 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 Langley Research Center, Hampton, VA
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
Session Chairs: Marty Snow and Greg Kopp, LASP, University of Colorado

1:35 – 2:00 pm Werner Schmutz (Invited), Physikalisch-Meteorologisches 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 Happy 15th Birthday SORCE!

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

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
Session Chair: Erik Richard & Tom Sparn, LASP, University of Colorado

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
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<tr>
<th>Time</th>
<th>Speaker(s)</th>
<th>Affiliation</th>
<th>Topic</th>
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<tr>
<td>9:20 – 9:45 am</td>
<td>Dave Diner <em>(Invited)</em></td>
<td>Jet Propulsion Laboratory, California Inst. of Technology, Pasadena</td>
<td>Multi-Angle Imager for Aerosols (MAIA): Observations, measurements, and science</td>
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<td>9:45 – 9:55 am</td>
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<td>Break</td>
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<td>9:55 – 10:20 am</td>
<td>Dave Harber <em>(Invited)</em></td>
<td>LASP, University of Colorado – Boulder</td>
<td>The Compact SIM (CSIM) and Compact TIM (CTIM) Instruments</td>
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<td>10:20 – 10:35 am</td>
<td>Bill Swartz</td>
<td>Johns Hopkins University/Applied Physics Lab, Laurel, MD</td>
<td>The RAVAN CubeSat Mission: On-orbit results</td>
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<td>10:35 – 10:50 am</td>
<td>Wolfgang Finsterle</td>
<td>PMOD/WRC, Davos Dorf, Switzerland</td>
<td>Absolute Radiometers on Upcoming TSI and Future EO Missions</td>
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<td>10:50 – 11:05 am</td>
<td>Charles Kankelborg</td>
<td>Montana State University, Bozeman</td>
<td>A FURST Look at the VUV Sun as a Star</td>
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<td>11:05 – 11:20 am</td>
<td>Candace Carlisle</td>
<td>NASA GSFC</td>
<td>Total and Spectral solar Irradiance Sensor (TSIS) NASA Project Status</td>
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<td>11:20 – 11:30 am</td>
<td>David Considine</td>
<td>NASA Headquarters</td>
<td>A NASA Earth Science Division Perspective on Solar Irradiance</td>
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<td>11:30 am – 1:00 pm</td>
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<td>Poster Session I</td>
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<td>Dinner – LACC Dining Room</td>
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<td>Special Evening Presentation</td>
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<td>9:20 – 9:45 am</td>
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<td>Impacts of solar variability on the terrestrial environment during SC24</td>
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<td>Lesley Gray <em>(Invited)</em></td>
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<td>10:20 – 10:35 am</td>
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<td>Impact of the 11-Year Solar Cycle at the Earth's Surface</td>
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<td>Gabriel Chiodo <em>(Invited)</em></td>
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<td>10:50 – 11:05 am</td>
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<td>Lagged Correlation between the NAO and the 11-Year Solar Cycle: Forced response or internal variability?</td>
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<td>Jae Lee, University of Maryland, Baltimore County, Baltimore, MD</td>
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<td>11:20 – 11:30 am</td>
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<td>Solar Cycle Variations in Mesospheric Carbon Monoxide</td>
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<td>11:30 am – 1:00 pm</td>
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<td>Dong Wu, NASA Goddard Space Flight Center, Greenbelt, MD</td>
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<td>12:15 pm</td>
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<td>How the Sun abandoned the Incas during the Maunder Minimum</td>
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9:55 – 10:10 am  Shuhui Wang (presented by King-Fai Li), JIFRESSE, Univ. 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, College Park; 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
Session Chair: Doug Rabin and Charles Ichoku, NASA GSFC

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

1:30 – 1:55 pm  Travis Metcalf (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 – 3:30 pm  Break

3:30 – 3:55 pm  Adam Kowalski (Invited), National Solar Observatory and Univ. of Colorado, Boulder
Magnetic Activity and Flares in the Near-UV Exoplanet Host Stars

3:55 – 4:10 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

4:10 – 4:25 pm  Miha Černetič, Univ. of Ljubljana, Slovenia; and Max Planck Inst., Göttingen, Germany
Fast Spectral Synthesis for a New Generation of Solar and Stellar Brightness Variability Models

4:25 – 4:50 pm  Eric Wolf (Invited), LASP and ATOC, University of Colorado – Boulder
Climate and Habitability of Earth-like Extrasolar Planets

4:50 – 6:30 pm  Poster Session II

6:30 – 8:00 pm  Dinner – LACC Dining Room
**Friday, March 23**

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<td>7:30 – 8:30 am</td>
<td>Breakfast Buffet</td>
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| 8:30 – 9:00 am | **Session 6.**  
**What are the expectations for the next solar minimum and SC 25?**  
*Session Chair: Tom Woods, LASP, University of Colorado – Boulder*  
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 – 10:50 am | Jerald Harder, LASP, University of Colorado – Boulder  
*Morphology and Time Evolution of Dark Facular regions in Cycle 23 and 24* |
| 10:50 – 11:15 am | Dick Mewaldt (Invited), California Institute of Technology, Pasadena  
*Galactic Cosmic Ray Intensities During the Space Age and the Holocene* |
| 11:15 – 12:00 pm | Meeting Wrap-Up / Summary                                             |
| 12:00 – 1:00 pm | Lunch Buffet                                                          |
| 1:00 pm | Symposium Adjourned                                                    |
In alphabetical order (as of 07 March 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 Angeles
    *A Long-Term Dissipation of the EUV He II (30.4) Segmentation in the Full-Disk Solar Images*

11) Leonid Didkovsky, Space Sciences Laboratory, Univ. of Southern California, Los Angeles
    *SC 24 vs SC 23: A Decreased EUV Irradiance Measured by SOHO/SEM and TIMED/SEE*

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

13) 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*

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

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

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

17) Daniele Galuzzo, University of Rome, Tor Vergata, Italy
    *Climate and Radiative Properties of a Tidally-locked Planet around Proxima Centauri*
18) Romaric Gravet, LPC2E, CNRS and University of Orléans, France
How can the Sun Explain the Correlations between CaII and Hα Emissions of Stars?

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

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

21) Cristoph Jacobi (presented by Margit Haberreiter), PMOD/WRC, Davos Dorf, Switzerland
Earth Energy Imbalance Explorer (EAGER)

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

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

24) Steffen Mauceri, ATOC and LASP, University of Colorado – Boulder
Revision of the Sun’s Spectral Irradiance as Measured by SORCE SIM

25) Mustapha Meftah, Université Paris Saclay, CNRS, LATMOS, Guyancourt, France
SOLAR/SOLSPEC Ultraviolet SSI Variability from 5 April 2008 to 15 Feb. 2017

26) 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

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

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

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

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

31) Martin Snow, LASP, University of Colorado – Boulder
(SIST) Solar Spectral Irradiance: Lyman Alpha, Magnesium II, and Sigma k proxies (SSIAMESE)

32) Martin Snow, LASP, University of Colorado – Boulder
Tribute to Juan Fontenla

33) Tom Sparn, LASP, University of Colorado – Boulder
TSIS-2 and Beyond

34) Bob Weber, Lower Peninsula, MI
The Solar Cycle Influence: How TSI and Insolation Warm and Cool the Ocean

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

36) Jia Yue, (presented by Jae Lee), Hampton University, Hampton, VA