HEPPA SOLARIS 2012

High Energy Particle Precipitation in the Atmosphere
SOLAR Influences for SPARC (Stratospheric Processes and their Role in Climate)

4th International HEPPA Workshop
in conjunction with SPARC/SOLARIS

9-12 October 2012

National Center for Atmospheric Research, CG1, Boulder, Colorado, USA
http://www2.acd.ucar.edu/heppasolaris

AGENDA

Tuesday, 9 October

0730-0830 Registration (light refreshments)

0830-0900 Welcome and Introduction (**Cora Randall**)

0900-0930 Historical perspective on Sun-Earth connection research (**Harry van Loon**)

0930-1000 Overview of solar irradiance effects on the Earth's atmosphere and climate (**Katja Matthes**)

1000-1030 Break (light refreshments)

1030-1100 Geomagnetic activity: Structure & variability (**Richard Horne**)

1100-1130 Overview of EPP effects on the Earth's atmosphere (**Charles Jackman**)

1130-1200 One-slide poster summaries for poster session 1

1200-1400 Lunch

1400-1600 Poster Session 1 (light refreshments)

1600-1630 Solar influence on the troposphere through dynamical processes (**Kuni Kodera**)

1630-1700 EPP contribution to tropospheric variations (**Annika Seppälä**)

1700-1900 Ice Breaker reception (NCAR CG1)

Wednesday, 10 October

0830-0900 Registration (light refreshments)

0900-0930 The role of the ocean in solar irradiance effects on climate variations (**Jerry Meehl**)

0930-1000 Atmospheric coupling by planetary waves, gravity waves, and tides (**Larisa Goncharenko**)

1000-1030 Break (light refreshments)

1030-1050 Solar irradiance measurements (**Peter Pilewskie**)

1050-1110 Energetic particle measurements (**Craig Rodger**)

1110-1130 Effects of galactic cosmic rays on the atmosphere and climate (**Jón-Egill Kristjánsson**)

1130-1200 One-slide poster summaries for poster session 2

1200-1300 Lunch

1300-1500 Poster Session 2 (light refreshments)

1500-1800 Boulder Mountain Parks: 5-km hike from Chautauqua to NCAR Mesa Lab

1520 – The bus will leave CG1, taking all hikers to Chautauqua. From there you will enjoy a moderate hike on a very popular trail with spectacular scenery, ending up at the NCAR Mesa Lab for the banquet. Total elevation gain is 400 ft (122 m) over the 5-km distance. Wear comfortable foot gear (tennis shoes or running shoes are sufficient; hiking boots are not necessary). Much of the trail is rocky, but the footing is not difficult (e.g., it is appropriate for families with young children and babies in packs). The weather in Boulder in early October is generally sunny and warm, but can be quite variable. It would be a good idea to pack a warm sweater, hat, and rain jacket just in case.

For those who do not wish to do the hike, the bus will be back later for transportation to the Mesa Lab for the banquet:

1715 - Pick-up at Marriott Courtyard

1730 - Pick-up at CG1 (for Residence Inn folks)

1800-2100 Meeting Banquet at NCAR on the Mesa (Boulder casual dress)

2105 Bus leaves Mesa Lab to Marriott Courtyard and Residence Inn

Thursday, 11 October

0830-0900 Registration (light refreshments)

0900-0930 Atmospheric measurements relevant to SOLARIS & HEPPA: What we have and what we need (**Bernd Funke**)

0930-1000 One-slide poster summaries for poster session 3

1000-1200 Poster session 3 (light refreshments)

1200-1400 Lunch

1400-1430 Extreme EPP events & ice core controversy (**Nathan Schwadron**)

1430-1500 Chemistry-Climate Models: What we have and what we need (**Dan Marsh**)

1500-1530 HEPPA/SOLARIS outstanding questions (**Cora Randall & Katja Matthes**)

1530-1600 Break (light refreshments)

1600-1700 HEPPA/SOLARIS Strategic Planning Discussion

Expect heavy traffic in Boulder Thursday evening, as there is a University of Colorado football game.

Friday, 12 October (HEPPA & SOLARIS working groups)

0830-0900 Light refreshments

0900-1020 Joint HEPPA/SOLARIS discussion (ongoing activities and plans)

0900-0905 Welcome
0905-0915 HEPPA-MMI activities, Overview (B. Funke)
0915-0925 SOLARIS activities, Overview (K. Matthes)
0925-0935 IPCC activities (J. Meehl)
0935-0945 CAWSES activities (A. Seppälä)
0945-0955 ISSI Project "Quantifying hemispheric differences in particle forcing effects on stratospheric ozone" (D. Marsh)
0955-1020 Discussion: Synergies and connections of ongoing activities, joint goals (e.g. SSI and particle forcing recommendations)

1020-1050 Break (light refreshments)

1050-1200 Break-out sessions (one for HEPPA, one for SOLARIS)

HEPPA Presentations & discussion (I)

- Intercomparison of observations
- Intercomparison of ionization rates and recommendations for model forcing
- Model-measurement intercomparisons

SOLARIS Presentations & discussion (I)

- Report on recent activities regarding uncertainty in solar forcing
  - ACPD review paper
  - Availability of SSI data
- Definition of coordinated model studies
- White paper status

1200-1330 Lunch

1330-1500 Break-out sessions continued

1330-1430 **HEPPA** Presentations & Discussion (II)

- Model-measurement intercomparisons (continued.)
- Lessons learned
- Next steps (new simulations & intercomparisons, timeline, pubs, etc.)

1330-1430 **SOLARIS** Presentations & Discussion (II)

- Analysis of solar signal in CMIP5 simulations (coordination & paper plans)
- Long-term solar signal impact on climate
- Possible definition of future experiments (top-down vs. bottom-up)

1430-1500 **HEPPA** discussion of future activities beyond HEPPA-II
1430-1500 **SOLARIS** discussion of future activities and focus area

1500-1530 Break (light refreshments)

1530-1700 Joint HEPPA/SOLARIS discussion (reports)

1530-1545 Report on SOLARIS session
1545-1600 Report on HEPPA session
1600-1700 Discussion of future joint activities/projects (data requirements, joint website, next HEPPA-SOLARIS working meeting)

Poster Session Topics:

A. Solar and Particle Variability

B. Solar and Particle Effects on the Stratosphere and Above

C. Solar and Particle Effects on the Troposphere and Climate

D. Atmosphere and Ocean/Atmosphere Coupling

E. Tools for Assessing Solar and Particle Influences (new or improved measurements, models, etc).

Topics have been divided into Poster Sessions according to # submissions:

Session 1 (Tuesday, 1400-1600): Topic B

Session 2 (Wednesday, 1300-1500): Topics A, C

Session 3 (Thursday, 1000-1200): Topics D, E

See next pages for schedule of individual posters.

Thanks to our sponsors!

POSTER SESSION 1, Tuesday, 1400-1600

B. Solar & Particle effects on the stratosphere and above.

Name	Title	Poster #
Andersson, Monika	Precipitating radiation belt electrons and enhancements of hydroxyl in the mesosphere during 2004--2009	B1
Bailey, Scott	The Fate of Nitric Oxide Produced in the Polar Night	B2
Friederich, Felix	Searching for lower mesospheric NOx production due to electron precipitation during 2008	B3
Funke, Bernd	Quantification of the stratospheric EPP-NOy deposition during 2002-2012 from MIPAS observations	B4
Kavanagh, Andrew	Antarctic Mesospheric winds during energetic particle precipitation	B5
Kren, Andrew	Examining the stratospheric response to the solar cycle in coupled WACCM simulations with an internally generated QBO	B6
Lopez-Puertas, Manuel	On the effects of solar protons events on thermospheric temperature and nitric oxide concentration	B7
McDonald, Adrian	Using trace gas measurements to quantify the modulating influence of transport on the EPP-IE	B8
Merkel, Aimee	Impact of solar spectral variability on middle atmospheric O_3	B9
Newnham, David	Observations of nitric oxide in the Antarctic middle atmosphere during recurrent geomagnetic storms	B10
Nieder, Holger	NOx production due to energetic particle precipitation in the MLT region - results from an ion-chemistry model	B11
Orsolini, Yvan	Chemical and dynamical effects of EPP through nitric acid formation by ion cluster chemistry	B12
Paivarinta, Sanna Mari	Geomagnetic and dynamical effects on NOx and O3 in early 2005, 2009 and 2012 in the Northern Hemisphere	B13
Peck, Ethan	Solar Cycle Influences on Southern Hemisphere Polar Lower Stratospheric Ozone	B14
Reddmann, Thomas	Transport of NOx from the lower Thermosphere into the middle Atmosphere in the KASIMA Model	B15
Sheese, Patrick	Polar night NO densities in the MLT: Odin, ACE, & WACCM	B16
Smith, Madeleine	Using the "function M" to quantify the modulating influence of transport upon the EPP-IE	B17
Stiller, Gabriele	Middle stratospheric to lower mesospheric polar HNO3 during and after SPE compared to EEP production	B18
Urban, Jo	Direct and indirect effects of high energetic particle precipitation on middle atmospheric composition as observed by Odin	B19
Verronen, Pekka	Changes in HOx and NOy Species During Solar Proton Events - Analysis and Parameterization	B20
vonClarmann, Thomas	The solar proton events in 2012 as seen by MIPAS	B21
Wang, Wenbin	Effects of MEPED electrons and ions on global upper atmosphere and ionosphere during Jan. 15-23, 2005 storms	B22
Wieters, Nadine	Model simulations of the impact of energetic particle precipitation on the chemical composition and heating rates	B23

POSTER SESSION 2, Wednesday, 1300-1500

A. Solar & Particle Variability.

Name	Title	Poster #
Asikainen, Timo	Relationship between energetic particle precipitation and geomagnetic indices according to the corrected NOAA/POES database	A1
Clilverd, Mark	Determining energetic electron precipitation fluxes into the atmosphere	A2
deToma, Giuliana	Are Sunspots Disappearing?	A3
Hargreaves, John	Small-scale structure in trapped and precipitating medium-energy electrons in the noon sector	A4
Rodger, Craig	Energetic (>10keV) and relativistic electron (>500keV) precipitation into the mesosphere - evidence and limitations	A5
Turunen, Esa	Electron Precipitation in the Ionospheric D region during the IPY Period 2007-2008, as seen by the EISCAT Svalbard Radar	A6
Tyssoy, Hilde	Proton Precipitation into the Mesosphere as deduced from GOES and NOAA/POES Measurements during a SEP Event in January 2012	A7

C. Solar & Particle effects on the troposphere and climate.

Name	Title	Poster #
Fontenla, Juan	Atmospheric Effects of Solar Spectral Irradiance changes	C1
Gray, Lesley	Observed solar cycle signal in the North Atlantic / European Region	C2
Hood, Lon	The Sea Level Pressure Response to 11-Yr Solar Forcing: Observational Analyses and Comparisons With Model Simulations	C3
Horaginamani, Sirajuddin	Solar and suspended particle effects on the urban troposphere: A case study of South India	C4
Maliniemi, Ville	Effect of electron precipitation on winter time surface temperature and tropospheric circulation	C5
Matthes, Katja	Recent variability of the solar spectral irradiance and its impact on climate modelling	C6
Misios, Stergios	Projection of the 11-yr solar cycle signal on internal modes of the tropical Pacific decadal variability	C7
Roy, Indrani	Solar cycle signals in the Pacific and the issue of timings	C8
Spence, Harlan	On the Controversy of Extreme Solar Particle Event Signatures in Arctic Ice Cores: Sun to Ice?	C9
Tourpali, Kleareti	Stratospheric and tropospheric effects of solar activity in CCMVal-2 model simulations	C10

POSTER SESSION 3, Thursday, 1000-1200

D. Atmosphere & Ocean/Atmosphere coupling.

Collins, Richard	Wave Driven Circulation of the Wintertime Arctic Middle Atmosphere	D1
Hood, Lon	The Tropical Lower Stratospheric Response to 11-Yr Solar Forcing: Relation to the BDC and Dependence on the Phase of the QBO	D2
Orsolini, Yvon	Ozone at the secondary maximum during elevated stratopause events	D3
Randall, Cora	Auroral Energy Particle Precipitation: An Atmospheric Coupling Agent?	D4

E: Tools for assessing solar & particle influences.

Andronova, Natalia	Variability of the Polar Night Upper Stratosphere/Lower Mesosphere Region from MERRA, SOCOL and HAMMONIA	E1
Asikainen, Timo	Calibrated NOAA/POES energetic electron database	E2
Bender, Stefan	Nitric oxide descent in 2008/2009 detected with SCIAMACHY	E3
Dudnik, Oleksiy	Unexpected behavior of subrelativistic electron fluxes under Earth's radiation belts	E4
Harvey, Lynn	HEPPA-II Model Measurement Inter-comparisons with MLS and ACE	E5
Holt, Laura	Modeling transport of NOx created by energetic particle precipitation in WACCM	E6
Machol, Janet	Update on the NOAA Polar Satellite Program, Data, and Products	E7
Mitchell, Elizabeth	A model of auroral precipitation based on SuperMAG generalized auroral electrojet and substorm onset times	E8
Orphal, Johannes	MACE - the Mesosphere and Climate Experiment	E9
Sinnhuber, Miriam	Influence of ion chemistry on middle atmosphere composition during energetic particle precipitation events	E10
Wissing, Maik	Assumptions and limitations in modeling atmospheric ionization by precipitating particles	E11
Wissing, Maik	Atmospheric Ionization Module OSnabrück (AIMOS) - Overview and recent Improvements	E12