

ARCTAS Science Team Meeting
Virginia Beach Holiday Inn SunSpree Resort
Virginia Beach, VA
27-30 January 2009

Final Agenda

Tuesday, 27 January 2009

7:30 *Registration*

Mission Overview – Hal Maring, Chair

8:30 Welcome and charge (Jim Crawford/Jay Al-Saadi/Hal Maring, NASA HQ)

8:45 ARCTAS mission overview (Daniel Jacob, Harvard)

9:00 Meteorological overview (Henry Fuelberg, FSU)

9:15 Fires in the summer phase (Mike Fromm, NRL)

9:30 DC-8 overview (Hanwant Singh, ARC/Jack Dibb, UNH)

9:45 P-3 overview (Phil Russell, ARC/Tony Clarke, U. Hawaii)

10:00 B-200 overview (Rich Ferrare/Chris Hostetler, LaRC)

10:15 Data status and intercomparisons (Jennifer Olson/Gao Chen, LaRC)

10:30 *Break*

Partner activities – Hanwant Singh, Chair

10:45 NOAA ARCPAC (Chuck Brock, NOAA ESRL)

11:00 DOE ISDAC (Steve Ghan, DOE PNNL)

11:15 POLARCAT-GRACE (Hans Schlager, DLR)

11:30 POLARCAT-France (Jacques Pelon, CNRS)

11:45 ARC-IONS (Anne Thompson, Penn State)

12:00 *Lunch*

Long-range transport – Daniel Jacob, Chair

13:30 Airborne DIAL ozone, aerosol, and clouds measurements: Observations of large-scale transport of pollution and fire plumes, and low ozone depletion events (John Hair, LaRC)

13:45 Patterns of CO₂ and radiocarbon across high northern latitudes during IPY 2008 (Stephanie Vay, LaRC)

14:00 Pyrocumulus transport of biomass burning tracers into the upper troposphere (Jason St. Clair, Caltech)

14:15 Biomass burning signatures in the Arctic troposphere observed by PTR-MS (Armin Wisthaler, U. Innsbruck)

14:30 Interannual variability of boreal biomass burning and relationship with climate cycles (Allen Chu, GSFC)

14:45 Factors influencing tropospheric Hg^o in the North American Arctic during the spring and summer periods (Huiting Mao, UNH)

15:00 *Break*

Tuesday, 27 January 2009 (continued)

Aerosol sources and properties – Phil Russell, Chair

- 15:15 Ground-based lidar and aerosol measurements (Glenn Shaw, U. Alaska)
- 15:30 HSRL measurements of smoke during ARCTAS (Rich Ferrare, LaRC)
- 15:45 Combustion aerosol in the Arctic: Models, size-resolved microphysics, chemistry, and relationships to CCN variability (Tony Clarke, U. Hawaii)
- 16:00 Arctic aerosol chemistry and spectral optical characteristics: Mixtures of major ions with black, brown and organic carbon (Steve Howell, U. Hawaii)
- 16:15 The physical and chemical evolution of biomass burning aerosols (Jose Jimenez, U. Colorado)
- 16:30 Evolution of physical and chemical properties of black carbon emitted from biomass burning and fossil fuel combustion (Yutaka Kondo, U. Tokyo)
- 16:45 Aerosol optical properties measured from aircraft, satellites and the ground during ARCTAS summer - their relationship to aerosol chemistry and smoke type (Yohei Shinozuka, ARC)
- 17:00 An overview of ARCTAS CCN measurements (Thanos Nenes, Georgia Tech)
- 17:15 *Adjourn plenary session*
- 17:15 1st Poster Session (two hours)

Wednesday, 28 January 2009

7:30 *Registration*

Aerosols and radiation – Tony Clarke, Chair

- 8:30 Synchronicity of aerosol optical measurements acquired at Arctic and sub-Arctic sites during the ARCTAS spring campaign (Norm O'Neill, Université de Sherbrooke)
- 8:45 Airborne sunphotometer (AATS-14) measurements in ARCTAS – First insights into their combined use with satellite observations to study Arctic aerosol radiative effects (Jens Redemann, ARC)
- 9:00 Simultaneous retrieval of aerosol and surface properties over snow (Charles Gatebe, GSFC)
- 9:15 The implications of SSFR measurement uncertainty and surface heterogeneity for spectral surface albedo and spectral aerosol forcing measured during ARCTAS (Eike Bierwirth, LASP/CU)
- 9:30 ARCTAS Snow Albedo Experiment (Ralph Kahn, GSFC)
- 9:45 Arctic haze and fire plume impact on the actinic flux and photolysis frequencies (Sam Hall, NCAR)
- 10:00 *Break*

Wednesday, 28 January 2009 (continued)

Ozone- HO_x - NO_x chemistry – Jim Crawford, Chair

- 10:15 ARC-IONS meeting report (David Tarasick, Environment Canada)
- 10:30 Preliminary evaluation of HO_x during ARCTAS (Chris Cantrell, NCAR)
- 10:45 HO_x chemistry and comparison with box model results during ARCTAS (Xinrong Ren, U. Miami)
- 11:00 Overview of fast photochemistry: Preliminary box modeling results (Jennifer Olson, LaRC)
- 11:15 Comparison of the NO_y budget and $\text{NO}:\text{NO}_2$ ratio during ARCTAS and TOPSE (Ron Cohen, UC Berkeley)
- 11:30 HNO_3 budgets, transport, and mysteries (John Crouse, Caltech)
- 11:45 Prudhoe Bay plume emissions, transport, and chemistry (Tom Ryerson, NOAA ESRL)
- 12:00 *Lunch*

Halogen chemistry – Jack Dibb, Chair

- 13:30 ARCTAS BrO workshop report (Yuhang Wang, Georgia Tech)
- 13:45 Measurement of inorganic bromine from the DC-8 during ARCTAS (Greg Huey, Georgia Tech)
- 14:00 Satellite measurements of BrO during ARCTAS (Kelly Chance, Harvard-SAO)
- 14:15 Linking satellite BrO retrievals with ARCTAS field measurements (Yuhang Wang, Georgia Tech)
- 14:30 Reconciling aircraft, ground-based, and satellite observations of BrO during ARCTAS (Ross Salawitch, U. Maryland)
- 14:45 Airborne formaldehyde measurements during select Arctic boundary runs in ARCTAS and evidence for chlorine chemistry (Alan Fried, NCAR)
- 15:00 VOCs as indicators for halogen chemistry during ARCTAS I and the observation and implications of VOC trace gases during convective events in ARCTAS II (Eric Apel, NCAR/Dan Riemer, U. Miami)
- 15:15 *Break*

CTM analyses – Rich Ferrare, Chair

- 15:30 Source contributions and transport pathways to the Arctic from MOZART-4 and CAM-Chem (Louisa Emmons, NCAR)
- 15:45 Modeling and interpretation of ARCTAS observations at GSFC (Jose Rodriguez, GSFC)
- 16:00 GEOS-Chem model analyses of ARCTAS observations (Daniel Jacob, Harvard)
- 16:15 Intercomparisons of CALIPSO and model aerosols during ARCTAS (Dave Winker, LaRC)
- 16:30 Meteorological data products available during ARCTAS (Walter Sessions, FSU)
- 16:45 Working Groups – Organization and charge (Daniel Jacob, Harvard)
- 17:00 *Adjourn plenary session*
- 17:00 2nd Poster Session (2 hours)

Thursday, 29 January 2009

7:30 *Registration*

8:30 Working Groups meet – 1st Session (*includes a 15-minute break at 10:15*)

WG 1.1: Long-range transport (co-leads: Louisa Emmons, NCAR/Henry Fuelberg, FSU)

WG 1.2: Arctic haze/springtime aerosols (co-leads: Rich Ferrare, LaRC/Phil Russell, ARC)

WG 1.3: Ozone-HO_x-NO_x chemistry (co-leads: Anne Thompson, Penn State/Paul Wennberg, Caltech)

12:15 *Lunch*

13:15 Working Groups meet - 2nd Session (*includes a 15-minute break at 3:15*)

WG 2.1: Halogens (co-leads: Ross Salawitch, U Maryland/Yuhang Wang, Georgia Tech)

WG 2.2: Fire plumes (co-leads: Mike Fromm, NRL/Tony Clarke, U. Hawaii)

WG 2.3: CARB (co-leads: Don Blake, UCI/Ron Cohen, UC Berkeley)

17:00 *Adjourn Working Group sessions*

Friday, 30 January 2009

7:30 *Registration*

Wrap-up – Jay Al-Saadi, Chair

8:30 Working group reports – 1st Session (WG leads)

9:30 Working group reports – 2nd Session (WG leads)

10:30 *Break*

10:45 Cross-cutting issues, gaps, priorities, publication plans, AGU, action items (Daniel Jacob, Harvard)

11:15 Future mission plans (Hal Maring, HQ/Jay Al-Saadi, LaRC)

12:00 *Adjourn meeting*

1st POSTER SESSION – Tuesday, 27 January

Long-range transport

- Correlation estimates of chemical species derived from global ensemble analyses during ARCTAS field mission (Ave Arellano, NCAR)
- GEOS-5 CO simulations for ARCTAS: Case study (Huisheng Bian, GEST/UMBC)
- Large-scale NMHC and halocarbon distributions during the ARCTAS spring campaign: Comparison with TOPSE (Nicola Blake, UCI)
- Impact of biomass burning and midlatitude pollution during the ARCTAS/CARB field campaign: A regional-scale modeling study (Greg Carmichael, U. Iowa)
- Trace gas measurements and correlations during ARCTAS (Glenn Diskin, LaRC)
- Interannual variation of pollutant transport to high latitudes: 2003-2008 (Bryan Duncan, GSFC)
- An analysis of pollution transport events and pollution sources in the Arctic during ARCTAS using aircraft, satellite, and model CO (Jenny Fisher, Harvard)
- Methane simulation validation in the Arctic: A preliminary analysis using aircraft data from ARCTAS (DC-8) and Pre-HIPPO/START-08 (Christopher Pickett-Heaps, Harvard)
- CO measurements from the P-3B during ARCTAS (Jim Podolske, ARC)
- Why the East Siberian Arctic Shelf (ESAS) should be considered a new focal point for methane studies in terms of climate change (Shakhova Semiletov, U. Alaska Fairbanks)
- Impact of Alberta oil sands emissions during ARCTAS (Isobel Simpson, UCI)
- The Nittany Atmospheric Trailer and Integrated Validation Experiment (NATIVE) during the ARCTAS campaign (Anne Thompson, Penn State)
- Comparison of ARCTAS aircraft observations and NCAR MOZART4 model results: Three cases (Simone Tilmes, NCAR)
- Preliminary validation for AIRS CO profiles during ARCTAS and comparisons to INTEX-B measurements (Juying Warner, UMBC)

Aerosol sources and properties

- Aerosol characteristics in the Arctic atmosphere: ARCTAS DC-8 (Andreas Beyersdorf, LaRC)
- Airborne DIAL measurements observed during spring and summer phases of ARCTAS: Aerosols (Carolyn Butler, LaRC)
- MODIS aerosol optical depth retrieval validations and improvements over ARCTAS and CARB domains (Allen Chu, GSFC)
- Comparisons of GEOS-5 aerosol profiles to airborne HSRL measurements during ARCTAS (Peter Colarco, GSFC)
- Was there secondary organic aerosol formation in the Arctic boreal fires investigated during ARCTAS-2008? (Arsineh Hecobian, GIT)
- Aerosols observed by CALIPSO during ARCTAS (Chieko Kittaka, SSAI)
- Closure and growth kinetics of ARCTAS CCN measurements (Terry Latham, Georgia Tech)
- Long-range transport of black carbon during ARCTAS (L. Sahu, U. Tokyo)
- Distribution of sulfate aerosol over northern North America and the Arctic Ocean during April 2008 (Eric Scheuer, UNH)
- Using CALIPSO observations to evaluate model predictions of aerosol transport into the Arctic (Dave Winker, LaRC)

- Simulation of black carbon aerosol by GEOS-Chem and source attribution (Xiaolu Yu, Harvard)

Aerosols and radiation

- Research Scanning Polarimeter (RSP) observations during the ARCTAS summer deployment: An example (Brian Cairns, GISS)
- Airborne spectral measurements of surface-atmosphere anisotropy during ARCTAS/CARB mission (Charles Gatebe, UMBC)
- Snow anisotropy from CAR: Analysis of LSRT, MRPV, and AART BRF models (Alexei Lyapustin, GEST UMBC)
- Combining active and passive measurements for aerosol retrieval (Matteo Ottaviani, GISS)
- *In situ* measurements of snow optical and physical properties, Barrow, April 2008 (Christina Pedersen, Norwegian Polar Institute)
- Airborne sunphotometer (AATS-14) measurements in ARCTAS – First insights into their combined use with satellite observations to study Arctic aerosol radiative effects (Jens Redemann, ARC)
- High Spectral Resolution Lidar (HSRL) assessment of CALIPSO measurements from the ARCTAS field campaign (Ray Rogers, LaRC)
- Daily MODIS snow albedo and reflectance anisotropy during ARCTAS (Crystal Schaaf, Boston U.)

2nd POSTER SESSION – Wednesday, 28 January

Ozone- HO_x - NO_x photochemistry

- Large-scale NMHC and halocarbon distributions during the ARCTAS spring campaign: Comparison with TOPSE (Nicola Blake, UCI)
- Airborne DIAL measurements observed during spring and summer phases of ARCTAS: Ozone (Marta Fenn, LaRC)
- Transport and transformations of NO_y and other species in pyro-convection (David Knapp, NCAR)
- Behavior of OH, H_2SO_4 , and MSA during ARCTAS (Ed Kosciuch, NCAR)
- Measurements of NO_y , PAN, and NO_x at Summit, Greenland during the ARCTAS intensive and the following months (Louisa Kramer, Michigan Tech)
- Variations in the $\Delta O_3/\Delta CO$ ratio observed during ARCTAS (Qing Liang, GSFC/ORAU)
- Quantifying fire and pollution influence in ARC-IONS profiles (Alaina Luzik, Penn State)
- HO_x - NO_x chemistry in the polar spring: Comparison with TOPSE2000 (Jingqiu Mao, Harvard)
- Measurement of OH reactivity during ARCTAS (Jingqiu Mao, Penn State)
- Spring and summer tropospheric ozone from ozonesondes during ARCTAS (ARCIONS) (Sam Oltmans, NOAA ESRL)
- Intercomparisons between TES ozone and ARC-IONS sondes (John Worden, JPL)

Halogen chemistry

- Modeling the effect of stratospheric transport on total column BrO (Tim Canty)

- Aerosol chemical composition with the HR-ToF-AMS during ARCTAS (Mike Cubison, CU)
- An update on measurements of soluble bromide and aerosol-associated bromide from the DC-8 during ARCTAS (Jack Dibb, UNH)
- Max-DOAS observations of BrO in Barrow, AK during Spring 2008 (Deanna Donohoue, U. Alaska Fairbanks)
- Measurements of C₂-C₆ hydrocarbons during ARCTAS: Indirect evidence of springtime halogen radical chemistry (Katrine Gorham, UCI)
- Daily ozonesonde launches at Barrow, Alaska: 1-21 April 2008 (Bryan Johnson, NOAA/ESRL)
- Depletion of Hg⁰ near the surface and in the stratosphere (Su Youn Kim, UNH)
- Current progress on stratospheric BrO retrievals from SCIAMACHY limb (Justin Parrella, Harvard)
- Arctic surface ozone depletions from ozonesondes (David Tarasick, Environment Canada)

Fire plumes

- NO_x emission and PAN formation in boreal forest fire smoke observed during ARCTAS (Matt Alvarado, Harvard)
- Biomass burning chemical signatures: Source and age dependencies (Chelsea Corr, UNH)
- Boreal wildfires as a source of Hg⁰ to the troposphere (Bob Talbot, UNH)

CARB

- MODIS aerosol optical depth retrieval validations and improvements over ARCTAS and CARB domains (Allen Chu, GSFC)
- California coastal aerosol during ARCTAS-CARB: Ships, wildfires, and background air (Tony Clarke, U. Hawaii)
- Analysis of boundary layer methane, nitrous oxide, carbon dioxide, and carbon monoxide measurements over California during the ARCTAS/CARB flights (Glenn Diskin, LaRC)
- Is soluble organic aerosol (SOA) production in Los Angeles, CA different from other cities? (Arsineh Hecobian, Georgia Tech)
- AVIRIS remote sensing and validation of methane from natural marine seeps, feedlots, and rice paddies (Ira Leifer, UCSB)
- Impact of wildfires on California air quality from MOZART and WRF-Chem simulations (Gabi Pfister, NCAR)
- HO_x chemistry and ozone production during ARCTAS-CARB phase (Xinrong Ren, U. Miami)
- The influence of anthropogenic aerosols on the atmosphere of the Los Angeles Basin (Lee Thornhill, LaRC)
- VOC distributions over California (Tomás Mikoviny and Armin Wisthaler, U. Innsbruck)
- Characterization of VOC emissions from various components of dairy farming and their effect on San Joaquin Valley air quality (Melissa Yang, UCI)