


# 16th Conference on Planned and Inadvertent Weather Modification (Expanded View)

\*  - Indicates paper has been withdrawn from meeting

[Compact View of Conference](#)

## Sunday, 9 January 2005

**7:30 AM, Sunday**

Short Course Registration

**9:00 AM-5:40 PM, Sunday**

Conference Registration

## Monday, 10 January 2005

**6:00 AM, Monday**

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**7:30 AM, Monday**

Registration continues through Thursday, 13 January

**9:00 AM-10:00 AM, Monday**

[Session 1 all aspects of planned and inadvertent weather modification](#)

Organizers: Joseph H. Golden, Forecast Systems Lab, NOAA, Boulder, CO; Patrick Sweeney, Weather Modification, Inc., Fargo, ND

- 9:00 AM 1.1 [A plan for the next phase in weather modification science and technology development](#)   
**T. P. DeFelice**, AIS, Sykesville, MD
-  1.2 [Learning the Chemistry of the Environment by the Study of Weather](#)  
**Glendora Carter**, Jarvis Christian College, Hawkins, TX
- 9:15 AM 1.3 [A PDA-based record keeping system for cloud seeding operations](#)    
**Paul T. Moen**, North Dakota State Water Commission, Bismarck, ND; and D. W. Langerud
- 9:30 AM 1.4 [Satellite Retrieved Microphysical Properties of AgI Seeding Tracks in Supercooled Layer Clouds](#)   
**Daniel Rosenfeld**, The Hebrew University of Jerusalem, Jerusalem, Israel; and X. Yu and J. Dai
- 9:45 AM 1.5 [Hail Metrics Using Conventional Radar](#)    
G. Brant Foote, NCAR, Boulder, CO; and **T. W. Krauss** and V. Makitov







**10:15 AM, Monday**

Coffee Break in Poster Session Room

**10:45 AM-11:45 AM, Monday**

**Session 2** [inadvertent weather modification on urban effects on fog, clouds, precipitation, runoff, and lightning](#)

Organizers: Robert D. Bornstein, San Jose State University, San Jose, CA; Don A. Griffith, North American Weather Consultants, Sandy, UT

- 10:45 AM 2.1 [Urban and Industrial Aerosols Impacts on Precipitation](#)   
**Daniel Rosenfeld**, The Hebrew University of Jerusalem, Jerusalem, Israel
- 11:00 AM 2.2 [Separation between cloud seeding and air pollution effects](#)    
**Amir Givati**, Hebrew University, Jerusalem, Israel; and D. Rosenfeld
- 11:15 AM 2.3 [Modeling the impacts of urban aerosol on convection and precipitation](#)    
**Susan C. Van den Heever**, Colorado State University, Fort Collins, CO; and W. R. Cotton
- 11:30 AM 2.4 [Analysis of Upper Air, Ground and Remote Sensing Data for the ATLAS Field Campaign in San Juan, Puerto Rico](#)    
**Jorge E. Gonzalez**, Santa Clara University, Santa Clara, CA; and J. Luvall, D. Rickman, D. E. Comarazamy, and A. J. Picon
- 11:45 AM 2.5 [MM5 simulations of uhi-induced thunderstorms over Atlanta, GA](#)  
**Bob Bornstein**, San Jose State Univ., San Jose, CA; and K. J. Craig and Q. Lin






**12:00 PM-1:30 PM, Monday**

Lunch Break

**2:30 PM-4:00 PM, Monday**

Formal Poster Viewing with Coffee Break

**2:30 PM-4:00 PM, Monday****Poster Session 1** [Poster Session](#)

- P1.1 [Modeling the complex interactions among urban climate, air quality, and adaptive/reactive human response](#)   
**David J. Sailor**, Portland State University, Portland, OR; and R. D. Bornstein, L. George, J. Semenza, and H. Taha
- P1.2 [Probe into the Hail Formation Mechanism on the Northeastern Border of Qinghai-Xizang Plateau and its Neighbourhood](#)   
**Kang Fengqin**, Lanzhou Institute of Arid Meteorology, Lanzhou, Gansu, China; and Z. Qiang and G. Xueliang
- P1.3 [Fog Aerosol analysis and cloud seeding experiments at DaeGwalryoung, Korea.](#)   
**Sung-Nam Oh**, Meteorological Research Institute / Korea Meteorological Administration, Seoul, South Korea; and Y. H. Kim, J. Y. Kim, G. M. Park, J. Y. Jeong, and H. Y. Yang
- P1.4 [Impacts of Cloud Seeding on COOP Precipitation Measurements in the Southern Plains](#)   
**Bradley G. Illston**, Oklahoma Climatological Survey/Univ. of Oklahoma, Norman, OK
-  P1.5 [Evaluation of Hail Suppression Operations on the North Dakota Cloud Modification](#)

[Project 1985-2003](#)**Aaron Gilstad**, North Dakota Atmospheric Resource Board, Bismarck, ND

- P1.6 [Effect of air pollution on precipitation along the Front Range of the Rocky Mountains](#) 


**Israel L. Jirak**, Colorado State University, Fort Collins, CO; and W. R. Cotton and W. L. Woodley

- P1.7 [Application of a hydrologic model to assess the effects of cloud seeding in the Walker river basin of Nevada](#)


**Douglas P. Boyle**, DRI, Reno, NV; and G. Lamorey and A. Huggins

- P1.8 [A Model Based Feasibility Study of Glacionic Seeding during a Winter Orographic Precipitation Event in Wyoming](#) 

**Tara Jensen**, NCAR, Boulder, CO; and R. Brintjes, D. Breed, W. D. Hall, B. Boe, and K. Ross

-  P1.9 [A look at thunderstorm indices and their ability to discriminate between seedable and non-seedable days in the Southern Ogallala Aquifer Rainfall \(SOAR\) program target area](#)


**Caleb J. Midgley**, SOAR program, Plains, TX; and D. Axisa

- P1.10 [Three-dimensional modeling of North Dakota clouds using a new microphysical scheme with explicit treatment of atmospheric aerosols and hygroscopic seeding effects](#) 

**Richard D. Farley**, South Dakota School of Mines and Technology, Rapid City, SD; and M. R. Hjelmfelt and S. L. Hansen

- P1.11 [THE UNFORTUNATE ACADEMY REPORT ON WEATHER MODIFICATION](#) 

**Roland List**, University of Toronto, Toronto, Ontario, Canada

- P1.12 [Summary of trace chemical and physical measurements of snowfall in two Nevada cloud seeding target areas](#) 

**Arlen W. Huggins**, DRI, Reno, NV; and P. R. Edwards and J. R. McConnell


- P1.13 [The Magnifying Glass Versus The Rubber Stamp—The Role of Statistics in Weather Modification](#) 

**Tressa L. Fowler**, NCAR, Boulder, CO; and B. G. Brown and E. Gilleland**4:00 PM-5:30 PM, Monday****Session 3** [development and refinement of conceptual models; application of numerical models to planned and inadvertent weather modification topics](#)


Organizer: Tara Jensen, NCAR, Boulder, CO

- 4:00 PM 3.1 [Purposeful tornado amelioration: Is the science ready?](#)







**Joseph H. Golden**, Forecast Systems Lab, NOAA, Boulder, CO

- 4:15 PM 3.2 [Modeled sensitivity of wintertime precipitation to CCN and GCCN concentrations](#) 

**Stephen M. Saleeby**, Colorado State University, Fort Collins, CO; and W. R. Cotton

- 4:30 PM 3.3 [Impacts of urban and rural land-use and land-cover changes on MM5 simulated meteorological conditions in the Houston-Galveston region](#) 

**Haider Taha**, Altostratus, Inc., Martinez, CA; and R. D. Bornstein, R. Balmori, and J. Noble

- 4:45 PM 3.4 [Dynamic climatology—a tool for assessing cloud seeding operations in water resource management](#)    
**William J. Badini**, HDR Engineering Inc., Denver, CO; and J. F. Henz
- 5:00 PM 3.5 [A case study of mesoscale and plume dispersion modeling for a February 2004 cloud seeding event in the Walker River Basin of California/Nevada](#)    
**Arlen W. Huggins**, DRI, Reno, NV; and D. Koracin, D. Podnar, and M. Xiao
- 5:15 PM 3.6 [Controlling the evolution of a simulated hurricane through optimal perturbations: Initial experiments using a 4-D variational analysis system](#)    
**R. N. Hoffman**, AER, Lexington, MA; and C. Grassotti, J. M. Henderson, S. M. Leidner, G. Modica, and T. Nehrkorn

**5:30 PM, Monday**

Sessions End for the day

**5:30 PM-7:00 PM, Monday**

FORMAL OPENING OF EXHIBITS WITH RECEPTION (CASH BAR)












**7:30 PM, Monday**

Suki Manabe Symposium Banquet

**Tuesday, 11 January 2005****8:30 AM-10:00 AM, Tuesday**

**Session 4** [Planned weather modification including promising new technologies such as the recent hygroscopic and winter orographic seeding experiments and evaluation methods for seeding experiments](#)

Organizers: William L. Woodley, Woodley Weather Consultants, Littleton, CO; Darin W. Langerud, North Dakota Atmospheric Resource Board, Bismarck, ND

- 8:30 AM 4.1 [The Santa Barbara Cloud Seeding Project in Coastal Southern California, Operations and Research Spanning More Than 50 Years](#)    
**Don A. Griffith**, North America Weather Consultants, Sandy, UT; and M. E. Solak, R. B. Almy, and D. Gibbs
- 8:45 AM 4.2 [Observations of rime icing in the Wasatch Mountains of Utah: implications regarding winter season cloud seeding](#)    
**Mark E. Solak**, North American Weather Consultants, Sandy, UT; and D. P. Yorty and D. A. Griffith
- 9:00 AM 4.3 [The search for the optimal size of hygroscopic seeding particles](#)    
**Ronen Lahav**, The Hebrew University, Jerusalem, Israel; and D. Rosenfeld
- 9:15 AM 4.4 [Precipitation Evaluation of the North Dakota Cloud Modification Project \(NDCMP\) using the ND ARBCON Precipitation Data](#)    
**Paul A. Kucera**, University of North Dakota, Grand Forks, ND; and E. Wise
- 9:30 AM 4.5 [The Snowy Precipitation Enhancement Research Program](#)    
**Mark F. Heggli**, Innovative Hydrology, Auburn, CA; and B. Dunn, A. W. Huggins, J. Denholm, L. Angri, and T. Luker
- 9:45 4.6 [Artificial Atmospheric Ionization: A Potential Window for Weather Modification](#) 

AM

**Phillip Kauffman**, Ionogenics Corp., Bedford, MA; and A. Ruiz-Columbié**11:00 AM-12:00 PM, Tuesday****Session 5** [recent developments in understanding natural cloud processes and aerosol cloud interactions and how they might be modified - Part 1](#)

Organizer: Roelof T. Brientjes, NCAR, Boulder, CO

- 11:00 AM 5.1 [The impacts of Saharan dust on Florida storm characteristics](#)   
**Susan C. van den Heever**, Colorado State University, Fort Collins, CO; and G. G. Carrió, W. R. Cotton, and W. C. Straka
- 11:15 AM 5.2 [Modifying particle size distributions in hygroscopic cloud Seeding flares and the effects on the warm rain process in convective clouds](#)  
**Vidal Salazar**, NCAR, Boulder, CO; and R. T. Brientjes and J. Gunkelman
- 11:30 AM 5.3 [On the stochastic nature of droplet growth by coalescence](#)  
**A. B. Kostinski**, Michigan Technological University, Houghton, MI
- 11:45 AM 5.4 [The Relationship between Cloud Droplet Distributions and Ambient Aerosol Populations in a Subtropical Desert Region](#)  
**Tara Jensen**, NCAR, Boulder, CO; and V. Salazar, D. Breed, R. Brientjes, S. Piketh, A. Al Mangoosh, and A. Al Mandoos

**11:30 AM-1:30 PM, Tuesday**

Exhibits Open

**12:15 PM, Tuesday**


Lunch Break



**1:30 PM-3:00 PM, Tuesday****Session 6** [RECENT DEVELOPMENTS IN UNDERSTANDING NATURAL CLOUD PROCESSES AND AEROSOL CLOUD INTERACTIONS AND HOW THEY MIGHT BE MODIFIED - Part 2](#)

Organizers: Daniel Rosenfeld, The Hebrew University of Jerusalem, Jerusalem 91904 Israel; Daniel Breed, NCAR, Boulder, CO

- 1:30 PM 6.1 [Aerosol Intercations on Clouds with emphasis on the Arabian peninsula](#)   
**Roelof T. Brientjes**, NCAR, Boulder, CO; and V. Salazar, D. Breed, J. Li, P. R. Buseck, T. Jensen, S. Piketh, and J. Reid
- 1:45 PM 6.2 [On the Documentation of Microphysical Signatures Following the Base-Seeding of Texas Convective Clouds Using Salt Micro-Powder](#)   
**William L. Woodley**, Woodley Weather Consultants, Littleton, CO; and D. Rosenfeld, D. Axisa, R. Lahav, and G. Bomar
- 2:00 PM 6.3 [Studies of Background Cloud Condensation Nucleus Population Characteristics in the Northern High Plains](#)   
**A. Detwiler**, South Dakota School of Mines & Technology, Rapid City, South Dakota
- 2:15 PM 6.4 [The mechanism of increase of precipitation efficiency by large aerosols and the optimum size of seed particles](#)

**Khain Alexander**, The Hebrew University of Jerusalem, Jerusalem 91904, Israel; and D. Rosenfeld, A. Pokrovsky, and Y. Segal

2:30 PM 6.5 [Saharan dust and optical properties of anvil-cirrus clouds](#)   
**Gustavo Carrió**, Colorado State University, Fort Collins, CO; and S. C. Van den Heever and W. R. Cotton

2:45 PM 6.6 [The Southern Plains Experiment in Cloud Seeding of Thunderstorms for Rainfall Augmentation \(SPECTRA\) project: Operational tools used towards verifying glaciogenic and hygroscopic seeding conceptual models, case studies and preliminary results.](#)  

**Duncan Axisa**, SOAR program, Plains, TX; and D. Rosenfeld, J. L. Santaripa, W. L. Woodley, and D. R. Collins

### 3:00 PM, Tuesday

Coffee Break in Exhibit Hall

### 3:30 PM-5:30 PM, Tuesday

[Joint Session 6 the water cycle in arid lands \(Joint with 16th Conference on Planned and Inadvertent Weather Modification and AMS Forum on Living with a Limited Water Supply\)](#)


Chair: John L. Wilson, New Mexico Institute of Mining and Technology, Socorro, NM

3:30 PM J6.1 [Topographic and Ecosystem Controls on Soil Moisture Distribution in the SMEX04-NAME Transect Study, Northern Sonora, Mexico](#)

**Enrique R. Vivoni**, New Mexico Institute of Mining and Technology, Socorro, NM; and H. A. Gutierrez, B. Brooks, C. A. Aragon, A. Rinehart, R. Wyckoff, C. J. Watts, J. C. Rodriguez, and T. J. Jackson

3:45 PM J6.2 [Seasonal strategies to enhance groundwater recharge in hyper-arid zones](#)

**David N. Yates**, NCAR, Boulder, CO; and A. Mangoosh, M. AlMalki, and R. T. Brintjes

4:00 PM J6.3 [Refinement of Numerical Modeling and technology of Global and Regional Water Cycle](#)  

**Hiromasa Ueda**, Disaster Prevention Research Institute, Kyoto University, Uji City, Kyoto, Japan; and T. Yamagata, R. Ohba, H. Sakuma, S. Behera, M. Mujumdar, and A. Chakraborty

4:15 PM J6.4 [MM5 Simulations of Precipitation in the El Paso Del Norte](#)


**Karina Apodaca**, Howard University, Washington, DC; and D. V. R. Morris

4:30 PM J6.5 [Mitigating climate risks through hydro-climate information and adaptive water management institutions](#)

**Andrea J Ray**, NOAA/CDC, Boulder, CO

4:45 PM J6.6 [Influence of soil and vegetation on rainfall in coastal desert and mountainous area](#)  

**Ryohji Ohba**, Mitsubishi Heavy Industries, Fukahorimachi, Nagasaki, Japan; and H. Ueda, T. Adachi, T. Hara, R. W. A. Hutjes, H. W. Ter Maat, and B. Bisselink

5:00 PM J6.7 [Hydroclimatology of the North American Monsoon Region in Northwest Mexico](#)  

**David J. Gochis**, NCAR, Boulder, CO; and L. Brito-Castillo and W. J. Shuttleworth

- 5:15 PM J6.8 [Geostatistical Mapping of Mountain Precipitation Incorporating Auto-searched Effects of Terrain and Climatic Characteristics](#)  
Huade Guan, New Mexico Institute of Mining and Technology, Socorro, NM; and J. L. Wilson and O. Makhnin

**5:30 PM, Tuesday**

Sessions end for the day

**Wednesday, 12 January 2005**

**8:30 AM-9:30 AM, Wednesday**

[Joint Session 7 extreme water cycle events: floods and droughts \(JOINT BETWEEN THE LIMITED WATER SUPPLY SYMPOSIUM, THE 19TH CONFERENCE ON HYDROLOGY, and the 16th Conference on Planned and Inadvertent Weather Modification\) \(parallel with Session 3\) \(Joint between the AMS Forum: Living with a Limited Water Supply, the 19th Conf on Hydrology, and the 16th Conference on Planned and Inadvertent Weather Modification\)](#)

Chair: Kevin Trenberth, NCAR, Boulder, CO

- 8:30 AM J7.1 [Pro-active drought mitigation in the United States: practical and theoretical Insights from a national survey of state drought planning impact and vulnerability assessments](#)  
**Joseph S Abraham**, Department of Geography and Regional Development, the University of Arizona, Tucson, Arizona
- 8:45 AM J7.2 [Long-Lead Drought Forecasting – Lessons Learned in the Murray-Darling Basin, Australia](#)  
**A. P. Barros**, Duke University, Durham, NC; and G. Bowden
- 9:00 AM J7.3 [Analysis of Precipitation Variability and Meteorological Drought in the Apalachicola-Chattahoochee-Flint River Basin](#)  
**Gloria Arrocha**, Florida State University, Tallahassee, FL; and P. Ruscher
- 9:15 AM J7.4 [Agricultural drought: an index based on transpiration deficit](#)  
**Vittorio Marletto**, ARPA Emilia-Romagna, Bologna, Italy; and F. Zinoni and T. Tonelli

**9:30 AM, Wednesday**

Coffee Break

**10:00 AM-12:00 PM, Wednesday**

Presidential Forum

**11:30 AM-1:30 PM, Wednesday**

Exhibits Open


**12:00 PM, Wednesday**

Lunch Break

**1:30 PM-5:00 PM, Wednesday**

[Session 7 The Weather Damage Modification Program](#)

Organizer: Andrew Detwiler, South Dakota School of Mines and Technology, Rapid City, SD

- 1:30 PM 7.1 [The Weather Damage Modification Program](#)  **Steven M. Hunter**, U.S. Bureau of Reclamation, Denver, CO; and J. Medina and D. A. Matthews
- 1:45 PM 7.2 [Preliminary Results from a Randomized Winter Propane Seeding Experiment in Utah](#) **James A. Heimbach Jr.**, UNCA, Springvale, ME; and A. B. Super
- 2:00 PM 7.3 [An Overview of Results from the Nevada Weather Damage Modification Program](#) **Arlen W. Huggins**, DRI, Reno, NV; and D. Koracin, D. P. Boyle, and M. Xiao
- 2:15 PM 7.4 [North Dakota Research Foci under the Weather Damage Modification Program](#)  **Darin W. Langerud**, North Dakota Atmospheric Resource Board, Bismarck, ND; and C. A. Grainger, P. Kucera, E. Wise, A. Detwiler, R. D. Farley, F. J. Kopp, M. R. Hjelmfelt, P. L. Smith, and P. W. Mielke
- 2:30 PM Formal Poster Viewing with Coffee Break
- 4:00 PM 7.5 [Numerical Simulations of Snowpack Augmentation for Drought Mitigation Studies in the Colorado Rocky Mountains](#) **Curtis L. Hartzell**, Project Consultant for the Colorado Water Conservation Board, Denver, CO; and J. Busto, W. R. Cotton, R. McAnelly, G. Carrió, and L. Hjermstad
- 4:15 PM 7.6 [Overview of Research and Field Observation Activities in Texas and Oklahoma](#) **Kenneth Howard**, NOAA/NSSL, Norman, OK; and N. Kuhnert
- 4:30 PM 7.7 [The Southern Plains Experiment in Cloud seeding of Thunderstorms for Rain Augmentation \(SPECTRA\) Project: The Study and Validation of Rain-Enhancement Strategies for the Mitigation of Drought in the Southern U. S. Great Plains Region](#) **Duncan Axisa**, SOAR program, Plains, TX; and G. Bomar and W. L. Woodley
- 4:45 PM 7.8 [Weather Modification operations with NEXRAD level-II data and products](#)   J. T. Johnson, Weather Decision Technologies, Norman, OK; and C. Barrere, **M. D. Eilts**, N. Kuhnert, M. Mathis, and D. Axisa

**3:30 PM-6:30 PM, Wednesday**

Exhibits Open

**5:30 PM-6:30 PM, Wednesday**

Exhibits Open

**7:30 PM, Wednesday**

AMS Annual Awards Banquet

**Thursday, 13 January 2005**


**8:30 AM-9:45 AM, Thursday**

[Joint Session 8 Understanding and predicting the water cycle across scales \(Joint between the Limited Water Supply Symposium, the 19th Conference on Hydrology, and the 16th](#)









[Conference on Planned and Inadvertent Weather Modification\) \(parallel with Session 5\)](#)

Chair: Roy Rasmussen, NCAR, Boulder, CO

- 8:30 AM J8.1 [What is causing the decline in coastal rainfall in eastern Australia?](#)  
**Jozef Syktus**, Queensland Centre for Climate Applications, Indooroopilly, Queensland, Australia
- 8:45 AM J8.2 [Using Model-Assimilated Meteorological Data in Forecasting of Seasonal Runoff Based on Statistical Models for some Aral Sea Sub-catchments](#)    
**Mariya G. Glazirina**, Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland; and R. Schiemann, J. Gurtz, L. Vasilina, F. Pertziger, S. Dirren, and C. Schär
- 9:00 AM J8.3 [Trends and variability in precipitable water, and surface freshwater flux \(precipitation minus evaporation\).](#)  
**Kevin E. Trenberth**, NCAR, Boulder, CO; and J. Fasullo and L. Smith
- 9:15 AM J8.4 [Toward an improved understanding of the global fresh water budget](#)    
**Peter H. Hildebrand**, NASA/GSFC, Greenbelt, MD
- 9:30 AM J8.5 [Representing the Mesoscale Organization of Convection in Prediction Models](#)  
**Mitchell W. Moncrieff**, NCAR, Boulder, CO; and C. Liu

**11:00 AM-12:00 PM, Thursday**[Joint Session 9 Understanding and predicting the water cycle across scale part II \(Joint between the Limited Water Supply Symposium the 16th Conference on Planned and Inadvertent Weather Modification\)](#)

Chair: Enrique R. Vivoni, New Mexico Institute of Mining and Technology, Socorro, NM




- 11:00 AM J9.1 [The role of fine-scale landscape and soil-moisture variability in convection initiation](#)    
**Fei Chen**, NCAR, Boulder, CO; and S. B. Trier and K. W. Manning
- 11:15 AM J9.2 [The representation of hydrological processes across spatial scales using the NASA-GSFC Land Information System \(LIS\)](#)  
**Matthew Garcia**, UMBC/GEST and NASA/GSFC Hydrological Sciences Branch, Greenbelt, MD; and C. D. Peters-Lidard
- 11:30 AM J9.3 [Establishing the global fresh water sensor web](#)    
**Peter H Hildebrand**, NASA, Greenbelt, MD
- 11:45 AM J9.4 [An End-to-End Hydrometeorological Forecasting System](#)    
**John N. McHenry**, Baron Advanced Meteorological Systems, Raleigh, NC; and G. S. Wilson, K. P. Georgakakos, C. D. Peters-Lidard, and M. Matreata

**12:00 PM-3:45 PM, Thursday**

Exhibits Open

**1:30 PM-4:00 PM, Thursday**[Joint Session 10 Understanding and predicting the water cycle across scales part III \(Joint between the Limited Water Supply Symposium and the 16th Conference on Planned and Inadvertent Weather Modification\)](#)

Chair: Fei Chen, NCAR, Boulder, CO

- 1:30 PM J10.1 [The Time-Integrated Random Access NEXRAD Database \(TIRAND\): description and opportunity](#)   
**John N. McHenry**, Baron Advanced Meteorological Systems, Raleigh, NC; and W. T. Smith
- 1:45 PM J10.2 [Role of TRMM daily rain forcing of the Indian Ocean onto simulated intraseasonal-to-interannual climate changes in the tropics.](#)  
**C. Perigaud**, California Institute of Technology/JPL, Pasadena, CA
- 2:00 PM J10.3 [Precipitation development in convective clouds over the eastern Arabian Peninsula](#)    
**Daniel Breed**, NCAR, Boulder, CO; and T. Jensen, R. Brintjes, S. Piketh, A. Al Mangoosh, and A. Al Mandoos
- 2:15 PM J10.4 [Observed declines in mountain snowpack and changes in snow seasons](#)  
**Philip W. Mote**, University of Washington, Seattle, WA; and A. F. Hamlet, D. Lettenmaier, and M. P. Clark
- 2:30 PM J10.5 [Intercomparison among TRMM, GPCP1DD and Radar-AMeDAS](#)  
**Kenji Kamiguchi**, MRI, Tsukuba, Ibaraki, Japan; and A. Kitoh and M. Hosaka
- 2:45 PM J10.6 [How snowmelt onset varies with elevation](#)  
**Jessica D. Lundquist**, SIO/Univ. of California and USGS, La Jolla, CA
- 3:00 PM Coffee Break
- 3:30 PM J10.7 [Discovery of Annual and Seasonal Precipitation Micro-Climates within South Louisiana: Impacts for Coastal Management](#)  
**Suzanne Van Cooten**, NDBC, Stennis Space Center, MS; and D. E. Barbe
- 3:45 PM J10.8 [Detection and attribution of 20th Century hydrologic variations and change over western North America](#)  
**Shaleen Jain**, NOAA-CIRES Climate Diagnostics Center, Boulder, CO; and M. Hoerling

**5:30 PM, Thursday**  
Conference Ends

**6:00 PM, Thursday**  
Ed Lorenz Symposium Banquet

Browse the complete program of [The 85th AMS Annual Meeting](#)