

Request for Facility Support

CSU-CHILL Radar
Department of Atmospheric Science
Colorado State University
Fort Collins, CO 80523
Tel: (970) 491-8283/8680

A. User Identification

1. Name: Wen-Chau Lee (EOL), Jorgen Jensen (EOL), Steven Oncley (EOL), Al Rodi (Univ. Wyo.), Steve Rutledge (CSU)
2. Title: ASP Summer Colloquium
3. Date: 1/15/2009
4. Address: PO Box 3000, Boulder, CO 80307
5. Affiliation: NCAR/EOL
6. Phone: 303-497-8814
FAX: 303-497-2044
Email: wenchau@ucar.edu
7. Other Persons and Affiliations (attach list if necessary):
8. Project Title: ASP Summer Colloquium
9. Brief Abstract of Proposed Field Program:

B. General Information

10. Funding Agency: NCAR/ASP Contract Officer: Maura Hagan
Proposal in Draft Form
Pending Negotiations
In Review
Approved
11. Location of Field Program: Front Range, CO
12. Start and End Dates of Field Program: 5-6 June 2009 +/- 2 days
13. Number of Personnel You Will Bring to the Field: 45
14. Typical operations (daily ops hrs): Daytime, 0500-2100
Relation of Operations Hours to Weather: Daytime, related to boundary layer development
15. CHILL provides a Scientific Project Manager for all field programs to assist in experiment design, site selection, field coordination and general liaison with Principal Investigators.
Does the proposed project require a CHILL scientist resident at the field site for the duration of the experiment? Yes No
16. Describe the other observational facilities involved in your program. (e.g. aircraft, surface sensors) NCAR C-130, S-Pol, MISS, ISFS, Univ. Wyo. King-Air

C. Requirements

17. Radar Parameters (be as specific as possible)

PRF: 1000

Gate Spacing: 150m

Types of Variable Recorded Scans: (velocity, reflectivity, phidp, ldr, rhohv(0), differential reflectivity: all of the above

Number of Pulses Per Integration Cycle: 64-128

Azimuth Interval for Processor Outputs (DEG): 1 deg

Time Series Data Collection Mode (Y or N): Prefer Y

18. List of auxiliary equipment you will bring (please include description, volume, power, and voltage): None

19. Communication Requirements (including the need for sending radar data to a remote site)

CHAT, VCHILL

20. Polarization Diversity: Yes (X) No ()

21. Data:

Estimated number of radar observations hours: 40

What level of product would you desire for a final data set (UF tape, [9-track or 8 mm], interpolated data, etc.)? DORADE format internet accessible

Do you want all data converted to UF or just selected time periods? No

D. Previous Experience

22. Previous Research Radar Experience of Requesting Scientist(s): TIMREX, Rainex, T-PARC, IHOP, BAMEX

23. List of Publications Resulting from Past Radar Programs (attach list if necessary):

Lee, W.-C. and M. M. Bell, 2007: Rapid Intensification, Eyewall Contraction and Breakdown of Hurricane Charley (2004) Near Landfall. *Geophys. Res. Lett.*, **34**, L02802

Xiao, Q., Y.-H. Kuo, J. Sun, and **W.-C. Lee**, 2005: Assimilation of Doppler Radar Observations with a Regional 3DVAR System: Impact of Doppler Velocities on Forecasts of a Heavy Rainfall Case. *J. Appl. Meteor.*, **44**, 768-788.

Houze, R. A., Jr., S. S. Chen, B. F. Smull, **W.-C. Lee**, M. M. Bell, 2007: Hurricane intensity change and eyewall replacement. *Science*. **315**, 1235-1239.

Lee, W.-C., and J. Wurman, 2005: Diagnosed three-dimensional axisymmetric structure of the Mulhall Tornado on 3 May 1999. *J. Atmos. Sci.*, **62**, 2373-2393.

- Lee, W.-C.**, and J. Wurman, 2005: Diagnosed three-dimensional axisymmetric structure of the retrieved from single Doppler radar observations. Part I: Interpretation of Doppler velocity patterns and the GBVTD technique. *Mon. Wea. Rev.*, **127**, 2419-2439.
- Lee, W.-C.**, and F. D. Marks, Jr., 2000: Tropical cyclone kinematic structure retrieved from single Doppler radar observations. Part II: The GBVTD-simplex center finding algorithm. *Mon. Wea. Rev.*, **128**, 1925-1936.
- Lee, W.-C.**, J.-D. Jou, P.-L. Chang and F. D. Marks, 2000: Tropical cyclone kinematic structure retrieved from single-Doppler radar observations. Part III: Evolution and structure of Typhoon Alex (1987). *Mon. Wea. Rev.*, **128**, 3982-4001.
- Lang, T. J., **S. A. Rutledge**, and J. L. Stith, 2004: Observations of Quasi-Symmetric Echo Patterns in Clear Air with the CSU-CHILL Polarimetric Radar. *Journal of Atmospheric and Oceanic Technology*, **21**, 1182-1189.
- Lang, T.J., and **S.A. Rutledge**, 2005: Cloud-to-Ground Lightning Downwind of the 2002 Hayman Forest Fire in Colorado. *Geophysical Research Letters*, **33**, L03804.
- Matrosov, S.Y., R. Cifelli, P.C. Kennedy, S.W. Nesbitt, and **S.A. Rutledge**, 2006: A comparative study of rainfall rate retrievals based on specific differential phase shift measurements and X- and S-band radar frequencies. *J. Atmos. Oceanic Technol.*, **23**, 952-963.
- Dolan, B.A., and **S.A. Rutledge**, 2007: An Integrated Display and Analysis Methodology for Multi-Variable Radar Data, *Journal of Applied Meteorology and Climatology*, **46**, 1196-1213.
- Depue, T.K., P.C. Kennedy, and **S.A. Rutledge**, 2007: The Performance of the Hail Differential Reflectivity (HDR) Polarimetric Radar Hail Indicator, *Journal of Applied Meteorology and Climatology*, **46**, 1290-1301.
- Lang, T. J., J. Miller, M. Weisman, **S. A. Rutledge**, L. J. Barker, V. N. Bringi, V. Chandrasekar, A. G. Detwiler, N. J. Doesken, J. Helsdon, C. Knight, P. Krehbiel, W. A. Lyons, CCM6, D. MacGorman, E. Rasmussen, W. Rison, W. D. Rust, R. Thomas, 2004: The Severe Thunderstorm Electrification and Precipitation Study (STEPS), *Bulletin of the American Meteorological Society*, **85**, 1107-1125.
- Lang, T. J., **S. A. Rutledge**, and K. C. Wiens, 2004: Origins of Positive Cloud-to-Ground Lightning Flashes in the Stratiform Region of a Mesoscale Convective System. *Geophysical Research Letters*, **31**, L10105.
- Tessendorf, S. A., L. J. Miller, K. C. Wiens, and **S. A. Rutledge**, 2005: The 29 June 2000 Supercell Observed During STEPS. Part I: Kinematics and Microphysics. *Journal of the Atmospheric Sciences*, **62**, 4127-4150.

Wiens, K. C., **S. A. Rutledge**, and S. A. Tessendorf, 2005: The 29 June 2000 Supercell Observed During STEPS. Part II: Lightning and Charge Structure. *Journal of the Atmospheric Sciences*, **62**, 4151-4177.

Tessendorf, S.A., **S.A. Rutledge** and K.C. Wiens, 2007: Radar and Lightning Observations of Normal and Inverted Polarity Multicellular Storms from STEPS, *Monthly Weather Review*, **135**, 3682-3706.

Tessendorf, S.A., K.C. Wiens, and **S.A. Rutledge**, 2007: Radar and Lightning Observations of the 3 June 2000 Electrically Inverted Storm From STEPS, *Monthly Weather Review*, **135**, 3665-3681.

Lang, T.J., and **S.A. Rutledge**, 2008: Kinematic, Microphysical, and Electrical Aspects of an Asymmetric Bow-Echo Mesoscale Convective System Observed During STEPS 2000. *Journal of Geophysical Research*, **113**, D08213.

Lang, T.J., A. Ahijevych, S.W. Nesbitt, R.E. Carbone, **S.A. Rutledge**, and R. Cifelli, 2007: Radar-Observed Characteristics of Precipitating systems during NAME 2004, *Journal of Climate*, **20**(9), 1713-1733.

Rowe, A.K., **S.A. Rutledge**, T.J. Lang, P.E. Ciesielski, and S.M. Saleeby, 2008: Elevation-dependant trends in precipitation observed during NAME, *Monthly Weather Review*, **136** (12), 4962-4979.

Cifelli, R., L. D. Carey, W. A. Petersen, and **S. A. Rutledge**, 2004: An Ensemble Study of Wet Season Convection in the South West Amazon: Kinematics and Implications for Diabatic Heating, *Journal of Climate*, **17**, 4692-4707.

E. Experiment Description

24. Please attach a written description of the experiment. A statement of the scientific objectives, experimental design, and planned use of all major facilities should be included and discussed in detail. This includes use of research aircraft, satellite data and sounding data, etc. Two copies of the scientific proposal through which this research will be funded should be submitted if such a proposal exists. Completed forms should be mailed to:

See EOL Request, attached, and supporting documents.

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