

# 1. Collaborative GOES–R Research Projects: COMET Outreach Program

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Topics: Other

Program: Proving Ground

## 2. Introduction

- ▶ The GOES–R Program provides funding via the COMET Outreach Program for applied research partnerships between university satellite researchers and new NWS offices
- ▶ Objective is to encourage testing, validating, or finding innovative uses for GOES–R products in the operational forecast environment

## 3. Methodology/Expected Outcomes

- ▶ Supported Projects:
  - Three 2-year Cooperative Projects
  - Ten (to date) 1-year Partners Projects

# 4. Results

## Cooperative Projects

- ▶ **CO School of Mines /NWRFC and ESRL**
  - *Integration of GOES satellite-based evapotranspiration products in operational streamflow forecasting*
- ▶ **Univ. of Nebraska–Lincoln/Omaha WFO**
  - *Evaluation of the GOES–R Proving Ground convective initiation products in the Plains: GOES East convective initiation nowcast*
- ▶ **Univ. of Hawaii/Honolulu WFO**
  - *Hawaii GOES–R satellite test bed for aerosol retrievals*

# 4. Results

## Partners Projects

- ▶ **San Jose State/Las Vegas WFO**
  - *Improving severe downslope winds and lee wave rotor forecasts using GOES-R Proving Ground products and high-resolution modeling*
- ▶ **Texas Tech Univ./Lubbock WFO**
  - *Operational trials of total lightning data and training at the NWS Lubbock Forecast Office*
- ▶ **Hobart & Williams Colleges/Binghamton WFO**
  - *Using satellite imagery to improve forecasting of lake-effect snow bands with a multiple lake connection*

# 4. Results

## Partners Projects

- ▶ **Hobart & Williams Colleges / Buffalo WFO**
  - *Using satellite imagery to improve monitoring and nowcasting of intense lake-effect snow bands*
- ▶ **Kean Univ. / Mt. Holly WFO**
  - *Fog research to operations using GOES-R*
- ▶ **North Carolina State / Raleigh WFO**
  - *Towards improved anticipation of prolific lightning events in central North Carolina*
- ▶ **Univ. of Nebraska-Lincoln / AWC**
  - *The development of GOES-R GLM case studies for use in the AWC operational setting*

# 4. Results

## Partners Projects

- ▶ **Univ. of Maryland College Park/Sterling WFO**
  - *Development and evaluation of WES cases to investigate the use of pseudo-GLM products during warning operations at the Sterling WFO*
- ▶ **Mississippi State/Memphis WFO**
  - *Mesoscale soundings from GOES and GOES-R during variable cloud conditions*
- ▶ **VA Tech/Blacksburg WFO**
  - *The utility of total lightning for warning of pulse-type thunderstorms within the central Appalachian Mountains region*

## 5. Path to Operations

- ▶ Preliminary benefits to forecasters:
  - Increased knowledge of new products & techniques
  - Increased understanding of foundational principles of satellite remote sensing
  - Data fusion with other products and datasets
  - Anticipation for improvements GOES-R will bring
  - Some data have already provided forecast support during severe weather

## 6. Future Plans

- ▶ All Cooperative Projects will finish in the next year
- ▶ 5 Partners Projects have finished
- ▶ Funding remains for 2–4 more Partners Projects
  - Contact Vickie Johnson, COMET Outreach Program Director, [vjohnson@comet.ucar.edu](mailto:vjohnson@comet.ucar.edu), 303–497–8361 for more information

# 7. Publication List

## ▶ Project Publications

- *Thesis (work in progress)*: Reside, A., 2013: Evaluating WRF microphysics performance in forecasting rotor events in Las Vegas. San Jose State University.
- Bruning, E. C., S. A. Weiss, and K. M. Calhoun, 2012: An evaluation of inverted polarity terminology and electrification mechanisms. *Atmos. Res.*, in press, doi: 10.1016/j.atmosres.2012.10.009.
- Bruning, E. C. and D. R. MacGorman, 2013: Theory and observations of controls on lightning flash size spectra. *J. Atmos. Sci.*, submitted.
- Croft, P. J., A. Cope, and others, 2012. Operational assessment & prediction of winter season fog occurrence & coverage (Parts I and II). In revision: *Weather and Forecasting*.
- Numerous conference presentations