

29 November 2012

Dr. Curtis H. Marshall
1325 East-West Highway
SSMC2; Mailcode W/OST12
Room 15360
Silver Spring, MD 20910

Dear Dr. Marshall:

We are transmitting a summary of our CSTAR IV project activities for the six-month period ending 31 October 2012. Research conducted during this period has continued to address both cool- and warm-season heavy precipitation events and forecasting problems over the Northeast U.S.

Two graduate students funded by the CSTAR IV project drafted their M.S. theses during the present reporting period: 1) Christopher Castellano and 2) Daniel Thompson. Their respective research projects and NWS focal points are: 1) Ice storms and freezing precipitation in the northeastern U.S. (John Quinlan, WFO ALY, and Michael Evans, WFO BGM; section 1a), and 2) Deep convection, severe weather, and Appalachian lee troughs (Thomas Wasula, WFO ALY, and Matthew Kramar, WFO LWX; section 1b). Castellano will complete his M.S. thesis in December 2012, whereas Thompson completed his M.S. thesis in September 2012. The CSTAR IV project has also leveraged a UAlbany NCEP/UCAR project on the topic of the reintensification of tropical cyclones (TCs) over land resulting from TC-jet streak interactions (section 1c). This topic was addressed by graduate student Matthew Potter, who investigated the inland reintensification of TC Danny (1997) in comparison to TC Camille (1969), which did not reintensify over land, for his M.S. thesis research. Potter completed his M.S. thesis in August 2012. A third graduate student, Jaymes Kenyon, has been funded by the CSTAR IV project during the present reporting period. His research project and NWS focal point are: Mesoscale substructure in winter storms (Michael Evans, WFO BGM; section 1d). Finally, we have recruited Kyle Meier, a new student from the incoming 2012-2013 graduate class, who intends to work on a cool-season research project for his M.S. thesis that will investigate wintertime convection (i.e., thundersnow) occurring in conjunction with heavy snowfall events in the Northeast. We are in the process of refining the scope of this project and identifying an NWS focal point.

During the present reporting period, UAlbany Co-PIs, graduate students, and NWS personnel participated in the Spring 2012 CSTAR meeting, held in Albany, NY, on 4 May 2012. CSTAR-related research was presented at the 25th American Meteorological Society Conference

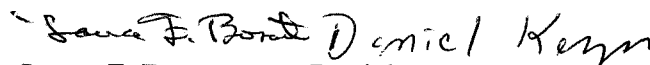
on Weather Analysis and Forecasting, held in Montreal, Quebec, Canada, on 29 May-1 June 2012, and at the 26th American Meteorological Society Conference on Severe Local Storms, held in Nashville, TN, on 5-8 November 2012 (see section 2c).

Documentation of CSTAR-related refereed publications is provided in section 2d. An NWS perspective on CSTAR IV project activities is provided by Warren Snyder in section 3, where it is reiterated that the CSTAR IV project continues to build upon the CSTAR legacy of completing operationally focused research, engaging the academic community at a high level, providing the NWS with top-quality applicants, and enabling the involvement of dozens of operational meteorologists from numerous NWS offices in applied research and conferences. In addition to these benefits to the NWS that accrue from CSTAR research, there is the rapid transfer of emerging project results into operational forecasting practice. Examples documented in this and recent reports include predecessor rain events, mesoscale banding, heavy precipitation in tropical cyclones undergoing inland reintensification, freezing rain and ice storms in the northeastern U.S., and severe convection in relation to Appalachian lee/prefrontal troughs.

Section 4 follows with summaries of project activities and work performed during the present reporting period by NWS personnel at WFO ALY and participating WFOs in the Northeast (sections 4a and 4b). Section 4c contains a comprehensive status and progress report on the "Snyder Plan," which continues to provide a sustainable governing framework for NWS participation in cooperative research and technology transfer. Section 5 describes activities performed by David Knight that address various computing and technology transfer issues. Finally, examples of UAlbany CSTAR project research that has transitioned into NWS forecast operations are documented chronologically in section 6 in the form of AFDs that explicitly refer to UAlbany CSTAR project research during the present reporting period. The examples documented in this report include research on warm-season cutoff lows and high-wind events.

In closing, the UAlbany CSTAR IV project continues to address research on high-impact cool- and warm-season forecasting problems in the Northeast that leverages the activities of the UAlbany Co-PIs and graduate students for the benefit of NWS forecast operations in the ER and other NWS regions.

Sincerely,


Lance F. Bosart Daniel Keyser
Professor Professor

cc: Raymond O'Keefe
Warren Snyder
Ken Johnson
Jeff Waldstreicher
David Knight
Jaymes Kenyon
Kyle Meier

**“The Collaborative Science, Technology,
and Applied Research (CSTAR) Program”**

Title:

**“Cooperative Research with the National Weather Service on Cool- and
Warm-Season Precipitation Forecasting over the Northeastern United States”**

University: University at Albany

Name of University Researchers Preparing Report: Lance F. Bosart and Daniel Keyser

NWS/AFWA/Navy Office: National Weather Service, Albany, New York

Name of NWS/AFWA/Navy Researcher Preparing Report: Raymond O’Keefe

National Oceanic and Atmospheric Administration Award Number: NA01NWS4680002

Date: 29 November 2012

SECTION 1: Summary of Graduate Student Research Activities

(a) Freezing Rain and Ice Storms in the Northeastern U.S. (Christopher Castellano)

Focal Points: John Quinlan, National Weather Service, Albany, NY

Kevin Lipton, National Weather Service, Albany, NY

M.S. Thesis Seminar

Department of Atmospheric and Environmental Sciences

University at Albany

Wednesday, 18 July 2012

3:30 pm

ES-333

Christopher Castellano

“Synoptic and mesoscale aspects of ice storms in the northeastern U.S.”

ABSTRACT

Ice storms are among the most hazardous, disruptive, and costly meteorological phenomena in the northeastern United States. The accretion of freezing rain during ice storms endangers human safety, compromises public infrastructure, and causes economic losses on local and regional scales. Furthermore, ice storms present a major operational forecast challenge due to the combined influence of synoptic, mesoscale, and microphysical processes on precipitation type. In consideration of these socioeconomic impacts and forecast issues, we have identified three primary objectives for this thesis: 1) to create long-term climatologies of freezing rain and ice storms in the northeastern U.S., 2) to identify antecedent environments conducive to ice storms and dynamical mechanisms responsible for freezing rain, and 3) to increase situational awareness of the synoptic and mesoscale processes that govern the evolution of ice storms.

The climatology portion of this thesis examines the temporal and spatial variability of freezing rain and ice storms during the 1975–2010 and 1993–2010 periods, respectively. Individual ice storms are also partitioned by five characteristic synoptic-scale weather patterns. Synoptic composite maps for the two most common event types (Type G and Type BC) illustrate how large-scale circulation patterns and associated quasi-geostrophic (QG) forcing, thermal boundaries, and moisture transport establish environments favorable for freezing rain. Additionally, composite cross sections offer critical insights into synoptic–mesoscale linkages that influence the duration and intensity of freezing rain. The composite analysis for both event types suggests that ice storms typically occur near the equatorward entrance region of an upper-level jet, and on the poleward side of a surface warm front. Moreover, low- to midlevel warm advection and moisture transport, in conjunction with near-surface ageostrophic cold advection, helps prolong freezing rain events by maintaining a thermodynamic profile conducive to freezing rain.

Case studies of the 3–4 Jan 1999 (Type G) and 11–12 Dec 2008 (Type BC) ice storms investigate the synoptic evolution of each event and describe the physical mechanisms that prolonged the duration of freezing rain and resulted in significant ice accretions. These case studies not only reinforce the results of the composite analyses, but also demonstrate how mesoscale processes such as terrain–flow interactions and frontogenesis modify synoptic-scale

circulations and thermodynamic environments on regional and local scales. Based on our findings from the composite and case study analyses, we have developed conceptual models illustrating key synoptic-scale ingredients and relevant dynamical processes associated with Type G and Type BC ice storms.

(b) Deep convection, severe weather, and Appalachian lee / prefrontal troughs (Daniel B. Thompson)

**Focal points: Thomas A. Wasula, National Weather Service, Albany, NY
Matthew Kramar, National Weather Service, Sterling, VA**

**M.S. Thesis Seminar
Department of Atmospheric and Environmental Sciences
University at Albany
Wednesday, 18 July 2012
3:00 pm
ES-333
Dan Thompson**

“Appalachian lee troughs and their association with severe convective storms”

ABSTRACT

Forecasting convective storms in the mid-Atlantic region of the U.S. (hereafter mid-Atlantic) is important because of the proximity of the convective initiation region to major East Coast cities. These forecasts can be challenging because of the weak synoptic-scale forcing for ascent and abundant convective instability typical of the mid-Atlantic warm season (May–September). As a result, mesoscale boundaries such as the Appalachian lee trough (ALT) play an important role in initiating convective storms. This thesis examines the association between ALTs and warm-season severe convective storms in the mid-Atlantic in order to understand how ALTs modulate the frequency and distribution of severe convective storms and to provide enhanced situational awareness for forecasters.

A climatology of warm season ALTs was developed for the region to the lee of the Appalachians. The climatology used an objective algorithm that searched for prominent lower-tropospheric features common to ALTs, which include an MSLP trough and a thermal ridge in the lee of the Appalachians, as well as downslope winds over the Appalachians. The climatology results indicate that ALT formation is favored during times of peak diurnal and seasonal heating. ALTs identified by the climatology were categorized according to their relationship to synoptic-scale cold fronts. A composite of the category in which ALTs occur in advance of cold frontal passages showed a plume of convective available potential energy that extended from the Carolinas to southeastern Pennsylvania. This plume was collocated with > 30 kt surface to 500-hPa vertical wind shear (VWS) over the Washington, DC, to Philadelphia corridor. This corridor also coincided with a maximum in severe local storm reports for events in this category.

A case study of a high-impact severe convective storm event was performed. This event featured prefrontal storms forming along a wind-shift boundary and intensifying upon approaching an axis of high equivalent potential temperature (345–365 K) collocated with an

ALT. It is hypothesized that storms approaching an ALT in an environment of > 30 kt VWS can be expected to intensify, since ALTs contain lower-tropospheric thermal ridges, which correspond to convective instability maxima near the ALT.

**(c) Multiscale Analyses of Inland Tropical Cyclone-Midlatitude Jet Interactions:
Camille (1969) and Danny (1997) (Matthew Potter)**

**M.S. Thesis Seminar
Department of Atmospheric and Environmental Sciences
University at Albany
Wednesday, 18 July 2012
2:30 pm
ES-333
Matthew Potter**

**“Multiscale analyses of inland tropical cyclone–midlatitude jet interactions: Camille (1969)
and Danny (1997)”**

ABSTRACT

TC Camille (1969) and TC Danny (1997) both interacted with the equatorward entrance region of an upper-tropospheric jet as they traversed the Appalachian Mountains; however, their societal impacts differed. During the 12-h period starting 0000 UTC 20 August 1969, 690 mm of rain fell over Massies Mill, Virginia, as TC Camille traversed the central Appalachian Mountains. On 24 July 1997, TC Danny underwent inland reintensification while moving across the Carolinas. TC Danny’s minimum central mean sea level pressure decreased from 1012 hPa to 1000 hPa and its maximum sustained wind speed increased from 20 kt to 40 kt during the 18-h period starting 0000 UTC 24 July. The main objectives of this thesis are to document the synoptic-scale environments and underlying mesoscale processes responsible for each TC–jet interaction, and to document important mechanisms and processes that lead to inland flooding associated with TC–jet interactions and inland reintensifying TCs that interact with midlatitude jets.

Multiscale analyses are conducted using ERA-40 and the NCEP CFSR (Climate Forecast System Reanalysis) global gridded datasets, available at 1.125° and 0.5° resolution, for the TC Camille and TC Danny cases. Surface analyses are employed to identify and document the surface environment and significant mesoscale features associated with both storms. Radar data are used to supplement the mesoscale analysis of each case, and a potential vorticity (PV) perspective is employed to facilitate the interpretation of the multiscale analyses.

The multiscale analyses reveal that unlike the TC Camille case, synoptic-scale ascent arising from implied positive PV advection and minimized effects of vertical wind shear associated with an upper-tropospheric positive PV anomaly enabled TC Danny to intensify inland. Frontogenetically forced ascent along a lower-tropospheric baroclinic zone and orographic enhancement of rainfall, induced by moist, upslope flow across the Blue Ridge Mountains, were the main contributors to the inland flooding associated with TC Camille. Convection that induced diabatically driven cyclonic relative vorticity and PV increases below the level of maximum diabatic heating at midlevels near the center of TC Danny strengthened

the TC's circulation and led to its inland reintensification. The tropospheric features and processes for each case are graphically represented in conceptual models that forecasters can utilize when predicting the impacts associated with inland TC–jet interactions.

(d) Mesoscale Substructure in Winter Storms (Jaymes Kenyon)

Focal Point: Mike Evans, National Weather Service, Binghamton, NY
Research Summary (1 May 2012 – 31 October 2012):

The distribution of snowfall accumulation attending winter storms is a product of both snowfall intensity and duration. Many heavy snowfall events are associated with distinct mesoscale snowbands that strongly modulate snowfall accumulation. Although the development of these snowbands can often be anticipated at 24–36 h forecast ranges, anticipating band duration *at a fixed location* remains a forecasting problem. As a consequence of their high length-width ratios, snowband duration is closely linked to snowband motion characteristics. However, despite the importance of snowband motion to operational forecasting interests, existing literature provides little description on the snowband motion characteristics that are routinely observed. Therefore, an improved understanding of snowband motion presents an opportunity to improve snowfall accumulation forecasts, which is the objective of this research.

Recent work on this CSTAR project has focused on (1) developing a classification scheme by which snowband motion can be interpreted, and (2) elucidating the synoptic and mesoscale environments that favor particular snowband motion characteristics. Archived radar reflectivity mosaics of 14 heavy snow events in the Northeast U.S. were studied in order to ascertain common modes of snowband motion. This work motivated the creation of a new snowband classification scheme, wherein snowbands meeting minimum aspect ratio, intensity, and longevity criteria may be classified according to attributes of their lateral (cross-axis) motion (Table. 1). The proposed scheme describes laterally translating, laterally quasi-stationary, and pivoting snowband modes, as summarized in Fig. 1. In contrast to laterally translating bands, laterally quasi-stationary and pivoting bands tend to be associated with prolonged snowfall at locations near their axes. This classification scheme provides a useful framework in which snowband motion can be interpreted and further studied.

In order to gain insight into the environmental attributes that favor particular modes of snowband motion, a large collection of formal study cases has been systematically identified. The observational records of 39 first-order stations were queried for all occurrences of heavy snowfall (≥ 6 inches in 24 h) during the 2005–2010 period. The locations of these stations are shown in Fig. 2. This search yielded 136 dates on which heavy snow was observed anywhere in the Northeast, out of which 40 dates were solely attributable to lake-effect snow and disqualified from further study. The remaining 96 dates were then grouped into 71 study cases (allowing for midnight continuity). Radar reflectivity mosaics of these 71 study cases are currently being analyzed in order to identify occurrences of each snowband mode throughout this set. From this work, a limited climatology of snowband motion will be constructed, and composites for each mode will be generated. Gridded data from the 0.5° Climate Forecast System Reanalysis (CFSR), available at 6-h intervals, is used to construct diagnostic charts for this research.

Preliminary results, based on a subset of the 71 study cases, suggest that attributes of the near-band environment are useful in discriminating between laterally translating, laterally quasi-

stationary, and pivoting snowband modes. Laterally translating snowbands appear to be favored within environments characterized by diffluent frontogenetical flow in the low- to mid-troposphere. By extension, these environments are associated with strong temperature advection along the band axis and a large cross-axis component of the environmental flow. Fig. 3 illustrates these environmental attributes for a laterally translating snowband observed at 0000 UTC 6 February 2010, which extended from central Pennsylvania to southern New Jersey as it moved northeast. Partitioning the Q -vector into along- and cross- isotherm components (Q_s and Q_n , respectively) reveals small Q_s in the near-band environment (Fig. 4). This arrangement indicates weak rotational frontogenesis, consistent with little change in the azimuthal orientation of the snowband as observed in radar reflectivity. Given the progressive cross-axis motion that characterizes laterally translating snowbands, snowfall accumulation from these bands is typically more geographically uniform than observed with laterally quasi-stationary or pivoting bands.

Laterally quasi-stationary snowbands, in contrast to laterally translating bands, appear to be favored within environments characterized by confluent frontogenetical flow in the low- to mid-troposphere, weaker temperature advection along the band, and environmental flow directed largely parallel to the band. Fig. 5 illustrates these attributes for a laterally quasi-stationary snowband at 0600 UTC 2 March 2009. At this time, the band extended from extreme eastern Pennsylvania to southern New Hampshire as it moved along its axis towards the northeast in close proximity to a confluent asymptote. The corresponding plot of partitioned Q -vectors (Fig. 6) indicates small Q_s in the near-band environment, again signaling a non-rotating temperature gradient and a steady band axis orientation. Given the prolonged duration of snowfall at locations along the axis of a laterally quasi-stationary band, and the usually abrupt precipitation cutoff on the cold side of the axis, snowfall accumulation from these bands typically exhibits a pronounced cold-side tapering.

Preliminary evidence suggests that pivoting bands are most commonly observed in the comma head portion of extratropical cyclones, and appear to exhibit greater along-band environmental variation than do laterally transient and laterally quasi-stationary bands. Radar reflectivity animations of pivoting snowbands reveal the presence of a pivot zone, which corresponds to the laterally quasi-stationary segment of the overall band. The progressive portion of the pivoting snowband located *downshear* of the pivot zone typically resides in a region of diffluent frontogenesis, low- to mid-tropospheric warm advection, pronounced cross-axis flow, and weak Q_s , similar to the transient snowband environment. Consequently, this portion of the pivoting snowband moves laterally towards colder air. Meanwhile, the progressive portion of the pivoting snowband *upshear* of the pivot zone, in close proximity to the surface cyclone, usually resides within a transition region, marked by gradual reversals in the low- to mid- tropospheric cross-axis flow and sign of the temperature advection. Q_s is large and directed downshear along this portion of the snowband, consistent with a cyclonic rotation of isotherms and a cyclonic re-orientation of the band axis in this region. The combined effect of these processes on either side of the pivot zone is to produce a quasi-stationary band segment within the pivot zone, which marks the location about which the band as a whole rotates cyclonically. Figs. 7 and 8 illustrate the environmental attributes associated with a pivoting snowband at 1200 UTC 12 February 2006, with the pivot zone centered over Connecticut at this time (denoted by a “**P**” in Fig. 7). Given that a pivot zone corresponds to the laterally quasi-stationary segment of a pivoting band at a given time, the axis heaviest snowfall accumulation appears to occur along the pivot zone trajectory, based on an analysis of three pivoting snowband

events. This relationship will be investigated further as additional pivoting snowband events are assessed. Accurately anticipating the actual pivot zone location is of particular interest, and this topic is being pursued.

National Weather Service Interactions:

Email correspondence between Jaymes Kenyon (UAlbany) and Mike Evans (WFO Binghamton) has occurred frequently. First-order station snowfall observations, radar reflectivity mosaics, and a growing suite of diagnostics for the 71 study cases have been posted to a web directory, and Mike Evans is coordinating with other NWS forecasters to analyze the cases relevant to particular CWAs and provide feedback to Jaymes Kenyon. These study cases, along with real-time events, will provide a means to test and improve diagnostics relevant to operationally assessing likely modes of snowband motion. Jaymes Kenyon has also been in contact with Pete Banacos (WFO Burlington), who provided suggestions that ultimately motivated the partitioned Q -vector diagnostic shown here.

Publications and Workshop Submissions:

A case study of the 29–30 October 2011 Northeast U.S. snowstorm was presented at the spring 2012 CSTAR meeting. This case spurred interest in pivoting snowbands and motivated subsequent work focusing on snowband motion characteristics. Following the cancellation of NROW XIV, Mike Evans has arranged for Jaymes Kenyon to present this research at WFO Binghamton on 15 November 2012 as part of its Fall Workshop. This research has also been accepted for presentation at the 2013 AMS Annual Meeting in January.

Table 1: Definitions in the proposed snowband classification scheme.

Heavy snowfall:	the occurrence of snowfall ≥ 6 inches (15.2 cm) in 24 h, not attributable to lake-effect snow (LES).
Banded event:	a heavy snowfall event associated with a <i>snowband</i> , requiring: (1) a linear reflectivity structure with an aspect ratio of 4:1 or greater, not associated with a cold front, (2) reflectivity values ≥ 25 dBZ along a majority of the structure's length and ≥ 10 dBZ over the background reflectivity, and (3) persistence of criteria (1) and (2) for ≥ 3 h.
Laterally translating snowband:	a snowband with a cross-axis speed $\geq 15 \text{ km h}^{-1}$ along the entire band axis.
Laterally quasi-stationary snowband:	a snowband with a cross-axis speed $< 15 \text{ km h}^{-1}$ along a segment of the band, or along the entire band. If a segment of the band is laterally quasi-stationary, the orientation of the band axis within this segment changes by $< 5^\circ \text{ h}^{-1}$.
Pivoting snowband:	a snowband exhibiting a laterally quasi-stationary band segment, wherein the orientation of the band axis rotates by $\geq 5^\circ \text{ h}^{-1}$, typically in a cyclonic fashion. This segment constitutes a <i>pivot zone</i> .

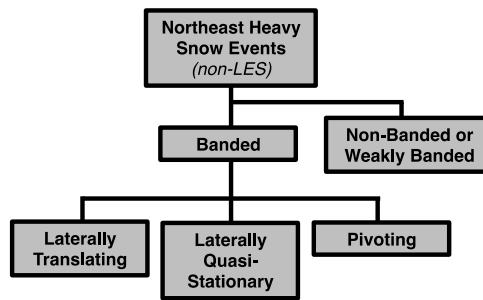


Fig. 1: Flowchart of the proposed snowband classification scheme. Definitions are given in Table 1.

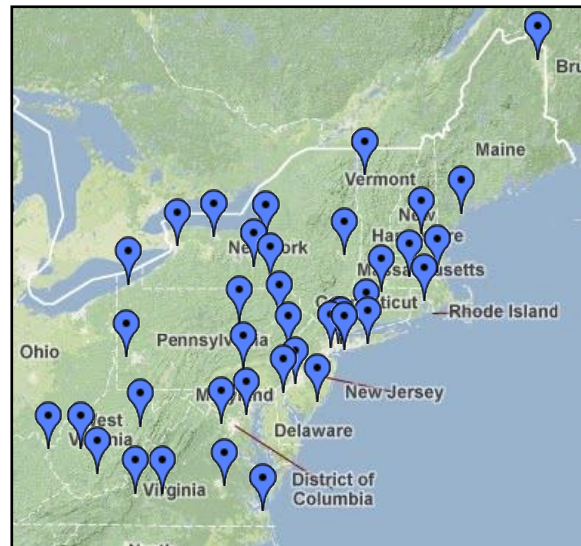


Fig 2: Locations of 39 first-order stations used in this study.

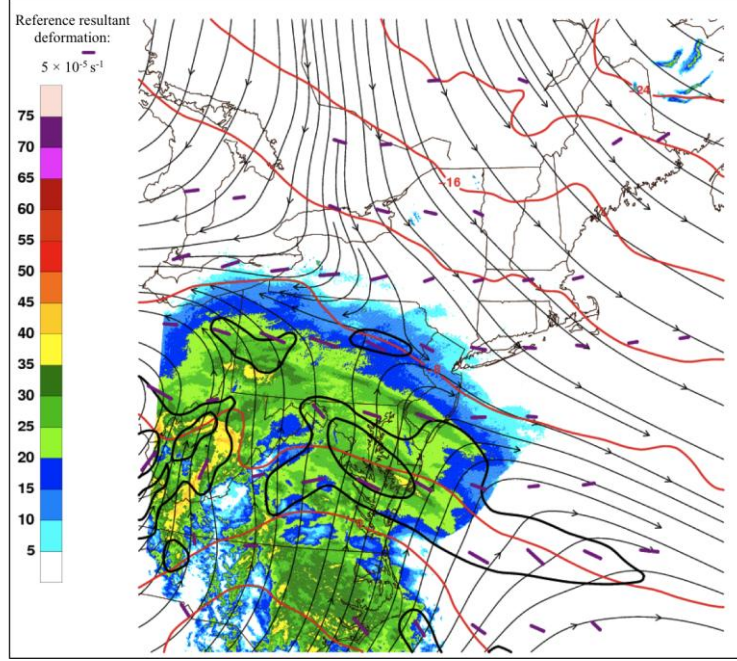


Fig. 3: 850–650-hPa layer-averaged streamlines (light black), axes of dilatation (plotted when resultant deformation $\geq 4 \times 10^{-5} \text{ s}^{-1}$, scaled accordingly), temperature (red, every 4°C), frontogenesis [heavy black, contoured at 1 and 3 $\text{K (100 km)}^{-1} (3 \text{ h})^{-1}$], and 0.5° radar reflectivity (filled, dBZ) at 0000 UTC 6 Feb 2010.

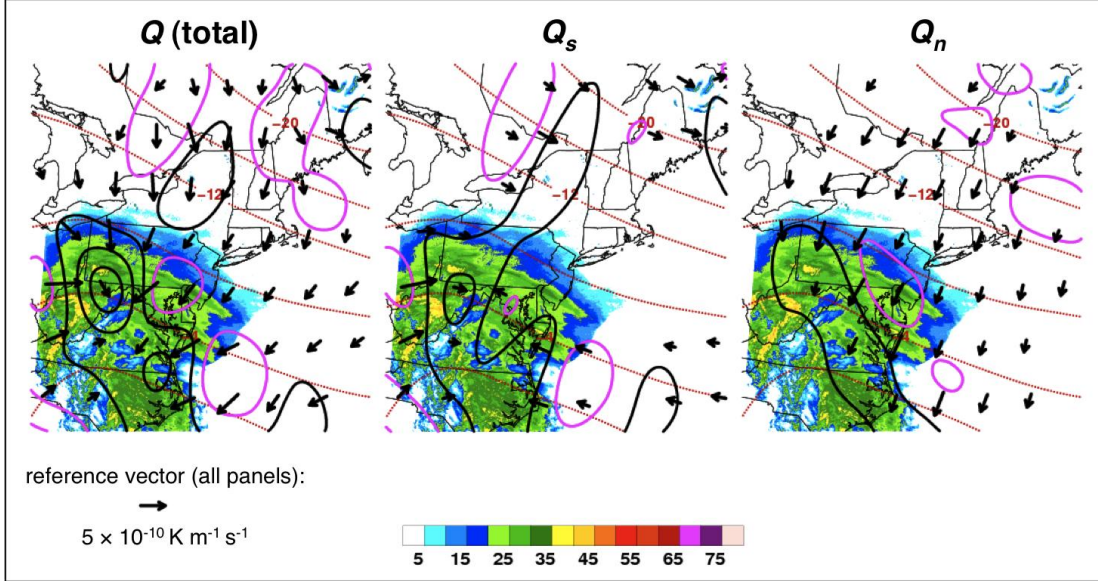


Fig. 4: 700-hPa Q total (left), Q_s (center), and Q_n (right) (magnitudes $\geq 2 \times 10^{-10} \text{ K m}^{-1} \text{ s}^{-1}$ shown) for 0000 UTC 6 Feb 2010. All panels: 0.5° radar reflectivity (filled, dBZ), Gaussian-smoothed 700-hPa temperature (red, every 4°C), and 700-hPa Q -vector convergence and divergence (black and pink, respectively, every $3 \times 10^{-15} \text{ K m}^{-2} \text{ s}^{-1}$, starting at $1 \times 10^{-15} \text{ K m}^{-2} \text{ s}^{-1}$). Q -vectors are calculated from Gaussian-smoothed nondivergent wind and temperature fields.

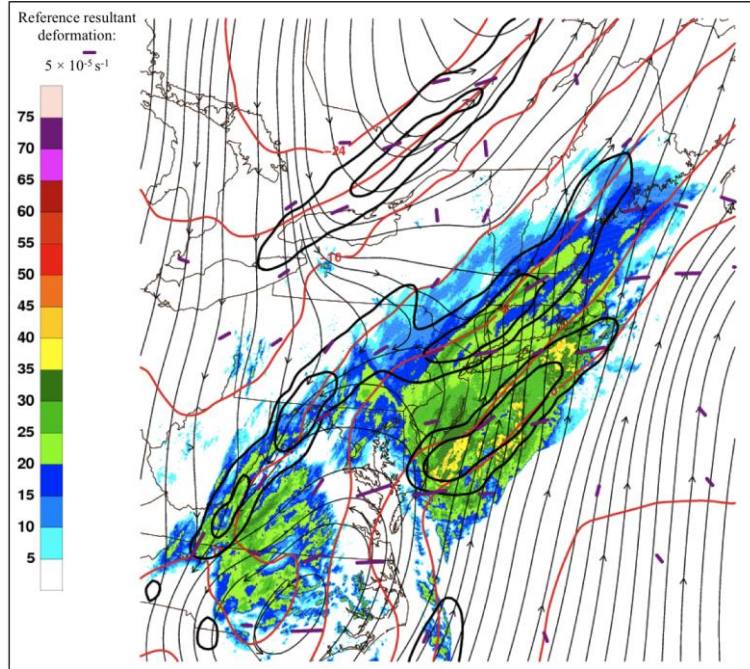


Fig. 5: As in Fig. 3, except for 0600 UTC 2 Mar 2009.

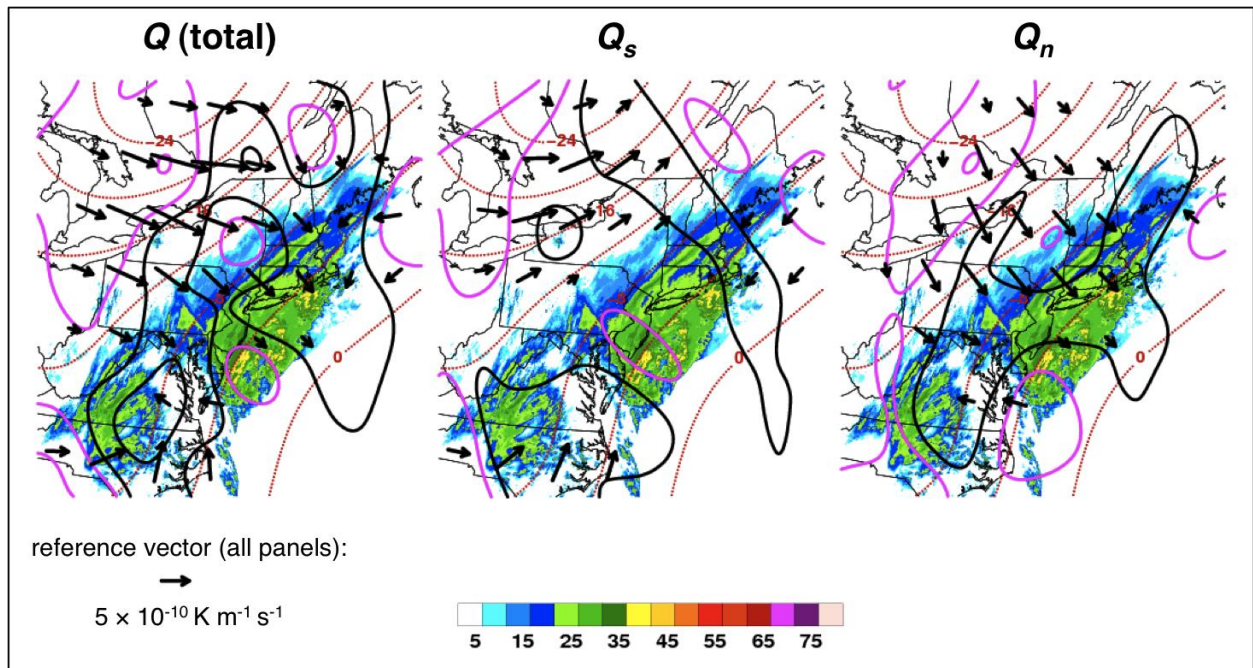


Fig. 6: As in Fig. 4, except for 0600 UTC 2 Mar 2009.

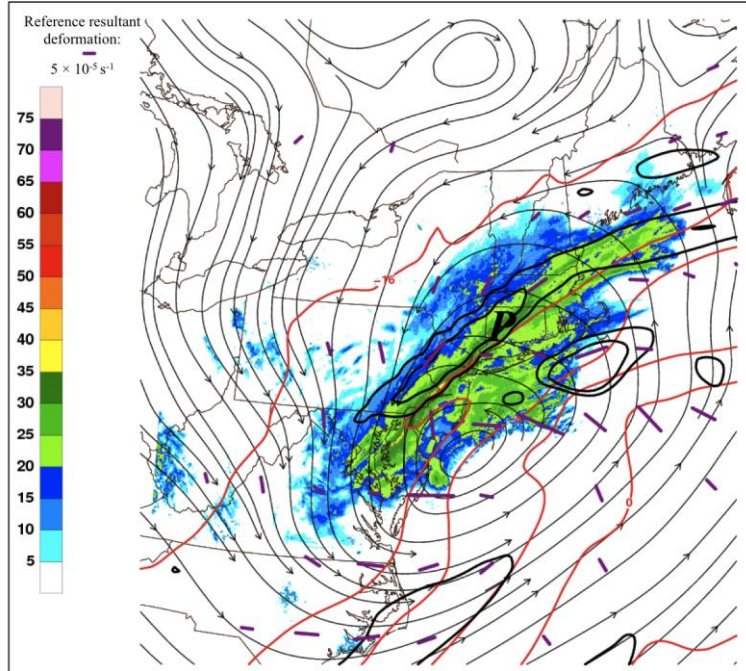


Fig. 7: As in Fig. 3, except for 1200 UTC 12 Feb 2006. The geographic position of the pivot zone at this time is denoted by a “P.”

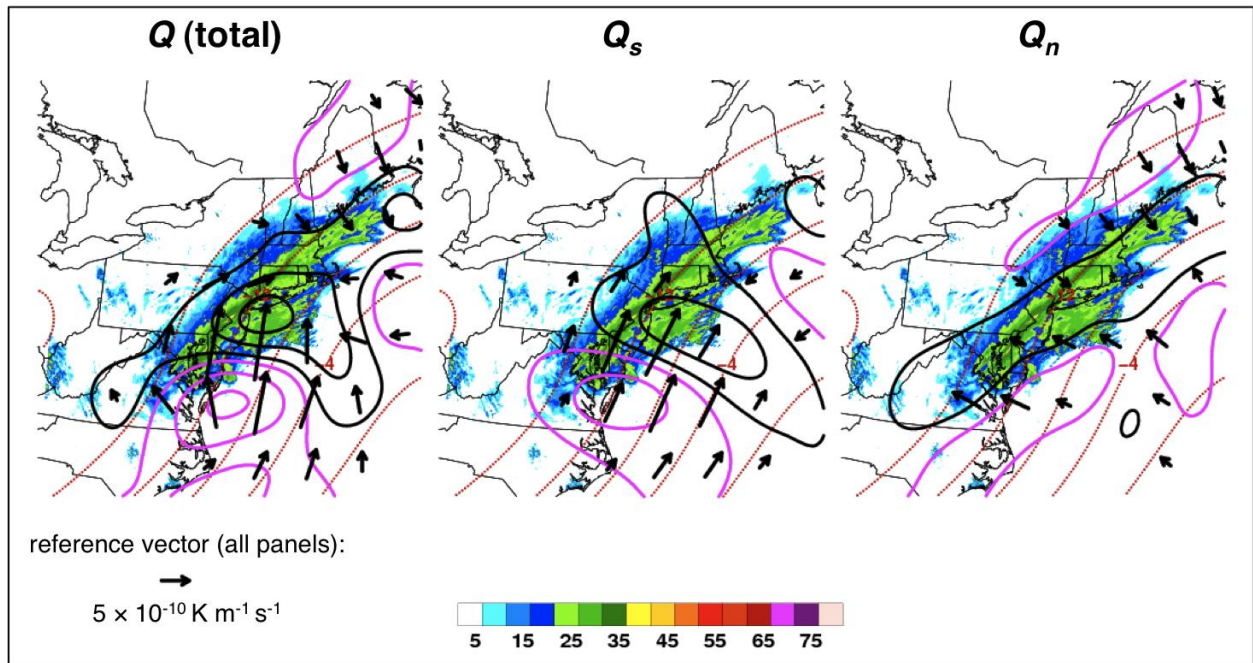


Fig. 8: As in Fig. 4, except for 1200 UTC 12 Feb 2006.

SECTION 2: Cumulative CSTAR Project Publications

a) Theses completed:

- Groenert, D., 2002: Large-scale circulation anomaly indices in relation to cool-season precipitation events in the Northeastern United States. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 144 pp.
- Novak, D., 2002: A climatological and composite study of cold season banded precipitation in the Northeast United States. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 182 pp.
- Smith, B. A., 2003: Cutoff cyclones: A global and regional climatology and two case studies. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 165 pp.
- DeLuca, D., 2004: The distribution of precipitation over the northeast accompanying landfalling and transitioning tropical cyclones. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 178 pp.
- Fracasso, A., 2004: Case studies of cold season 500 hPa cutoff cyclone precipitation distribution. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 121 pp.
- Najuch, J. S., 2004: Case studies of warm season cutoff cyclone precipitation distribution. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 108 pp.
- Archambault, H., 2005: Cool-season regime transition and its impact on precipitation in the northeastern United States. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 163 pp.
- Wasula, A. C., 2005: A comprehensive study of cool season tornadoes in the southeast United States. Ph.D. Dissertation, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 222 pp.
- Wagner, K. R., 2006: Cool-season moderate precipitation events in the Northeastern United States. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 134 pp.
- Greenstein, M. D., 2006: Mesoscale structure of precipitation regions in northeast winter storms. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 128 pp.
- Cote, M. R., 2007: Predecessor rain events in advance of tropical cyclones. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 200 pp.
- Klein, J. R., 2007: Mesoscale precipitation structures accompanying landfalling and transitioning tropical cyclones in the Northeast United States. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 155 pp.

- Wilson, P. H., 2008: Warm-season lake-/sea-breeze severe weather in the Northeast. Master of Science Thesis, Department of Earth and Atmospheric Sciences, University at Albany/SUNY, Albany, NY, 115 pp.
- Scalora, M. A., 2009: Forecasting distributions of warm-season precipitation associated with 500-hPa cutoff cyclones. Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY, 186 pp.
- Asuma, J. V., 2010: Cool-season high wind events in the Northeast U.S. Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY, 117 pp.
- Moore, B. J., 2010: Synoptic-scale environments and dynamical mechanisms associated with predecessor rain events ahead of tropical cyclones. Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY, 150 pp.
- Payer, M. D., 2010: Forecasting precipitation distributions associated with cool-season 500-hPa cutoff cyclones in the Northeastern United States. Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY, 130 pp.
- Potter, M. S., 2012: Multiscale analyses of inland tropical cyclone-midlatitude jet interactions: Camille (1969) and Danny (1997). Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY, 138 pp.
- Thompson, D. B., 2012: Appalachian lee troughs and their association with severe convective storms. Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY, 137 pp.
- Castellano, C. M., 2012: Synoptic and mesoscale aspects of ice storms in the Northeastern US, Master of Science Thesis, Department of Atmospheric and Environmental Sciences, University at Albany/SUNY, Albany, NY (to be completed December 2012).

b) Preprints:

- Groenert, D., L. F. Bosart, D. Keyser, and R. H. Grumm, 2002: Large-scale circulation anomaly indices in relation to cool-season precipitation events in the northeastern United States. Preprints, 19th Conference on Weather Analysis and Forecasting, American Meteorological Society, 12-16 August 2002, San Antonio, TX, pp 168–171.
- Grumm, R. H., N. W. Junker, R. Hart, and L. F. Bosart, 2002: Can possible heavy rainfall events be identified by comparing various parameters to the climatological norms? Preprints, 19th Conference on Weather Analysis and Forecasting, American Meteorological Society, 12-16 August 2002, San Antonio, TX, pp 160–163.
- Junker, N. W., R. Hart, R. H. Grumm, and L. F. Bosart, 2002: Establishing a 10 Year climatology of 101.6 mm (4 inch) rainfall days, Part I. Preprints, 19th Conference on Weather Analysis and Forecasting, American Meteorological Society, 12-16 August 2002, San Antonio, TX, pp 156–159.

- Novak, D. R., and R. S. Horwood, 2002: Analysis of mesoscale banded features in the 5–6 February 2001 New England snowstorm. Preprints, 19th Conference on Weather Analysis and Forecasting, American Meteorological Society, 12–16 August 2002, San Antonio, TX, pp J103–J105.
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- Bosart, L. F., 2001: Scientific and operational lessons from the 25 Jan '00 and 30 Dec '00 snowstorms. Oral presentation at the 26th Annual Northeastern Storm Conference, 9-11 March 2001, Saratoga Springs, NY.
- Bosart, L. F., 2001: An overview of derechos and their environments. Oral presentation at the CSTAR Conference and Albany Weather Forecasting Office Spring Meeting, 25-26 April 2001, Albany, NY.
- Bosart, L. F., 2001: Death by 1000 Cuts? Oral presentation at the Third Northeast Regional Operational Workshop, 6-7 November 2001, Albany, NY.
- Groenert, D., L. F. Bosart, D. Keyser, and R. Grumm, 2001: Large-scale circulation anomaly indices in relation to cool-season precipitation events in the northeastern United States. Oral presentation at the Third Northeast Regional Operational Workshop, 6-7 November 2001, Albany, NY.
- Novak, D., L. F. Bosart, D. Keyser, and J. Waldstreicher, 2001: A climatology of cold season banded precipitation in the northeast United States. Oral presentation at the Third Northeast Regional Operational Workshop, 6-7 November 2001, Albany, NY.
- Smith, B. A., L. F. Bosart, D. Keyser, and D. St. Jean, 2001: A climatology of 500 hPa cutoff cyclones. Oral presentation at the Third Northeast Regional Operational Workshop, 6-7 November 2001, Albany, NY.
- Bosart, L. F., 2002: Dynamic tropopause and PV maps: A user's guide. Oral presentation at the 27th Annual Northeastern Storm Conference, 8-10 March 2002, Saratoga Springs, NY.
- Groenert, D., L. F. Bosart, and D. Keyser, 2002: Large-scale circulation anomaly indices in relation to cool-season precipitation events in the northeastern United States. Oral presentation at the 27th Annual Northeastern Storm Conference, 8-10 March 2002, Saratoga Springs, NY.
- Novak, D., L. F. Bosart, D. Keyser, and J. Waldstreicher 2002: A climatological and composite study of cold season banded precipitation in the northeast United States. Oral presentation at the 27th Annual Northeastern Storm Conference, 8-10 March 2002, Saratoga Springs, NY.

- Bosart, L. F., 2002: Mesoscale boundaries, organized deep convection and forecast derailments. Oral presentation at the Northeast Regional Operational Workshop, 5 November 2002, Albany, NY.
- Novak, D., J. Waldstreicher, L. F. Bosart, and D. Keyser, 2002: Anticipating mesoscale band formation in winter storms. Oral presentation at the Northeast Regional Operational Workshop, 5 November 2002, Albany, NY.
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- Smith, B. A., L. F. Bosart, D. Keyser, and D. St. Jean, 2002: Cutoff cyclones: A global and regional climatology (1948–2001) and two case studies. Oral presentation at the Northeast Regional Operational Workshop, 5 November 2002, Albany, NY.
- Atallah, E. H., and L. F. Bosart, 2003: Tropical cyclone extratropical transition evolutions: Forecast vs. observed. Oral presentation at the 28th Annual Northeastern Storm Conference, 7-9 March 2003, Saratoga Springs, NY.
- Atallah, E. H., A. Aiyer, and L. F. Bosart, 2003: Teleconnections, 1000-500 hPa thickness and storm tracks in the Northern Hemisphere. Oral presentation at the 28th Annual Northeastern Storm Conference, 7-9 March 2003, Saratoga Springs, NY.
- Brewster, J., and M. Evans, 2003: Forecasting the Christmas Day 2002 Snowstorm using modernized National Weather Service tools, training and technology. Oral presentation at the 28th Annual Northeastern Storm Conference, 7-9 March 2003, Saratoga Springs, NY.
- Bosart, L. F., and M. J. Dickinson, 2003: The double transition of Hurricane Michael (2000): Baroclinic to tropical to baroclinic. Oral presentation at the 28th Annual Northeastern Storm Conference, 7-9 March 2003, Saratoga Springs, NY.
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- Archambault, H. M., 2003: Large-scale regime transition and its relationship to significant cool season precipitation events in the Northeast. Oral presentation at the NWS/UAlbany/NCSU CSTAR Workshop, 9-10 July 2003, Silver Spring, MD.
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- Fracasso, A., A. Aiyer, L. F. Bosart, D. Keyser, and M. Evans, 2003: Case studies of cold season cutoff cyclone precipitation distribution. Oral presentation at the NWS/UAlbany/NCSU CSTAR Workshop, 9-10 July 2003, Silver Spring, MD.

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- Novak, D., J. Waldstreicher, L. F. Bosart, and D. Keyser, 2003: Anticipating mesoscale band formation in Winter storms using radar and model guidance. Invited speaker at the 28th Annual National Weather Association Meeting, 18-23 October 2003, Jacksonville, FL.
- Archambault, H. M., L. F. Bosart, D. Keyser, and R. Grumm, 2003: Large-scale regime transition and its relationship to significant cool season precipitation events in the Northeast. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
- Bosart, L. F., W. Drag, and A. C. Wasula, 2003: The unusually intense coastal front passage of 17-18 April 2002 in Eastern New England. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
- DeLuca, D. P., L. F. Bosart, D. Keyser, and D. R. Vallee, 2003: The distribution of precipitation over the northeast accompanying landfalling and transitioning tropical cyclones. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
- Fracasso, A., L. F. Bosart, D. Keyser, and M. Evans, 2003: Cold season 500 hPa cutoff cyclone precipitation distribution and a case study. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
- LaPenta, K. D., 2003: The Eastern New York and Western New England F2 Tornado of 21 July. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
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- Waldstreicher, J. S., 2003: Assessing the impact of collaborative research projects on NWS Warning performance. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
- Wasula, A. C., L. F. Bosart, R. Schneider, S. Weiss, and R. Johns, 2003: A study of cool season tornadoes in the Southeast United States. Oral presentation at the Northeast Regional Operational Workshop, Albany, NY, 4-5 November 2003.
- Archambault, H. M., L. F. Bosart, and D. Keyser, 2004: Large-scale regime transition and its relationship to significant precipitation events in the Northeast. Oral presentation 29th Annual Northeastern Storm Conference, 12-14 March 2004, Saratoga Springs, NY.
- Bosart, L. F., 2004: Coastal fronts, cold air damming, and fronts adjacent to higher terrain. Oral presentation 29th Annual Northeastern Storm Conference, 12-14 March 2004, Saratoga Springs, NY.

- Cannon, J., 2004: Environmental flow regimes and heavy rainfall distribution associated with tropical cyclones in the northeast United States. Oral presentation 29th Annual Northeastern Storm Conference, 12-14 March 2004, Saratoga Springs, NY.
- DeLuca, D. P., L. F. Bosart, D. Keyser, and D. R. Vallee, 2004: The distribution of precipitation over the Northeast accompanying landfalling and transitioning tropical cyclones. Oral presentation 29th Annual Northeastern Storm Conference, 12-14 March 2004, Saratoga Springs, NY.
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- Sisson, P. A., D. St. Jean, E. Evenson, W. E. Murray, S. F. Hogan, L. F. Bosart, D. Keyser, and B. Smith, 2004: Application of local research results to National Weather Service Operational Forecast Challenges – A success story forecasting heavy mountain snowfalls in Vermont and Northern New York. Oral presentation 29th Annual Northeastern Storm Conference, 12-14 March 2004, Saratoga Springs, NY.
- Bosart, L. F., K. D. LaPenta, A. Seimon, and M. J. Dickinson, 2004: Terrain-influenced tornadogenesis in the northeastern United States: An examination of the 29 May 1995 Great Barrington, Massachusetts, Tornado. Oral presentation, 22nd Conference on Severe Local Storms, 4-8 October 2004, Hyannis, MA.
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- Archambault, H. M., L. F. Bosart, D. Keyser, A. Aiyer, and R. Grumm, 2004: Cool-season regime transition and its impact on precipitation in the northeast. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.
- Bosart, L. F., 2004: A long-lived intense continental-scale front: 28 February-4 March 1972. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.
- Fracasso, A., L. F. Bosart, and D. Keyser, 2004: Cool season 500 hPa cutoff cyclones: Precipitation distribution and a case study. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.

- Novak, D., B. Colle, and D. Keyser, 2004: High-resolution simulations of the 25 December 2002 banded snowstorm using Eta, MM5, and WRF. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.
- Runyon, S. C., and L. F. Bosart, 2004: A statistical and synoptic climatological analysis of U.S. heat waves. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.
- Wagner, K., L. F. Bosart, and D. Keyser, 2004: Cyclogenesis and upper-level jet streaks and their influence on the low-level Jet. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.
- Wasula, A. C., L. F. Bosart, R. S. Schneider, S. Weiss, R. H. Johns, G. S. Manikin, and P. Welsh, 2004: The structure and climatology of boundary layer winds in the southeast United States and its relationship to nocturnal tornado episodes. Oral presentation at the Sixth Northeast Regional Operational Workshop (NROW), 2-3 November 2004, Albany, NY.
- Bosart, L. F., W. Drag, and A. Wasula, 2004: Backdoor and sidedoor cold fronts: A continual forecast challenge. Invited presenter, 5th Southern New England Weather Conference, 6 November 2004, Brookline, MA.
- Archambault, H. M., L. F. Bosart, D. Keyser, A. Aiyyer, and R. Grumm, 2005: Cool-season regime transition and its impact on precipitation in the northeast. Oral presentation at the 30th Annual Northeastern Storm Conference, 18-20 March 2005, Burlington, VT.
- Runyon, S. C., and L. F. Bosart, 2005: A statistical analysis and synoptic climatology of heat waves over the United States. Oral presentation at the 30th Annual Northeastern Storm Conference, 18-20 March 2005, Burlington, VT.
- Wagner, K., L. F. Bosart, and D. Keyser, 2005: Moderate precipitation events in the Northeastern United States. Oral presentation at the 30th Annual Northeastern Storm Conference, 18-20 March 2005, Burlington, VT.
- Archambault, H. M., L. F. Bosart, D. Keyser, A. Aiyyer and R. H. Grumm, 2005: Cool-season regime transition and its impact on precipitation in the Northeast. Oral presentation, 21st Conference on Weather Analysis and Forecasting/17th Conference on Numerical Weather Prediction, American Meteorological Society, 1-5 August 2005, Washington, DC.
- Greenstein, M. D., L. F. Bosart, D. Keyser, and D. J. Nicosia, 2005: Examining the role of mesoscale features in the structure and evolution of precipitation regions in northeast winter storms. Poster presentation, 21st Conference on Weather Analysis and Forecasting/17th Conference on Numerical Weather Prediction, American Meteorological Society, 1-5 August 2005, Washington, DC.
- Junker, N., R. Grumm, R. Hart, L. F. Bosart, K. M. Bell and F. J. Pereira, 2005: Forecasting extreme wintertime precipitation events in northern California. Oral presentation, 21st Conference on Weather Analysis and Forecasting/17th Conference on Numerical Weather Prediction, American Meteorological Society, 1-5 August 2005, Washington, DC.
- Novak, D. R., B. A. Colle, and D. Keyser, 2005: High-resolution modeling of the 25 December 2002 Northeast U.S. banded snowstorm. Oral presentation, 21st Conference on Weather Analysis and Forecasting/17th Conference on Numerical Weather Prediction, American Meteorological Society, 1-5 August 2005, Washington, DC.

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- Wagner, K. R., L. F. Bosart, D. Keyser, and M. S. Evans, 2005: Cool-season moderate precipitation events in the Northeastern United States. Poster presentation, 21st Conference on Weather Analysis and Forecasting/17th Conference on Numerical Weather Prediction, American Meteorological Society, 1-5 August 2005, Washington, DC.
- Archambault, H., L. F. Bosart, D. Keyser and R. Grumm, 2005: Cool-season regime transition and its impact on precipitation in the Northeast. Poster presentation, NOAA 30th Annual Climate Diagnostics and Prediction Workshop, 24-28 October 2005, University Park, PA.
- Archambault, H., L. F. Bosart, D. Keyser and R. Grumm, 2005: Cool-season regime transition and its impact on precipitation in the Northeastern United States. Oral presentation, The 6th Southern New England Weather Conference, 5 November 2005, Brookline, MA.
- Archambault, H., L. F. Bosart, D. Keyser and R. Grumm, 2005: Cool-season regime transition and its impact on precipitation in the Northeast. Oral presentation at the Seventh Northeast Regional Operational Workshop (NROW), 1-2 November 2005, Albany, NY.
- Novak, D., B. Colle, and D. Keyser, 2005: An investigation of model-simulated band placement and evolution in the 25 December 2002 Northeast U.S. Banded Snowstorm. Oral presentation at the Seventh Northeast Regional Operational Workshop (NROW), 1-2 November 2005, Albany, NY.
- Greenstein, M. D., L. F. Bosart, D. Keyser, and D. J. Nicosia, 2005: Examining the role of mesoscale features in the structure and evolution of precipitation regions in northeast winter storms. Oral presentation at the Seventh Northeast Regional Operational Workshop (NROW), 1-2 November 2005, Albany, NY.
- Wagner, K., L. F. Bosart, D. Keyser, and M. S. Evans, 2005: Cool-season moderate precipitation events in the Northeastern United States. Oral presentation at the Seventh Northeast Regional Operational Workshop (NROW), 1-2 November 2005, Albany, NY.
- Runyon, S. C., and L. F. Bosart, 2005: A statistical analysis and synoptic climatology of heat waves over the Northeast United States. Oral presentation at the Seventh Northeast Regional Operational Workshop (NROW), 1-2 November 2005, Albany, NY.
- Wasula, A. C., 2005: A multiscale analysis of the 23-24 November 2004 Southeast United States tornado outbreak. Oral presentation at the Seventh Northeast Regional Operational Workshop (NROW), 1-2 November 2005, Albany, NY.
- Archambault, H., L. F. Bosart, D. Keyser, A. Ayyer, and R. Grumm, 2006: Cool-season regime transition and its impact on precipitation in the Northeast. Oral presentation 31st Annual Northeastern Storm Conference, 10-12 March 2006, Saratoga Springs, NY.
- Bosart, L. F., 2006: The small-scale New England coastal bomb of 9 December 2005: A near-miss Hurricane Zeta? Oral presentation 31st Annual Northeastern Storm Conference, 10-12 March 2006, Saratoga Springs, NY.

- Greenstein, M. D., L. F. Bosart, D. Keyser, and D. J. Nicosia, 2006: Mesoscale structure of precipitation regions in northeast winter storms. Oral presentation 31st Annual Northeastern Storm Conference, 10-12 March 2006, Saratoga Springs, NY.
- Wagner, K., L. F. Bosart, and D. Keyser, 2006: Cool-season moderate precipitation events in the Northeastern United States. Oral presentation 31st Annual Northeastern Storm Conference, 10-12 March 2006, Saratoga Springs, NY.
- Wasula, A. C., 2006: The diurnal variation of synoptic scale structure of cool season tornado episodes in the Southeast United States. Oral presentation 31st Annual Northeastern Storm Conference, 10-12 March 2006, Saratoga Springs, NY.
- Wasula, T. A., 2006: The Thanksgiving 2004 severe weather event across upstate New York and New England. Oral presentation 31st Annual Northeastern Storm Conference, 10-12 March 2006, Saratoga Springs, NY.
- Bosart, L. F. (with contributions from A. Wasula, W. Drag, and K. Meier), 2006: Strong surface fronts over sloping terrain and coastal plains. Oral presentation, St. Louis (LSX) National Weather Service Forecast Office, 15 March 2006, St. Louis, MO.
- Bosart, L. F., 2006: Modern weather forecasting: A scientific and operational perspective. Guest speaker, Eastern Region MIC Conference, 28 March 2006, Raleigh, NC.
- Archambault, H. M., D. Keyser, and L. F. Bosart, 2006: Cool-season regime transition and its impact on northeast precipitation. Seminar (presented by D. Keyser), Program in Atmospheres, Oceans, and Climate, Massachusetts Institute of Technology, 8 May 2006, Cambridge, MA.
- Archambault, H. M., D. Keyser, and L. F. Bosart, 2006: Cool-season regime transition and its impact on major northeast precipitation events. Oral presentation, Second Annual Eastern US Weather Conference, 8 July 2006, Baltimore, MD.
- Archambault, H. M., D. Keyser, L. F. Bosart, and A. Ayyer, 2006: Cool-season regime transition and its impact on Northeast precipitation. Seminar (presented by H. Archambault), NCEP/Climate Prediction Center, 6 September 2006, Camp Springs, MD.
- Grumm, R., and L. F. Bosart, 2006: Model jumpiness and the need for ensembles. Oral presentation, 31st Annual Meeting, National Weather Association, 14-19 October 2006, Cleveland, OH.
- Cote, M. R., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr., 2006: Heavy rainfall events preceding the arrival of tropical cyclones. Oral presentation at the Eighth Northeast Regional Operational Workshop (NROW), 1-2 November 2006, Albany, NY.
- Wilson, P., L. F. Bosart, D. Keyser, and T. Wasula, 2006: Warm-season lake-/sea-breeze severe weather in the Northeast. Oral presentation at the Eighth Northeast Regional Operational Workshop (NROW), 1-2 November 2006, Albany, NY.
- Klein, J. R., L. F. Bosart, D. Keyser, and D. Vallee, 2006: Mesoscale precipitation structures accompanying landfalling and transitioning tropical cyclones in the northeast United States. Oral presentation at the Eighth Northeast Regional Operational Workshop (NROW), 1-2 November 2006, Albany, NY.

- Cote, M. R., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr., 2007: Heavy rainfall events preceding the arrival of tropical cyclones. Oral presentation, 32nd Annual Northeastern Storm Conference, 9-11 March 2007, Springfield, MA.
- Klein, J. R., L. F. Bosart, D. Keyser, and D. Vallee, 2007: Mesoscale precipitation structures accompanying landfalling and transitioning tropical cyclones in the Northeast United States. Oral presentation, 32nd Annual Northeastern Storm Conference, 9-11 March 2007, Springfield, MA.
- Wilson, P., L. F. Bosart, D. Keyser, and T. A. Wasula, 2007: Warm-season lake-/sea-breeze severe weather in the Northeast. Oral presentation, 32nd Annual Northeastern Storm Conference, 9-11 March 2007, Springfield, MA.
- Cote, M. R., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr., 2007: Heavy rainfall events preceding the arrival of tropical cyclones. Oral presentation, National Weather Service Spring Workshop, Binghamton, NY, 27 March 2007, Binghamton, NY.
- Klein, J. R., L. F. Bosart, D. Keyser and D. Vallee, 2007: Mesoscale precipitation structures accompanying landfalling and transitioning tropical cyclones in the Northeast United States. Oral presentation, 22nd Conference on Weather Analysis and Forecasting/18th Conference on Numerical Weather Prediction, American Meteorological Society, 25-29 June 2007 Park City, UT.
- Cote, M. R., L. F. Bosart, D. Keyser, and M. L. Jurewicz Sr., 2007: Heavy rainfall events preceding the arrival of Tropical Cyclones. Oral presentation, 22nd Conference on Weather Analysis and Forecasting/18th Conference on Numerical Weather Prediction, American Meteorological Society, 25-29 June 2007 Park City, UT.
- Wilson, P., L. F. Bosart, D. Keyser, and T. Wasula, 2007: Warm-season lake-/sea-breeze severe Weather in the Northeast. Oral presentation, 22nd Conference on Weather Analysis and Forecasting/18th Conference on Numerical Weather Prediction, American Meteorological Society, 25-29 June 2007 Park City, UT.
- Cote, M. R., L. F. Bosart, D. Keyser, and M. L. Jurewicz, 2007: Predecessor rain events in tropical cyclones. Oral presentation, 12th Conf. on Mesoscale Processes, American Meteorological Society, 9 August 2007, Waterville Valley, NH.
- Klein, J. R., L. F. Bosart, D. Keyser, and D. Vallee, 2007: Mesoscale precipitation structures accompanying landfalling and transitioning tropical cyclones in the Northeast United States. Oral presentation, 12th Conf. on Mesoscale Processes, American Meteorological Society, 9 August 2007, Waterville Valley, NH.
- Wilson, P. H., L. F. Bosart, D. Keyser, and T. A. Wasula, 2007: Warm-season lake-/sea-breeze severe weather in the Northeast. Oral presentation at the 32nd Annual National Weather Association Meeting, 13-18 October 2007, Reno, NV.
- Bosart, L. F., D. Keyser, S. Weiss, R. Schneider, M. Cote, D. DeLuca, T. Fracasso, J. Klein, and A. C. Wasula, 2007: Lessons learned from CSTAR/COMET-sponsored research on convective storms and heavy rains. Invited speaker at the 32nd Annual National Weather Association Meeting, 13-18 October 2007, Reno, NV.
- Wilson, P., L. F. Bosart, D. Keyser, and T. Wasula, 2007: Warm-season lake-/sea-breeze severe weather in the Northeast. Oral presentation at the Ninth Northeast Regional Operational Workshop (NROW), 7-8 November 2007, Albany, NY.

- Cote, M. R., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr., 2007: Predecessor rain events in tropical cyclones. Oral presentation at the Ninth Northeast Regional Operational Workshop (NROW), 7-8 November 2007, Albany, NY.
- Bosart, L. F., D. Keyser, M. R. Cote, J. Klein, and D. DeLuca, 2007: CSTAR tropical cyclone-related research at the University at Albany/SUNY. Invited presentation at the National Centers for Environmental Prediction, 5 December 2007, Washington, DC.
- Bosart, L. F., K. Corbosiero, M. R. Cote, and T. J. Galarneau, Jr., 2008: Mesoscale structures within transient synoptic-scale systems: Science and forecast challenges. Invited presentation at the First US-China Symposium on Meteorology: Mesoscale Meteorology and Data Assimilation, 27 February 2008, National Weather Center, Norman, OK.
- Bosart, L. F., T. J. Galarneau, Jr., and A. C. Wasula, 2008: Modern weather forecasting: Where do we stand and where do we need to go? Invited presentation, 33rd Annual Northeastern Storm Conference, 14-16 March 2008, Springfield, MA.
- Augustyniak, M., and L. F. Bosart, 2008: Flow channeling in the Mohawk and Hudson Valleys: A multiscale case study of surface flow convergence. Oral presentation, 33rd Annual Northeastern Storm Conference, 14-16 March 2008, Springfield, MA.
- Bosart, L. F., T. J. Galarneau, Jr., and A. C. Wasula, 2008: Modern weather forecasting: Where do we stand and where do we need to go? Invited presentation, 12th Annual Russell L. DeSouza Banquet, Department of Earth Sciences, Millersville University, 16 April 2008, Millersville, PA.
- Cote, M. R., L. F. Bosart, and D. Keyser, 2008: Predecessor rain events in tropical cyclones. Oral presentation, 28th Conference on Hurricanes and Tropical Meteorology, American Meteorological Society, 27 April - 2 May 2008, Orlando, FL.
- Bosart, L. F., and K. Meier, 2008: Front-mountain interactions in the long-lived, intense surface front of 28 February through 4 March 1972 over the United States. Oral Presentation, 13th Conference on Mountain Meteorology, American Meteorological Society, 11-15 August 2008, Whistler, Canada.
- Bosart, L. F., M. Cote, T. J. Galarneau, Jr., and A. Srock, 2008: Troublesome precipitation events: A challenge for models and humans alike. Invited seminar, Earth System Research Laboratory, ESRL/PSD Seminar Series, 5 June 2008, Boulder, CO.
- Bosart, L. F., J. C. Cordeira, and T. J. Galarneau, Jr., 2008: Modern weather forecasting: A status report and scientific opportunities." Invited seminar at GERT Joint Program in Applied Mathematics and Earth and Environmental Sciences, Columbia University, 9 October 2008, New York, NY.
- Keyser, D., H. M. Archambault, and L. F. Bosart, 2008: Relationships between large-scale regime transitions and major cool-season precipitation events in the Northeast U.S. Oral presentation at the 14th Cyclone Workshop, 21-26 September 2008, Hôtel Mont Gabriel, Sainte-Adèle, Quebec, Canada.
- Wasula, T. A., P. H. Wilson, L. F. Bosart, D. Keyser, and R. L. Tracey, 2008: A comparison of two lake breeze severe events with a threat checklist application. Poster presentation at the American Meteorological Society 24th Conference on Severe Local Storms, American Meteorological Society, 27-31 October 2008, Savannah, GA.

- Wasula, T. A., N. A. Stuart, and A. C. Wasula, 2008: The 17 February 2006 severe weather and high wind event across Eastern New York and New England. Oral presentation at the 24th Conference on Severe Local Storms, American Meteorological Society, 27-31 October 2008, Savannah, GA.
- Galarneau, T. J. Jr., and D. Keyser, 2008: Use of the nondivergent wind for diagnosing banded precipitation systems. Oral presentation at the Tenth Northeast Regional Operational Workshop (NROW), 5-6 November 2008, Albany, NY.
- Scalora, M. A., L. F. Bosart, D. Keyser, N. A. Stuart, and T. A. Wasula, 2008: A diagnostic analysis of a difficult-to-forecast cutoff cyclone from the 2008 warm season. Oral presentation at the Tenth Northeast Regional Operational Workshop (NROW), 5-6 November 2008, Albany, NY.
- Bosart, L. F., 2008: The “spin” on the active part of the 2008 North Atlantic hurricane season: Large-scale storm interactions and mesoscale forecast challenges posed by inland flooding. Oral presentation (invited) at the NOAA/AOML/HRD, 15 December 2008, Miami, FL.
- Bosart, L. F., 2009: Just how good are weather forecasts these days: Challenges and opportunities. Oral presentation (invited) at the AMS Southeastern Coastal and Atmospheric Processes Symposium (SeCAPS), 27-28 February 2009, Mobile, AL.
- Bosart, L. F., T. J. Galarneau, Jr., and J. M. Cordeira, 2009: Storm-storm and storm-environment interactions during the 2008 North Atlantic hurricane season. Oral presentation at the 34th Annual Northeastern Storm Conference, 6-8 March 2009, Springfield, MA.
- Scalora, M. A., L. F. Bosart, and D. Keyser, 2009: An analysis of a high impact 500-hPa cutoff cyclone from the 2008 warm season. Oral presentation at the 34th Annual Northeastern Storm Conference, 6-8 March 2009, Springfield, MA.
- Bosart, L. F., H. M. Archambault, T. J. Galarneau, Jr., and J. M. Cordeira, 2009: Modern weather forecasting: Scientific opportunities and operational challenges. The Robert D. Cess lecture (invited), 1 April 2009, University at Stony Brook, SUNY, Stony Brook, NY.
- Galarneau, T. J., Jr., L. F. Bosart, D. Keyser, and R. S. Schumacher, 2009: A review of recent UAlbany CSTAR research on warm-season precipitation systems including predecessor rain events ahead of tropical cyclones. Oral presentation at the 1st NOAA Testbed USWRP Workshop, 28-29 April 2009, Boulder, CO.
- Asuma, J. V., L. F. Bosart, and D. Keyser, 2009: Cool-season severe weather in the northeast U.S. Poster presentation at the 23rd Conference on Weather Analysis and Forecasting/19th Conference on Numerical Weather Prediction, 1-5 June 2009, Omaha, NE.
- Bosart, L. F., H. Archambault, and J. M. Cordeira, 2009: Linked extreme weather events: Severe cold and record-breaking rains in Mexico and disruptive wildfires in California in late October 2007. Oral presentation at the 23rd Conference on Weather Analysis and Forecasting/19th Conference on Numerical Weather Prediction, 1-5 June 2009, Omaha, NE.
- Galarneau, T. J., Jr., L. F. Bosart, and R. S. Schumacher, 2009: The life-cycle of tropical storm Erin (2007): Genesis, postlandfall reintensification, and widespread heavy rain. Oral presentation at the 23rd Conference on Weather Analysis and Forecasting/19th Conference on Numerical Weather Prediction, 1-5 June 2009, Omaha, NE.

- Moore, B. J., L. F. Bosart, and D. Keyser, 2009: A predecessor rain event over the Upper Midwest associated with Tropical Cyclone Rita (2005). Poster presentation at the 23rd Conference on Weather Analysis and Forecasting/19th Conference on Numerical Weather Prediction, 1-5 June 2009, Omaha, NE.
- Scalora, M. A., L. F. Bosart, and D. Keyser, 2009: An analysis of a high impact 500-hPa cutoff cyclone from the 2008 warm season. Oral presentation at the 23rd Conference on Weather Analysis and Forecasting/19th Conference on Numerical Weather Prediction, 1-5 June 2009, Omaha, NE.
- Bosart, L. F., and T. J. Galarneau, Jr., 2009: An overview of predecessor heavy rain events associated with landfalling tropical cyclones. Oral presentation at the Conference on the Inland Impacts of Tropical Cyclones, 10-12 June 2009, Atlanta, GA.
- Jurewicz, M. L. Sr., M. Cote, L. F. Bosart, and D. Keyser, 2009: A study of predecessor rainfall events (PRE) in advance of tropical cyclones. Oral presentation at the Conference on the Inland Impacts of Tropical Cyclones, 10-12 June 2009, Atlanta, GA.
- Moore, B. J., L. F. Bosart, and D. Keyser, 2009: A comparison of significant predecessor rain events associated with Tropical Cyclone Rita (2005) and Tropical Cyclone Erin (2007). Oral presentation at the Conference on the Inland Impacts of Tropical Cyclones, 10-12 June 2009, Atlanta, GA.
- Bosart, L. F., 2009: An overview of predecessor heavy rain events associated with landfalling tropical cyclones. Invited seminar, Department of Atmospheric and Oceanic Sciences, University of Wisconsin at Madison, 21 September 2009, Madison, WI.
- Asuma, J. V., L. F. Bosart, D. Keyser, J. S. Quinlan, T. A. Wasula, H. W. Johnson, and K. S. Lipton, 2009: Cool-season high wind events in the northeast. Oral presentation at the Northeast Regional Operational Workshop XI (NROW), 4-5 November 2009, Albany, NY.
- Bosart, L. F., T. J. Galarneau, Jr., J. M. Cordeira, and B. J. Moore, 2009: Predecessor rain events ahead of TC Ike and TC Lowell on 11-14 September 2008. Oral presentation at the Northeast Regional Operational Workshop XI (NROW), 4-5 November 2009, Albany, NY.
- Moore, B. J., L. F. Bosart, D. Keyser, M. L. Jurewicz, Sr., 2009: Synoptic environments associated with predecessor rain events in advance of landfalling tropical cyclones. Oral presentation at the Northeast Regional Operational Workshop XI (NROW), 4-5 November 2009, Albany, NY.
- Payer, M., L. F. Bosart, D. Keyser, N. A. Stuart, and T. A. Wasula, 2009: Analysis of precipitation distributions associated with two cool-season cutoff cyclones. Oral presentation at the Northeast Regional Operational Workshop XI (NROW), 4-5 November 2009, Albany, NY.
- Bosart, L. F., H. M. Archambault, and J. M. Cordeira, 2010: Upstream North Pacific “mischief” and downstream extreme weather during December 2009 and January 2010. Oral presentation at the 35th Annual Northeastern Storm Conference, 5-7 March 2010, Saratoga Springs, NY.
- Moore, B., L. F. Bosart, D. Keyser and M. L. Jurewicz, Sr., 2010: Mechanisms for the development of predecessor rain events in advance of landfalling tropical cyclones. Oral presentation at the 35th Annual Northeastern Storm Conference, 5-7 March 2010, Saratoga Springs, NY.

- Asuma, J. V., L. F. Bosart, D. Keyser, J. S. Quinlan, T. A. Wasula, H. W. Johnson, and K. S. Lipton, 2010: Cool-season high wind events in the Northeast. Oral presentation at the 35th Annual Northeastern Storm Conference, 5-7 March 2010, Saratoga Springs, NY.
- Payer, M., L. F. Bosart, D. Keyser, N. A. Stuart, and T. A. Wasula, 2010: Analysis of the precipitation distribution associated with the 1-4 January 2010 hPa cutoff cyclone. Oral presentation at the 35th Annual Northeastern Storm Conference, 5-7 March 2010, Saratoga Springs, NY.
- Payer, M., D. Keyser, N. A. Stuart, and T. A. Wasula, 2010: Analysis of the precipitation distribution associated with the 1-4 January 2010 500 hPa cutoff cyclone. Oral presentation at the 35th Annual Northeastern Storm Conference, 5-7 March 2010, Saratoga Springs, NY.
- Moore, B. J., L. F. Bosart, D. Keyser, and M. L. Jurewicz, 2010: Mechanisms for predecessor rain events ahead of tropical cyclones. Invited presentation at the 2nd NOAA Testbed USWRP Workshop, 4-5 May 2010, Boulder, CO.
- Moore, B. J., L. F. Bosart, D. Keyser, and M. L. Jurewicz, 2010: Mechanisms for predecessor rain events in advance of tropical cyclones. Oral presentation at the NOAA/NWS Eastern Region Flash Flood Conference, 2-4 June 2010, Wilkes-Barre, PA.
- Payer, M., L. F. Bosart, D. Keyser, N. A. Stuart, and T. A. Wasula, 2010: Forecasting heavy precipitation associated with cool-season 500-hPa cutoff cyclones in the Northeast. Oral presentation at the NOAA/NWS Eastern Region Flash Flood Conference, 2-4 June 2010, Wilkes-Barre, PA.
- Wasula, T. A., N. A. Stuart, M. A. Scalora, L. F. Bosart, and D. Keyser, 2010: An application of a cutoff low forecaster pattern recognition model in the 30 June – 2 July 2009 significant event for the Northeast. Poster presentation at the American Meteorological Society 25th Conference on Severe Local Storms, 11-15 October 2010, Denver, CO.
- Moore, B. J., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr., 2010: Synoptic-scale environments and dynamical processes associated with predecessor rain events ahead of tropical cyclones. Oral presentation at Cooperative Institute for Research in the Environmental Sciences, University of Colorado, Boulder, CO, 25 October 2010.
- Moore, B. J., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr., 2010: Synoptic and mesoscale process associated with predecessor rain events ahead of tropical cyclones. Oral presentation at The Twelfth Northeast Regional Operational Workshop (NROW) 3-5 November 2010, Albany, NY.
- Moore, B. J., L. F. Bosart, D. Keyser, and M. L. Jurewicz, Sr. 2011: Synoptic-scale environments and dynamical mechanisms associated with predecessor rain events ahead of tropical cyclones. Oral presentation at the 24th American Meteorological Society Weather Analysis and Forecasting Conference at the 91st American Meteorological Society Annual Meeting, 23-27 January 2011, Seattle, WA.
- Bosart, L. F., 2011: Briefing on Winter Wonderland: Extremes, hazards, and blackouts – What gives? Invited oral presentation at the briefing sponsored by the University Corporation for Atmospheric Research, the American Geophysical Union, and The Weather Coalition, 2 March 2011 at the Senate Office Building, Capitol Hill, DC.

- Bosart, L. F., 2011: Modern weather forecasting: a personal perspective. Invited keynote speaker at the 2nd Great Lakes Atmospheric Science Symposium (GLASS), 16 April 2011, SUNY-Oswego, Oswego, NY.
- Bosart, L. F., 2011: Snowstorms and ice storms – mechanistic perspective. Oral presentation at the National Climatic Data Center Extreme Storms Workshop 25-27 July 2011, Asheville, NC.
- Potter, M., L. F. Bosart, and D. Keyser, 2011: A multiscale analysis of the inland reintensification of Tropical Cyclone Danny (1997) within an equatorward jet-entrance region. Oral presentation at the American Meteorological Society 14th Conference on Mesoscale Processes, 1–4 August 2011, Los Angeles, CA.
- Castellano, C. M., L. F. Bosart, D. Keyser, and J. Quinlan, 2011: Climatological aspects of freezing rain in the eastern United States. Poster presentation at the American Meteorological Society, 14th Conference on Mesoscale Processes, 1–4 August 2011, Los Angeles, CA.
- Thompson, D. B., L. F. Bosart, D. Wasula, T. A. Wasula, and M. Kramar, 2011: Characteristics and climatology of Appalachian lee troughs. Poster presentation at the American Meteorological Society, 14th Conference on Mesoscale Processes, 1–4 August 2011, Los Angeles, CA.
- Bosart, L. F., 2011: What’s up with recent “cold” winters? Oral presentation at the 30th Annual STANYS Siena Conference, 14 October 2011, Saratoga, NY.
- Thompson, D. B., L. F. Bosart, D. Keyser, T. A. Wasula, and M. Kramar, 2011: Characteristics and climatology of Appalachian lee troughs. Oral presentation at the Thirteenth Northeast Regional Operational Workshop (NROW), 2-3 November 2011, Albany, NY.
- Potter, M., L. F. Bosart, and D. Keyser, 2011: A multiscale analysis of the inland reintensification of Tropical Cyclone Danny (1997) within an equatorward jet-entrance region. Oral presentation at the Thirteenth Northeast Regional Operational Workshop (NROW), 2-3 November 2011, Albany, NY.
- Castellano, C. M., L. F. Bosart, D. Keyser, and J. Quinlan, 2011: Climatological aspects of freezing rain in the eastern United States. Oral presentation at the Thirteenth Northeast Regional Operational Workshop (NROW), 2-3 November 2011, Albany, NY.
- Potter, M., L. F. Bosart, and D. Keyser, 2012: A multiscale analysis of the inland reintensification of Tropical Cyclone Danny (1997) within an equatorward jet-entrance region. Oral presentation at the 37th Annual Northeastern Storm Conference, 2-4 March 2012, Rutland, VT.
- Castellano, C. M., L. F. Bosart, D. Keyser, and J. Quinlan, 2012: Climatological aspects of freezing rain in the Eastern United States. Oral presentation at the 37th Annual Northeastern Storm Conference, 2-4 March 2012, Rutland, VT.
- Thompson, D. B., L. F. Bosart, D. Keyser, T. A. Wasula, and M. Kramar, 2012: Appalachian lee troughs and their association with severe thunderstorms. Oral presentation at the 37th Annual Northeastern Storm Conference, 2-4 March 2012, Rutland, VT.

- Humphrey, T. W., and L. F. Bosart, 2012: Results of a preliminary evaluation of CAPE tendency. Oral presentation at the 37th Annual Northeastern Storm Conference, 2-4 March 2012, Rutland, VT.
- Humphrey, T. W., and M. Evans, 2012: A study on convective modes associated with tornadoes in central New York and northeast Pennsylvania. Poster presentation at the 37th Annual Northeastern Storm Conference, 2-4 March 2012, Rutland, VT.
- Potter, M. S., L. F. Bosart, and D. Keyser, 2012: Multiscale analyses of inland tropical cyclone-midlatitude jet interactions: Camille (1969) and Danny (1997). Oral presentation at the American Meteorological Society 30th Conference on Hurricanes and Tropical Meteorology 16-20 April 2012, Ponte Vedra Beach, FL.
- Potter, M. S., L. F. Bosart, and D. Keyser, 2012: Multiscale analyses of inland tropical cyclone-midlatitude jet interactions: Camille (1969) and Danny (1997). Oral presentation at the American Meteorological Society 25th Conference on Weather Analysis and Forecasting, 29 May-1 June 2012, Montreal, Quebec, Canada.
- Castellano, C. M., L. F. Bosart, D. Keyser, J. Quinlan, and K. Lipton, 2012: Climatological aspects of ice storms in the Northeastern United States. Oral presentation at the 25th American Meteorological Society Conference on Weather Analysis and Forecasting, 29 May-1 June 2012, Montreal, Quebec, Canada.
- Thompson, D. B., L. F. Bosart, D. Keyser, T. A. Wasula, and M. Kramar, 2012: Appalachian lee troughs and their association with severe thunderstorms. Oral presentation at the American Meteorological Society 25th Conference on Weather Analysis and Forecasting, 29 May-1 June 2012, Montreal, Quebec, Canada.
- Thompson, D. B., L. F. Bosart, D. Keyser, T. A. Wasula, and M. Kramar, 2012: Appalachian lee troughs and their association with severe thunderstorms. Poster presentation at the American Meteorological Society 26th Conference on Severe Local Storms, 5-8 November 2012, Nashville, TN.

d) CSTAR/COMET related refereed publications:

- Wasula, A. C., L. F. Bosart, and K. D. LaPenta, 2002: The influence of terrain on the severe weather distribution across interior Eastern New York and Western New England. *Wea. Forecasting*, **17**, 1277–1289.
- Weisman, R. A., K. G. McGregor, D. R. Novak, J. L. Selzler, M. L. Spinar, B. C. Thomas, and P. N. Schumacher, 2002: Precipitation regimes during cold-season central U.S. inverted trough cases. Part I: Synoptic climatology and composite study. *Wea. Forecasting*, **17**, 1173–1193.
- Bosart, L. F., 2003: Whither the weather analysis and forecasting process? *Wea. Forecasting*, **18**, 520–529.
- Novak, D. R., L. F. Bosart, D. Keyser, and J. S. Waldstreicher, 2004: An observational study of cold season-banded precipitation in northeast U.S. cyclones. *Wea. Forecasting*, **19**, 993–1010.

- LaPenta, K. D., L. F. Bosart, T. J. Galarneau Jr., and M. J. Dickinson, 2005: A multiscale examination of the 31 May 1998 Mechanicville, New York, F3 tornado. *Wea. Forecasting*, **20**, 494–516.
- Novak, D. R., J. S. Waldstreicher, D. Keyser, and L. F. Bosart, 2006: A forecast strategy for anticipating cold season mesoscale band formation within eastern U.S. cyclones. *Wea. Forecasting*, **21**, 3–23.
- Bosart, L. F., A. Seimon, K. D. LaPenta, and M. J. Dickinson, 2006: Supercell tornadogenesis over complex terrain: The Great Barrington, Massachusetts, tornado on 29 May 1995. *Wea. Forecasting*, **21**, 897–922.
- Wasula, A. C., L. F. Bosart, R. S. Schneider, S. J. Weiss, G. S. Manikin, and P. Welch, 2007: Mesoscale aspects of the rapid intensification of a tornadic convective line across central Florida: 22–23 February 1998. *Wea. Forecasting*, **22**, 223–243.
- Junker, N. W., R. H. Grumm, R. Hart, L. F. Bosart, K. M. Bell, and F. J. Pereira, 2008: Use of anomalous fields to anticipate extreme rainfall in the mountains of northern California. *Wea. Forecasting*, **23**, 313–335.
- Archambault, H. M., L. F. Bosart, D. Keyser, and A. R. Aiyer, 2008: Influence of large-scale flow regimes on cool-season precipitation in the northeastern United States. *Mon. Wea. Rev.*, **136**, 2945–2963.
- Bosart, L. F., A. C. Wasula, W. H. Drag, and K. W. Meier, 2008: Strong surface fronts over sloping terrain and coastal plains. *Fred Sanders Monograph*, L. F. Bosart and H. B. Bluestein, Eds., *Meteor. Monogr.*, **33**, No. 55, Amer. Meteor. Soc., 35–85.
- Archambault, H. M., D. Keyser, and L. F. Bosart, 2010: Relationships between large-scale regime transitions and major cool-season precipitation events in the Northeastern United States. *Mon. Wea. Rev.*, **138**, 3454–3473.
- Galarneau, T. J., Jr., L. F. Bosart, and R. S. Schumacher, 2010: Predecessor rain events ahead of tropical cyclones. *Mon. Wea. Rev.*, **138**, 3272–3297.
- Schumacher, R. S., T. J. Galarneau, Jr., and L. F. Bosart, 2011: Distant effects of a recurving tropical cyclone on rainfall in a midlatitude convective system: A high-impact predecessor rain event. *Mon. Wea. Rev.*, **139**, 650–667.
- Bosart, L. F., J. M. Cordeira, T. J. Galarneau Jr., B. J. Moore, and H. M. Archambault, 2012: An Analysis of Multiple Predecessor Rain Events ahead of Tropical Cyclones Ike and Lowell: 10–15 September 2008. *Mon. Wea. Rev.*, **140**, 1081–1107.
- Moore, G. J., L. F. Bosart, D. Keyser, and M. L. Jurewicz, 2012: Synoptic-scale environments of predecessor rain events occurring east of the Rocky Mountains in association with Atlantic basin tropical cyclones. *Mon. Wea. Rev.*, **140**, in press.
- Kunkel, K. E., K. R. Thomas, H. Brooks, J. Kossin, J. H. Lawrimore, D. Arndt, L. F. Bosart, D. Changnon, S. L. Cutter, N. Doesken, K. Emanuel, P. Y. Groisman, R. W. Katz, T. Knutson, J. O'Brien, C. J. Paciorek, T. C. Peterson, K. Redmond, D. Robinson, J. Trapp, R. Vose, S. Weaver, M. Wehner, K. Wolter, and D. Wuebbles, 2012: Monitoring and understanding trends in extreme storms: State of knowledge. *Bull. Amer. Meteor. Soc.*, **93**, in press.

SECTION 3:

CSTAR: May 2012-October 2012 National Weather Service Perspective

**Warren R. Snyder, Science & Operations Officer
Science & Operations Officer
WFO Albany, New York**

The CSTAR IV project “*The Cooperative Research with the National Weather Service on Cool and Warm-Season Precipitation Forecasting over the Northeastern United States*” has been successful as it progresses into its final year. Most major projects have reached conclusions. The level of interaction between the graduate students and NWS Focal Points and has generally been excellent and frequent. Three prior CSTAR masters thesis’s were provided in digital form to the NWS for inclusion on the CSTAR webpage, and development of teletraining.

Some communications challenges of working between the Binghamton Office, NWS participants in multiple offices and Jaymes Kenyon, were identified by the focal point Mike Evans. These were not detrimental to the project, and will be the basis for lessons learned and improvements in the future.

Graduate students Chris Castellano (“*Ice Storms and Freezing Precipitation*”) and Dan Thompson (*Deep Convection, Severe Weather, and Appalachian Lee Troughs*) have worked on their projects for two years. Findings have been established that will be useful to operations.

Much of the work on these projects is done. Unfortunately the disruption caused by Hurricane/Superstorm Sandy lead to the cancelation of the Northeast Regional Operational Workshop (October 31-November 1, 2012), and the Fall CSTAR meeting, where much of this work is initially presented to the operational and academic communities. The CSTAR meeting has been rescheduled to November 28, 2012. NROW for 2013 has been tentatively scheduled and Sandy will likely be the topic of many presentations.

Graduate student Jaymes Kenyon was the last of the students to begin work. Jaymes, Lance and Dan finalized the project during the spring, with input from NWS focal point Mike Evans. During the summer, Mike reviewed some of Jayme's data sets including radar loops, and was given feedback on the definition of what might constitute a long-lived vs. not-long lived band. Mike also reviewed an abstract for an AMS conference. Initial discussions on the project back in November, 2011 indicated that the project could be related to banding, or could be related to influences of terrain on snowfall. The possibility that the project could be related to influence of terrain on snowfall led the Binghamton office to work on two related local projects, one was a high wind event in northeast Pennsylvania that may have been related to the development of gravity waves east of the Pocono plateau, and the second on the impact of elevation on snowfall amounts across northeast Pennsylvania. Results from the wind study were presented at the northeast storm conference in Rutland in March, 2012. Results from the elevation snow conference were presented at the Great Lakes atmospheric symposium in Oswego, in April 2012.

They were scheduled to be presented at NWA conference as a poster, before the travel budget cuts precluded that.

UAlbany and NWS worked closely through a series of meetings, phone calls and email exchanges in responding to the October 2012 CSTAR RFP. The process was collegial and productive, expanding the University's participation and building on previous successful CSTAR work. The research proposal developed in response to the RFD merged the research interests, expertise, and focus of both UAlbany and the local NWS offices participating into an excellent proposal that we hope will receive funding.

The Collaborative and Associate projects have mostly been completed and were covered in a separate report. Of note, as part of both an ongoing NWS Weather Ready Nation Initiative and the CSTAR Project "ALY Decision Support Services Project (DSS)". Steve DiRienzo and Brian Montgomery were dispatched to the New York State Office of Emergency Management (NY OEM) during Hurricane Sandy for 24/7 hour coverage from October 27-30, 2012. This provided an outstanding opportunity to work closely with other federal and state partners. The Improving TAF forecasts project has shifted to developing an IFR TAF climatology for Albany's TAF sites. UAlbany undergraduate Interns Elizabeth Levesque, and Dana Kamens worked on reorganizing databases during the summer of 2012. Elizabeth Levesque is continuing this work as Independent Study.

CSTAR continues to provide a large payback to the NWS for the modest amounts expended. This grant's projects continue to build on CSTAR's legacy of completing operationally focused research, engaging the academic community at a high level, providing the NWS with top quality applicants, and enabling the involvement of dozens of operational meteorologists in applied research and conferences from numerous offices. CSTAR resources in the NWS Collaborative and Associate Projects of this grant also raise the level and sophistication of involvement by UAlbany undergraduates in support of the CSTAR and NWS research.

SECTION 4:

(a) **Semi-annual Report** **CSTAR IV Research (May 1, 2012 – October 31, 2012)**

Focal Point Leader(s): Thomas A. Wasula, NOAA/ NWS Albany, NY
Matt Kramar, NOAA/NWS Sterling, VA

Contributors: Brian Frugis, NWS Albany, NY
Mike Evans and Mike Jurewicz, NWS Binghamton, NY
Joe Dellicarpini, NOAA/NWS Taunton, MA
Mike Ekster, NOAA/NWS Gray, ME
Dr. Lance Bosart and Dr. Daniel Keyser, SUNYA at Albany
Warren Snyder, NOAA/NWS Albany, NY

Research Focus: *Deep Convection, Severe Weather, and Appalachian Lee Troughs*

- a. Understanding the role of Appalachian lee troughs in the organization of convection and its severity. Develop methodologies and conceptual models to identify and forecast regionally, specific significant events.
- b. Utilize new 8bit products and Dual Polarization (Dual Pol) WSR88D datasets after the April 2012 installation, in the development of warning criteria for 1 inch hail, and update V/R shear criteria developed by LaPenta et al. in identifying tornadic thunderstorms.

I. Project Activities and Work Done

- Dan Thompson, SUNYA Master's CSTAR student, gave a presentation at the May 4, 2012 CSTAR meeting at the WFO at Albany. It was on the progress so far on this Appalachian Lee Trough (ALT) work, which involved defining the trough in a domain, and building acclimatology from 2000-09. Dan also did a composite analysis of shear and CAPE profiles for geographical sectors per ALT and severe weather (Hail vs. Wind) type. A detailed case analysis was also done. Some of Dan's key points were: 1) ALT's formation is preferred during maximum seasonal diurnal heating, 2) ALT's are more likely in the Mid-Atlantic Region than the Northeast, 3) Monthly distribution of ALT's depends on the category defined of each ALT-type. For example, classic terrain-induced ALT's are more common in June-August, while ALT's with a frontal-passage occur more in May and September
- Mike Evans from BGM also attended the May 4, 2012 meeting via webinar due to the travel restrictions in place by NOAA/NWS from May through November. Matt Kramar has also contributed over the past few months via e-mail discussions.

- Dan has summary powerpoints and presentations on his progress from major conferences, such as the Northeastern Storms Conference in 2012, and the Weather and Forecasting Conference in Montreal in late May and early June of 2012 on his student web-site: <http://www.atmos.albany.edu/student/dthompsa/docs.html>
- Tom attended Dan's M.S. thesis presentation on July 18th after his midnight shift. Dan's M.S. materials (including his thesis) were placed on the CSTAR web-site in August. Dan and Tom worked on an outline and a rough draft for a powerpoint for a future teletraining presentation of his research results on Aug 30th.
- Luigi Meccariello, former SCEP student and now WFO Albany Intern, has assisted Brian Frugis and Tom Wasula on the on the 8-bit radar data tornado study. A presentation was given at the May 4th CSTAR meeting by Brian and Tom on Luigi's work done including a climatology, and a comparison of the 4 vs. 8-bit radar rotational velocity and shear values for tornadoes in the Albany Forecast Area. The data analysis is continuing at this time with undergraduate student help from Katie Towey and Becky Eidelman.
- On October 11, 2012, Tom gave a Dual Pol Brown Bag Eastern Region Webinar talk on the "May 29, 2012 Large Hail Detection Dual Pol Event at Albany". This talk used Dual Pol data and published results from the 1" Hail study done by Brian Frugis and Tom Wasula to show how accurate warnings for large hail can be done with the tools the NWS currently has in place.
- Five abstracts either lead-authored or co-authored by Tom Wasula were submitted to the 4-8 November 2012 AMS Severe Local Storms Conference in Nashville, TN. The two abstracts lead authored by Tom were "The June 1, 2011 Hail Monster Event across Eastern New York and Western New England", and "The May 26-27, 2010 Eastern NY and Western New England Backdoor Cold Front Severe Weather Event". Tom co-authored with Brian two other abstracts. The abstracts Brian lead-authored were: "The 4 September 2011 Tornado in Eastern NY: An Example Updating Tornado Warning Strategies", and "Use of the Albany Hail Study to Predict Large Hail during the 16 May 2012 and 29 May 2012 Severe Weather Episodes". **Unfortunately, travel funds were denied in October for this conference by NOAA/NWS.**
- Tom and Neil continue to work on deliverables for past CSTAR projects. A teletraining session continues to be under review by Eastern Region SSD on Matt Scalora's, M.S. thesis entitled "Forecasting Distributions of Warm-Season Precipitation and Severe Weather Associated with 500-hPa Cutoff Cyclones". Tom and Neil also have a draft for a potential referred paper, which is being reviewed at this time at the University at Albany.

II. Presentations on CSTAR IV Related Research (NOV 2010 – OCT 2012)

Dellicarpini, J. W., 2011. The Massachusetts Tornado Outbreak of June 1, 2011, 13th Northeast Operational Workshop, Albany, NY, November 2-3, 2011.

Evans, M., 2011. The April 28, 2011 Early-morning Tornado and Flash Flood Event in Central New York and Northeast Pennsylvania, 13th Northeast Operational Workshop, Albany, NY, November 2-3, 2011.

Frugis, B. J., 2011. The 4 September 2011 Tornado in Eastern New York: An Example for Updating Tornado Warning Strategies, Albany, NY, November 2-3, 2011.

Kramar, M. R., 2011. Applying Conceptual Models for Non-mesocyclonic Tornadoes in QLCS's to NWS Damage Surveys 13th Northeast Operational Workshop, Albany, NY, November 2-3, 2011.

Meccariello, L.F., B.J. Frugis, and T.A. Wasula, 2012. Tornado Climatology across New York and New England with Specific Case Studies, 37th Northeastern Storms Conference, Rutland, VT March 2-4, 2012.

Meccariello, L.F., B.J. Frugis, and T.A. Wasula, 2012. Tornado Climatology and Vr-Shear Study across New York and New England, Albany WFO Spring Meeting, May 3, 2012.

Wasula, T.A., 2011. The June 1, 2011 Hail Monster Event across Eastern New York and Western New England, 13th Northeast Operational Workshop, Albany, NY November 2-3, 2011.

Wasula, T.A., 2012. The June 1, 2011 Hail Monster Event across Eastern New York and Western New England, 37th Northeastern Storms Conference, Rutland, VT March 2-4, 2012.

Wasula, T.A., B. J. Frugis, 2012. May 29, 2012 Large Hail Detection Event at Albany. Albany, NY Oct 11, 2012.

III. Publications on CSTAR IV Related Research (MAY 2011 – OCTOBER 2012)

Frugis, B.J., T. A. Wasula, 2011. Development of Warning Thresholds for One Inch or Greater Hail in the Albany New York County Warning Area, *Eastern Region Tech Attachment*, **No 2011-05**, National Weather Service, NOAA, Department of Commerce, 24 pp., Bohemia, NY.

(b)

Semi-annual Report

CSTAR IV Research (May 2012 – October 2012)

Focal Point Leader: John S. Quinlan, NWS Albany, NY
NWS Contributor: Kevin Lipton, NWS Albany, NY
NWS Contributor: Paul Sisson, NWS Burlington, VT
NWS Contributor: Todd Lerichos, NWS Caribou, ME
NWS Contributor: Robert LaPlante, NWS Cleveland, OH
NWS Contributor: Mike Cempa, NWS Gray, ME
NWS Contributor: David Glenn, NWS Gray, ME
NWS Contributor: Stacie Hanes, NWS Gray, ME
NWS Contributor: Dan St. Jean, NWS Gray, ME
NWS Contributor: Hayden Frank, NWS Taunton, MA
Dr. Lance Bosart, University at Albany
Dr. Daniel Keyser, University at Albany
Warren Snyder, NWS Albany, NY

Research Focus: *Ice Storms and Freezing Precipitation* - Understanding the environments that produce Ice Storms, development of forecast climatologies & methodologies to forecast and identify significant Ice Storm events. Across the Northeast United States and Southeastern Canada these events have the greatest potential to cause societal disruption, massive damage to utility grids, and economic disruption. The Northeast United States has the greatest frequency of these events in the nation.

I. Project Activities and Work Done

- John and Kevin attended the annual Spring CSTAR meeting, which was held on May 4, 2012. This project was discussed, with Chris presenting some of the results of the long term climatology of freezing rain for the eastern United States that he had completed.
- John and Kevin met with Chris on July 3, 2012 to discuss the best way to classify ice storm events. Chris mentioned a classification system that had been used by Rauber et al. (2001) to classify ice storms and wanted to use a similar technique for this study.
- John met with Chris on July 19, 2012 to go over all of the ice storm events and classify them based on the Rauber technique.
- John met with Chris on August 31, 2012 to create a PowerPoint presentation based on his Master's Thesis which can be used as a template for a future training presentation.
- It was extremely challenging finding time to meet during the last 6 months with summer leave and our new staff members getting up to speed in their new positions.

II. Presentations on CSTAR IV Related Research (May 2012 – OCT 2012)

Castellano, C.M., L.F. Bosart and D. Keyser, 2012. Synoptic and mesoscale aspects of ice storms in the northeastern U.S. M.S. Thesis Seminar, Department of Atmospheric and Environmental Sciences, University at Albany, Albany, NY, July 18, 2012.

Castellano, C.M., L.F. Bosart and D. Keyser, 2012. Climatological Aspects of Ice Storms in the Northeastern United States. 25th Weather and Forecasting Conference, Montreal, QUE, May 28-June 1, 2012.

*******Presentations Prior to May 2012*******

Castellano, C.M., L.F. Bosart and D. Keyser, 2012. Climatological Aspects of Ice Storms in the Northeastern U.S., 37th Northeastern Storm Conference, Rutland, VT, March 2-4, 2012.

Castellano, C.M., L.F. Bosart and D. Keyser, 2011. Climatological Aspects of Freezing Rain in the Eastern U.S.,
13th Northeast Operational Workshop, Albany, NY, November 2-3, 2011.

Castellano, C.M., L.F. Bosart and D. Keyser, 2011. Climatological aspects of freezing rain events in the eastern United States, 14th Conference on Mesoscale Processes, Los Angeles, CA, August 1-4, 2011.

Quinlan, J.S., K.S. Lipton, 2011. A 16 Year Climatology of Ice Storms in WFO Albany's County Warning Area and a Comparison of Two Recent Events, ISE Workshop, Hubbard Brook Experimental Forest, NH, April 12, 2011.

Lipton, K.S., J.S. Quinlan, 2010. A 16 Year Climatology of Ice Storms in WFO Albany's County Warning Area and a Comparison of Two Recent Events, 12th Northeast Operational Workshop, Albany, NY, November 3-5, 2010.

Lipton, K.S., J.S. Quinlan, 2010. A 16 Year Climatology of Ice Storms in WFO Albany's County Warning Area and a Comparison of Two Recent Events, 3rd Tri-State Weather Conference, Danbury, CT, October 9, 2010.

Quinlan, J.S., K.S. Lipton, 2010. A 16 Year Climatology of Ice Storms in WFO Albany's County Warning Area and a Comparison of Two Recent Events, HPC Visiting Forecaster Program Presentation, Camp Springs, MD, September 23, 2010.

Quinlan, J.S., K.S. Lipton, 2010. A 16 Year Climatology of Ice Storms in WFO Albany's County Warning Area and a Comparison of Two Recent Events, 67th Eastern Snow Conference, Hancock, MA, June 8-10, 2010.

Lipton, K.S., J.S. Quinlan, 2010. A 16 Year Climatology of Ice Storms in WFO Albany's County Warning Area and a Comparison of Two Recent Events, 35th Northeastern Storm Conference, Saratoga Springs, NY, March 5-7, 2010.

(c) **Status of “Snyder Proposal” Projects**

Department of Commerce
NOAA, National Weather Service
251 Fuller Rd. Suite B-300
Albany, NY 12203-3640

November 8, 2012

MEMORANDUM FOR: Lance F. Bosart

FROM: Warren R. Snyder
SOO, WFO, Albany, NY
(W/Input from Project Focal Points)

SUBJECT: Status of Collaborative and Associate Projects in CSTAR IV

1. Overview

- a. Actual project descriptions are in CSTAR Proposal.

2. Collaborating Projects

- a. ***ALY Decision Support Services Project (DSS)*** - A study assessing DSS provided to New York State Office of Emergency Management (OEM). Provided support via the following approaches, telephone or NAWAS Briefing, live web briefing/in house briefing, webinar, live virtual briefing, or in person at OEM Emergency Operations Center. The level of briefing is contingent on the situation. Study will assess techniques and technologies used, and the effectiveness of the project on OEM’s operations. Develop best practices. Project lead completed ICS training, and briefings have been supplied for several events, Support to OEM was largely via Powerpoint briefings and state conference calls. These were provided for Spring Fire Weather Events and April 2012 Snowstorm in Western New York. Project ongoing, dependent on events.

During Hurricane Sandy Steve DiRienzo and Brian Montgomery were dispatched to the New York State Office of Emergency Management (NY OEM) from October 27-30, 2012. This provided the opportunity to work closely with other federal and state partners to fulfill our WeatherReady Nation initiative. This projects participants were NWS meteorologists with ICS-FEMA course completion, which allowed for a smooth interaction with OEM staff, understanding of our roles as well as the chain of command established at NY OEM.

Lead – Brian Montgomery (ALY)

- b. ***Integrating Social Science Into Operations*** – Initial contact Dr. Tom Stewart, Director, Center for Policy Research and Research Professor has retired. This project has been shelved.
 - i) Lead – Neil Stuart (ALY)
 - ii) Team – Raymond O’Keefe (ALY), Steve DiRienzo (ALY)
- c. **Establishing Criteria for Warning on 1 Inch Hail** –
 - i) Project is completed. Details in November 2011 report. Research published as ER-TA
 - a) Lead – Brian Frugis (ALY)
 - b) Participants –Rihaan Gangat (ALY STEP) & Tom Wasula

- d. **Using 8bit Products and Dual Pol WSR88D data sets” to Improve Tornado Warnings, and updating the Vr Shear Criteria from Lapenta et al.**
 - i) Brian Frugis and Tom Wasula worked with Luigi Meccariello, and developed a tornado climatology for WFO ALY and several other Northeast County Warning Areas, for the past 30 years. Datasets have been analyzed for Vr shear, as well as for the presence of other tornadic indicators such as Hooks, Mesocyclones, and Boundaries. Of the three indicators studied so far, boundaries have been identified as playing a much more significant role in tornadogenesis in the cases studied. Many more events will be analyzed with UAlbany undergraduates participating. Project is ongoing with significant results expected in the spring of 2013.
 - a) Team - Brian Frugis & Tom Wasula
 - b) Participants - Luigi Meccariello
- e. ***Applications of Mesoscale Modeling –***
 - i) Local HiRes (regional) WRF at UAlbany run performance has improved to better than 90% with recent configurations changes. The DAES is procuring a cluster at the RIT center, and has offered to make unused CPU time available for this modeling effort in the future.
 - ii) WFO Albany is running a local WRF on a cluster of computers in the WFO built from excess AWIPS components. It covers the CWA and has been running over a year to support the Enhanced Short Term Forecast Initiative and Warn on Forecast concepts. Data has been used in numerous events by office staff to identify timing, convective mode, and structure of significant precipitation events. CWSU Oberlin relies on this data via the web particularly in convective events.
 - a) Leads – Warren Snyder (ALY), Mike Evans (BGM), Mark McKinley(ZOB),
 - b) PI - David Knight
 - c) Team – Vasil Koleci, Todd Lerichos (CAR-e), Dan Leins (CLE) , Scott Reynolds (ZBW)
- f. ***Improvement of Ceiling & Visibility Forecasts for TAFs–***
 - i) Much work has been done on this project. Completed work is covered in the May 2012 report. New efforts have shifted to developing an IFR climatology for WFO ALY TAF sites. METAR data since January 2007 has been built into a database. The database needs to be organized, as the transition and parsing from the original data files into a Microsoft Excel Spreadsheet included several repeated observations. In the summer of 2012, UAlbany undergraduates Elizabeth Levesque, and Dana Kamens worked on reorganizing the Excel spreadsheet. Elizabeth Levesque is continuing this work along with 2012-13 Interns during the 2012-13 academic year.
 - a) Lead – Kevin Lipton (ALY)
 - b) Team - Hugh Johnson (ALY), Jeff Tongue (OKX), Mike Evans (BGM), Todd Lerichos (CAR), John Roessner (UAlbany STEP Student), Debra Lucia (ALY), Hannah Attard (UAlbany STEP)
- g. ***Understand the Modulation of the Climate of the Northeast United States by Hudson’s Bay (Canada).*** – This project was shelved.
 - i) Lead – Warren Snyder (ALY)

- h. **Understanding Inland Extent of Lake Effect Snow Bands.** Project is complete. Reported on in November 2011 report. Development of graphics to display snowband position is awaiting student or staff with requisite programming skills.
 - i) Leads – Joe Villani and Mike Jurewicz.
- i. ***Expanding Operational Use of Known Methods for Forecasting River Ice Formation, Snow Melt and Ice Break up.*** – This project was shelved.
 - i) Lead – Steve DiRienzo (ALY)
 - ii) Team – Greg Hanson (SSH, BTV) , Mark Turner (CAR), Dan St. Jean (GYX-datasets only), Thomas Econopoly (NERFC), Michael Schaffner (BGM)
- j. **Northeast Convective Flash Flood Events** – Completed. Reported on in November 2011 report.
- k. **Development of a Flash Flood Potential Index (FFPI)** Completed. Reported on in November 2011 report.
 - i) Leads – Joe Villani and Mike Jurewicz.

1. Associate Projects

- a. ***Integration of Research Into Operations*** –
 - i. CSTAR webpage maintenance items included adding thesis material and articulate presentations.
 - ii. Articulate presentations Warm Season Cutoff Lows reviewed at SSD. They are planned for the two completed CSTAR III Projects. Delayed due to issues with Articulate software running in Office 2010 under Windows 7.
 - iii. WFO Albany Senior Forecaster Neil Stuart creates post mortem pages based on past events related to CSTAR projects.
 - iv. Encourage use of forums in AMS journals for fast publication of short articles on CSTAR projects. More of these topics have found their way on the Maplist discussion board through UAlbany.
 - v. Project Participants
 - 1. Lead – Vasil Koleci (ALY)
 - 2. Team - Neil Stuart (ALY), Tom Wasula (ALY), Michael Jurewicz (BGM), Mike Evans (BGM), Josh Korotky (PIT)
- b. ***Hudson-Mohawk Convergence Events*** –
 - i. Cases continued to be reviewed by UAlbany Interns adding to the preliminary findings identified in previous report. The focus of recent work has been on reverse or Southerly Flow HMC events during the warm season. Events are relatively rare, and identification of cases has been challenging. Additional work is planned during the 2012-13 academic year.
 - 1. Leads – Hugh W. Johnson IV (ALY) and Kim McMahon (BTV)
- c. ***UAlbany Interns Increased Involvement in CSTAR*** – Since the summer of 2010 Twenty Seven Interns have been or were actively involved in supporting Local Research and CSTAR projects, as well as six SCEP/STEP NWS employees who were UAlbany Students.

SECTION 5: Computer and Technology Transfer Issues (David Knight)

The results described herein would not have been possible without appropriate computing infrastructure. Students are exposed to NWS facilities and software, and NWS staff have access to capabilities not available in the local office. Both groups benefit from this interaction and sharing of facilities. Several Sun workstations and PCs are available for use by CSTAR participants. Approximately 1 TB of disk space on the UAlbany Department of Atmospheric and Environmental Sciences (DAES) Sun servers is dedicated to storing CSTAR related data and software. This disk space is available on all DAES workstations and provides a central location where both UAlbany and NWS personnel can store, process, and exchange large datasets. Each CSTAR student has a PC laptop, which enables them to take familiar computers with them when visiting NWS staff, and provides them ready access to the DAES UNIX machines. Email lists created on the DAES computers at the beginning of the project continue to be useful conduits for exchange of scientific ideas, results, and information between CSTAR participants. There are email lists for all the CSTAR participants, as well as focused lists for those involved in specific projects. Albany WFO staff took the lead in maintaining content for the CSTAR webpage at <http://cstar.cesm.albany.edu>. The web page provides an additional mechanism for exchanging information and ideas. The WFO also runs a CSTAR forum and discussion group at http://infolist.nws.noaa.gov/read/?forum=cstar_ne. The DAES web server (<http://www.atmos.albany.edu>) and ftp server (<ftp://ftp.atmos.albany.edu>) are being used to facilitate exchange of large datasets between CSTAR collaborators. The DAES computing resources are available for CSTAR related research including a Sun server (with 8 CPUs and 16GB RAM), a Linux server (with 16 CPUs and 96GB RAM) and two large network attached disk storage arrays (54 TB total usable space). While CSTAR money was not used for this, and the machines were not bought specifically for CSTAR use, they nonetheless directly benefit the CSTAR research by providing much faster servers for computation and storage space for commonly used datasets.

In addition to DAES and NWS computing facilities, the formal CSTAR collaborative grant effort has allowed access to University Research Information Technology (RIT) services. In particular, Warren Snyder (SOO Albany WSFO) is using the RIT 144 CPU Linux cluster for Weather Research and Forecasting (WRF) model simulations. This computing facility allows him to perform computations not possible at the local office. The facility will be used to generate additional members for the collaborative ensemble, and to generate higher resolution runs for research purposes. So far this facility has been made available at no cost to the CSTAR project.

SECTION 6: Selected Documentation of CSTAR Project Activities:

Tuesday 22 May 2012

Lance,

For possible incorporation into the next six-month CSTAR report.

CSTAR cutoff low research is cited in the second paragraph of the short-term section of this morning's AFD issued by NWS ALY.

Dan

FXUS61 KALY 220842

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

438 AM EDT TUE MAY 22 2012

.SYNOPSIS...

A WEAK TROUGH OF LOW PRESSURE WILL REMAIN ENTRENCHED OVER THE AREA THROUGHOUT MUCH OF THE WORK WEEK. THIS DISTURBANCE WILL PROVIDE UNSETTLED CONDITIONS WITH BOUTS OF SHOWERS AND PERHAPS A FEW MAINLY AFTERNOON AND EARLY EVENING THUNDERSTORMS. WITH LOTS OF CLOUDS...TEMPERATURES ARE EXPECTED TO REMAIN IN THE 60S TODAY...BUT WITH MORE BREAKS OF SUNSHINE...HIGH TEMPERATURES SHOULD WARM BACK THROUGH THE 70S TO AROUND 80 WEDNESDAY AND THURSDAY.

&&

.SHORT TERM /6 PM THIS EVENING THROUGH THURSDAY/

ANY DIURNALLY DRIVEN CONVECTION STILL LOOKS TO GRADUALLY DIMINISH TONIGHT NIGHT...LEAVING MAINLY ISOLATED SHOWERS. THERE WILL STILL BE PLENTY OF LOW LEVEL MOISTURE AROUND AND BY THIS TIME...SOME BREAKS IN THE CLOUDS ARE POSSIBLE. SHOULD THAT BE THE CASE...SOME FOG WOULD FORM. EVEN IF CLOUDS PERSIST...PATCHY FOG IS POSSIBLE OVERNIGHT SO WE HAVE INCLUDED IT. TEMPS WILL AGAIN REMAIN MILD...EVEN IF CLOUDS WERE TO BREAK UP. OVERNIGHT LOWS WED NIGHT WILL BE VERY SIMILAR TO TUESDAY NIGHT.

ON WEDNESDAY WE WILL STILL BE UNDER THE INFLUENCE OF THE TROUGH...ALTHOUGH GUIDANCE INDICATING AN UPPER LOW CONSOLIDATING OVER THE CENTRAL/SOUTHERN APPALACHIANS. THIS MIGHT PRODUCE A BAND OF ENHANCED CONVECTION IN OUR SOUTHERN ZONES DUE TO MID LEVEL FRONTOGENESIS. (CSTAR STUDIES IN THE PAST HAVE INDICATED THAT WHEN A MID LEVEL LOW CLOSES OFF...IT INCREASES THE CHANCES OF ENHANCED MID LEVEL FRONTOGENESIS TO NORTHEAST OF THE FEATURE). FOR NOW...JUST KEEP EVERYONE IN THE CHANCE CATEGORY...BUT AT THE HIGH END IN OUR SOUTHERN ZONES SOME THURSDAY. MORE BREAKS OF SUNSHINE ARE EXPECTED WEDNESDAY ALONG

WITH WARMER TEMPERATURES PUSHING THROUGH THE 70S...AND EVEN AROUND 80 IN PORTIONS OF THE HUDSON VALLEY. AS A RESULT...THE ATMOSPHERE LOOKS MORE UNSTABLE...WITH MUCAPE POSSIBLY REACHING OVER 2000 J/KG! WILL CONTINUE TO CARRY CHC THUNDERSTORMS FOR MAINLY THE AFTERNOON...AGAIN HIGHEST IN SOUTHERN ZONES.

THURSDAY...THE CUTOFF LOW LOOKS TO OPEN UP AGAIN AS IT MOVES SLOWLY NORTHWARD WITH MORE UNSETTLED WEATHER. WILL CONTINUE TO MENTION THE POSSIBILITY OF THUNDERSTORMS THAT DAY WITH HIGH TEMPERATURES IN THE 70S TO AROUND 80 ALONG WITH ELEVATED DEWPOINTS.

NONE OF THE NEXT SEVERAL DAYS LOOKS TO BE COMPLETE WASHOUT.

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\$\$

SYNOPSIS...NAS/JPV

SHORT TERM...HWJIV/JPV

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Friday 22 June 2012

Lance,

For possible incorporation into the next six-month CSTAR report.

CSTAR warm-season cutoff low research is cited in the second paragraph of the long-term section of this morning's AFD issued by NWS ALY.

Dan

FXUS61 KALY 220916

AFDALY

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE ALBANY NY
516 AM EDT FRI JUN 22 2012

.SYNOPSIS...

A COLD FRONT WILL MOVE ACROSS THE REGION TODAY PRECEDED AND ACCOMPANIED BY ISOLATED TO SCATTERED SHOWERS AND THUNDERSTORMS. HIGH PRESSURE WILL BUILD IN FROM THE GREAT LAKES REGION FOR THE WEEKEND WITH COOLER AND LESS HUMID CONDITIONS. HOWEVER...A DISTURBANCE IN THE UPPER LEVELS OF THE ATMOSPHERE WILL MOVE OVERHEAD SATURDAY AND MAY RESULT IN SOME SHOWERS AND/OR THUNDERSTORMS MAINLY TO THE NORTH OF THE CAPITAL DISTRICT AND ACROSS SOUTHERN VERMONT. UNSETTLED WEATHER AND BELOW NORMAL TEMPERATURES ARE EXPECTED MUCH OF NEXT WEEK.

&&

.LONG TERM /MONDAY THROUGH THURSDAY/...

UNSETTLED WEATHER SHOULD BE THE RULE FOR MOST OF THE PERIOD...BUT SOME IMPROVEMENT POSSIBLE BY THURSDAY. DEPARTING UPPER IMPULSE SUPPORTS GOOD CHANCE FOR SHOWERS FOR MUCH OF THE NORTHEASTERN U.S.

MONDAY...THEN DECREASING COVERAGE OF SHOWERS MONDAY NIGHT AND TUESDAY WITH WEAK FLAT RIDGING AHEAD OF AN APPROACHING DEVELOPING UPPER LOW. STILL SOME ISOLATED SHOWERS ACTIVITY POSSIBLE MONDAY NIGHT AND TUESDAY...WITH POSSIBLE SCATTERED ACTIVITY IN THE WESTERN MOHAWK VALLEY...SOUTHERN ADIRONDACKS...LAKE GEORGE REGION AND SOUTHERN VERMONT INTO THE NORTHERN BERKSHIRES. SCATTERED ACTIVITY POSSIBLE ABOUT EVERYWHERE TUESDAY AFTERNOON WITH RAPID COOLING ALOFT AHEAD OF THE DEVELOPING UPPER LOW THAT APPROACHES.

GOOD CONSENSUS FOR A STRONG UPPER LOW TO DROP OUT OF CANADA AND TRACK THROUGH THE NORTHEASTERN U.S. THEN SLOWLY DEPARTING LATER WEDNESDAY THROUGH THURSDAY. THE LAST 2 SETS OF GUIDANCE AND ENSEMBLES SUGGEST A POTENTIAL TYPE B UPPER LOW TRACK FROM CSTAR WARM SEASON UPPER LOW RESEARCH... SUGGESTING UPPER COLD POOL STRONG CONVECTION POTENTIAL OVER THE NORTHEASTERN U.S. WHEN THE UPPER LOW CENTER ITSELF TRACKS THROUGH. THE UPPER LOW LOOKS TIMED FOR THE DAY WEDNESDAY...BUT THIS FAR OUT...TIMING AND TRACK COULD CHANGE. ALL GUIDANCE SUGGESTS QUITE AN UPPER COLD POOL FOR THIS TIME OF YEAR...SUPPORTING SOME RATHER STEEP LAPSE RATES OVER OUR REGION WHEN THE UPPER LOW TRACKS THROUGH.

BY THURSDAY...UPPER LOW SLOWLY LIFTS THROUGH NORTHERN NEW ENGLAND AND INTO SOUTHEASTERN CANADA WITHIN A NEGATIVE TILTED LARGER SCALE UPPER TROUGH. ALL THIS UPPER ENERGY AND COOLING ALOFT MONDAY THROUGH THURSDAY SUGGESTS CONSIDERABLY MORE CLOUDS THAN SUN THROUGH THE PERIOD...BUT DEPENDING ON TIMING OF FEATURES...THERE COULD BE BRIEF PERIODS OF CLEARING AT DIFFERENT TIMES IN VARIOUS PARTS OF THE REGION...BUT AGAIN THE LACK OF THE ABILITY TO SPECIFICALLY TIME FEATURES...JUST GOING PARTLY TO MOSTLY CLOUDY THE ENTIRE PERIOD...WITH THE MOST CLOUDINESS IN NORTHERN AND EASTERN AREAS...MOST PROXIMATE TO THE POTENTIAL UPPER LOW TRACK...AND ESPECIALLY AROUND TERRAIN. HIGH TEMPERATURES SHOULD BE IN THE 70S MOST DAYS...WITH 60S IN SOME AREAS...ESPECIALLY ONCE THE UPPER LOW TRACKS THROUGH THE REGION.

&&

\$\$

SYNOPSIS...IAA

LONG TERM...NAS

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Wednesday 8 August 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research on warm-season heavy rainfall is cited in the second paragraph of the hydrology section of yesterday morning's AFD issued by NWS ALY.

FXUS61 KALY 070841

AFDALY

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE ALBANY NY
441 AM EDT TUE AUG 7 2012

.SYNOPSIS...

HIGH PRESSURE WILL DOMINATE OUR WEATHER TODAY...BEFORE SHIFTING OFFSHORE TONIGHT AS A COLD FRONT APPROACHES FROM THE GREAT LAKES REGION ON WEDNESDAY. IT WILL BE WARMER AND MORE HUMID WEDNESDAY ALONG WITH THE POSSIBILITY OF ISOLATED TO SCATTERED AFTERNOON THUNDERSTORMS. UNSETTLED WEATHER IS EXPECTED FOR THE END OF THE WEEK AS A LOW PRESSURE SYSTEM TRACKS ACROSS THE REGION.

&&

.HYDROLOGY...

DRY CONDITIONS ARE EXPECTED THROUGH WEDNESDAY MORNING. ISOLATED TO SCATTERED SHOWERS AND THUNDERSTORMS ARE EXPECTED TO DEVELOP WED AFTERNOON...WITH SCATTERED SHOWERS AND THUNDERSTORMS EXPECTED FOR THU/THU NT. SHOWERS AND THUNDERSTORMS WILL ALSO OCCUR FRI AND SAT AS A LOW PRESSURE SYSTEM APPROACHES FROM THE SOUTHWEST.

INCREASINGLY MOIST AIR WILL FAVOR HEAVY DOWNPOURS WITHIN ANY THUNDERSTORMS FROM WED AFTERNOON THROUGH SATURDAY. LOCALLY HEAVY RAINFALL WILL BE POSSIBLE IN AT LEAST SOME AREAS DURING THIS TIME FRAME...ESPECIALLY WHERE MULTIPLE ROUNDS OF SHOWERS AND THUNDERSTORMS OCCUR. THIS COULD LEAD TO PONDING OF WATER IN LOW LYING...POOR DRAINAGE AND URBAN AREAS. UNCERTAINTY REMAINS...HOWEVER...AS TO THE EXACT EVOLUTION AND ORIENTATION OF THE POTENTIAL UPPER LEVEL TROUGH AND/OR LOW ACROSS THE GREAT LAKES REGION FOR FRI INTO SATURDAY. ALTHOUGH SOME MODELS INDICATE A PATTERN FAVORABLE FOR WIDESPREAD HEAVY RAINFALL PER CSTAR III RESEARCH...THERE IS STILL SOME POSSIBILITY FOR HEAVY RAINFALL TO REMAIN MORE LOCALIZED. NEVERTHELESS...WILL ADDRESS THIS POTENTIAL IN HWOALY.

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SYNOPSIS...KL/IAA

HYDROLOGY...KL/IAA/HWJIV

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Wednesday 8 August 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research on warm-season heavy rainfall associated with cutoff lows is cited in the ninth paragraph of the short-term section and in the third paragraph of the hydrology section of yesterday afternoon's AFD issued by NWS ALY.

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY
445 PM EDT TUE AUG 7 2012

.SYNOPSIS...

HIGH PRESSURE WILL SHIFT OFFSHORE TONIGHT. A COLD FRONT WILL APPROACH FROM THE GREAT LAKES REGION LATE ON WEDNESDAY. THIS FRONT WILL CROSS THE REGION ON THURSDAY...STALL TO OUR SOUTH AS ANOTHER COLD FRONT AND DEVELOPING LOW PRESSURE TRACK OUR WAY FOR FRIDAY.

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.SHORT TERM /6 AM WEDNESDAY MORNING THROUGH FRIDAY NIGHT/...

WEDNESDAY WILL START OUT WITH ANY PATCHY FOG BURNING OFF QUICKLY LEAVING US A PARTLY TO MOSTLY SUNNY SKY. DEWPOINTS WILL CONTINUE TO RISE INTO THE 60S IN MOST PLACES (EXCEPT HOLD IN THE UPPER 50S ACROSS THE CATSKILLS AND ADIRONDACKS).

850 TEMPERATURES LOOK TO RISE TO ABOUT +18C SOUTH TO ABOUT +16C NORTHERN AREAS. WITH FAIRLY GOOD MIXING...SOME SUNSHINE AND A COLD FRONT/SHORT WAVE BEGINNING TO PRESS SOUTHWARD DURING THE AFTERNOON...WE LOOK FOR YET ANOTHER VERY WARM TO HOT DAY ACROSS THE REGION. WE FIGURE HIGH TEMPERATURES TO REACH AROUND 90 IN THE HUDSON VALLEY FROM THE CAPITAL DISTRICT SOUTHWARD...80S MOST OTHER PLACES. HEAT INDICES LOOK TO FALL WELL SHORT OF 100 DEGREES EVERYWHERE SO NO HEAT ADVISORIES WILL BE ISSUED.

MODELS SOUNDING INDICATE A WEAK CAP IN THE MID LEVELS OF THE ATMOSPHERE ON WEDNESDAY. HOWEVER...THERE WILL BE 1000-2000 J/KG OF CAPE SO THERE WILL BE MODEST INSTABILITY.

AS THE COLD FRONT PRESSES SOUTHWARD TOWARD THE ADIRONDACKS AND MOHAWK VALLEY BY DAY/S END IT WILL LIKELY DISSIPATE THE CAP AND WORK ON THIS MODEST INSTABILITY. CONTINUED LOW CHANCES FOR THUNDERSTORMS WEDNESDAY AFTERNOON IN THESE AREAS. THE ACTUAL FORCING FROM THIS FRONT LOOKS WEAK AS THE SHORT WAVE WEAKENS. WILL CONTINUE WITH ONLY SLIGHT POPS FOR THE AFTERNOON FURTHER SOUTH AND EAST.

MID LEVEL LAPSE RATES DO STEEPEN TO ABOUT 6.0 C/KM AND BULK SHEAR LOOKS FAIRLY WEAK (UNDER 30KTS)...NEITHER OF WHICH ARE FAVORABLE FOR ANY CELL TO BECOME STRONG OR SEVERE. NOT OUT OF THE POSSIBILITY BUT APPEARS UNLIKELY AT THIS TIME.

BY WEDNESDAY NIGHT THE COLD FRONT WILL SLOWLY WORK THROUGH OUR REGION. AHEAD OF IT WILL REMAIN MUGGY AND EVEN BEHIND IT...INITIALLY NOT ALL THAT COOL. WILL HAVE 30 POPS FOR SHOWERS/THUNDER IN THE EVENING ALL PLACES...BUT BACK OFF TO SLIGHT POPS OVERNIGHT AS WE LOOSE ALL THE HEATING OF THE DAY.

BY THURSDAY INTO THURSDAY NIGHT...THIS FRONT WILL STALL OUT NEAR INTERSTATE 84 AS A MUCH STRONGER SHORT WAVE PLUNGES INTO THE GREAT LAKES WHICH IN TURN...WILL BACK THE FLOW TO A SOUTHERLY DIRECTION. THIS SETUP WILL INCREASE

MOISTURE FROM THE WARM ATLANTIC WATERS FORCING ISENTROPIC LIFT AS THE WARM AIR GLIDES OVER THE FRONT BOUNDARY.

KEEP CHANCE OF SHOWERS AND THUNDERSTORMS IN THURSDAY ALTHOUGH THE STRONG FORCING LOOKS TO BE TO OUR WEST AT THAT TIME. INCREASE TO LIKELY THE CHANCES OF RAIN (AND POSSIBLE THUNDERSTORMS) IN OUR NORTHWESTERN AREAS LATER THURSDAY NIGHT.

THE MODEL GUIDANCE CONTINUES TO DEVELOPMENT OF A CLOSED LOW OVER THE GREAT LAKES/OHIO VALLEY FRIDAY. THE MODELS INDICATE A SYNOPTIC PATTERN FAVORABLE FOR THE POTENTIAL FOR WIDESPREAD HEAVY RAINFALL FOR PART OF THE REGION. LOCAL CSTAR III RESEARCH HAS SHOWN THAT THE NORTHEAST UNITED STATES IN THE RIGHT-ENTRANCE REGION OF THE UPPER LEVEL JET...STRONG SOUTHERLY WIND ANOMALY AT 850 MB ACROSS THE REGION AND NEGATIVE HEIGHT ANOMALIES AT 500 MB ACROSS THE GREAT LAKES AND MIDWEST ARE FAVORABLE FOR HEAVY RAINFALL ACROSS THE REGION. THE 12Z GEFS ENSEMBLES INDICATED 500 MB HEIGHT ANOMALIES OF -2 TO -3 STANDARD DEVIATIONS OVER THE OHIO VALLEY FRIDAY AND SATURDAY AND 850 MB WIND ANOMALIES OF +1 TO +2 STANDARD DEVIATIONS ALONG THE MID ATLANTIC COAST INTO THE NORTHEASTERN UNITED STATES. PRECIPITABLE WATER VALUES ARE STILL MODELED TO INCREASE TO 1.5 TO CLOSE TO 2 INCHES.

WILL GO WITH LIKELY POPS EVERYWHERE FRIDAY INTO FRIDAY FOR RAIN AND THE CHANCE OF THUNDERSTORMS. SOME OF THE RAIN...ESPECIALLY WITH ANY THUNDERSTORMS COULD BE QUITE HEAVY.

WILL KEEP THE MENTION FOR THE POSSIBILITY FOR HEAVY RAINFALL IN OUR HAZARDOUS WEATHER OUTLOOK.

TEMPERATURES WILL NOT BE QUITE AS WARM THURSDAY AS WEDNESDAY AS MOST IF NOT ALL THE AREA WILL BE BEHIND THE COLD FRONT. WE WENT WITH HIGHS AROUND 80 MOST AREAS...EXCEPT 70S WELL NORTH AND WEST OF ALBANY. IT WILL STILL BE HUMID.

OVERNIGHT LOWS WILL BE IN THE 60S THURSDAY NIGHT AND IN THE 70S FRIDAY WITH RAIN AND CLOUDS ANTICIPATED. HOWEVER...HUMIDITY LEVELS WILL BE HIGH.

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.HYDROLOGY...

DRY TONIGHT. A CHANCE OF SHOWERS AND THUNDERSTORMS WEDNESDAY AFTERNOON...MAINLY NORTH AND WEST OF ALBANY. THESE WILL BE WIDELY SCATTERED IN NATURE AND LIKELY NOT CAUSE ANY HYDRO PROBLEMS.

HOWEVER...A SLOW MOVING COLD FRONT...WHICH WILL STALL ALTOGETHER WILL INCREASE CHANCES FOR MORE SHOWERS AND THUNDERSTORMS THURSDAY INTO THURSDAY. THESE MIGHT CONTAIN LOCALLY HEAVY RAINFALL. AT THIS POINT WE FIGURE AVERAGE BASIN RAINFALL WILL REMAIN BELOW 0.25 INCHES THROUGH THURSDAY NIGHT.

THEN...A MUCH STRONG DISTURBANCE WILL APPROACH AND INTERACT WITH THE STALLED FRONT LATE THURSDAY NIGHT INTO EARLY SATURDAY. BASED ON LOCAL CSTAR III RESEARCH THE MODELS ARE INDICATING THAT THE SYNOPTIC PATTERN MAY SET UP TO BE FAVORABLE FOR WIDESPREAD HEAVY RAINFALL ACROSS PART OF THE REGION DURING THIS TIME FRAME. THE NORTHEAST UNITED STATES IN THE RIGHT-ENTRANCE REGION OF THE UPPER LEVEL JET.

STRONG SOUTHERLY WIND ANOMALY AT 850 MB ACROSS THE REGION. NEGATIVE HEIGHT ANOMALIES AT 500 MB ACROSS THE GREAT LAKES AND MIDWEST ARE FAVORABLE...INDICATIONS AT THIS TIME ARE THESE ANOMALIES ARE FORECAST OVER THE OHIO VALLEY. PRECIPITABLE WATER VALUES ARE MODELED TO INCREASE TO 1.5 TO CLOSE TO 2 INCHES. THE MODEL QPF OUTPUT IS INDICATING HIGHER AMOUNTS.

IT IS STILL TOO EARLY TO DETERMINE WHERE THE HIGHEST PRECIPITATION AMOUNTS WOULD BE. FOR NOW...FIGURE ON THE POTENTIAL FOR 1-4 INCHES OF AVERAGE RAINFALL BASIN REGION WIDE. THE BIGGER CONCERN WOULD BE FOR POSSIBLE FLASH FLOODING.

AS FAR AS MAINSTEM RIVERS GO...THERE COULD BE SIGNIFICANT WITHIN BANK RISES ON SOME (DEPENDING ON THE AXIS OF HEAVY RAINFALL). HOWEVER...GIVEN THE DRY CONDITIONS OF LATE...AT THIS POINT...WIDESPREAD RIVER FLOODING APPEARS UNLIKELY.

DUE TO ALL THESE FACTORS MENTIONED ABOVE...WILL KEEP MENTION FOR THE POSSIBILITY FOR HEAVY RAINFALL IN OUR HAZARDOUS WEATHER OUTLOOK.

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SYNOPSIS...HWJIV

SHORT TERM...HWJIV/IAA

HYDROLOGY...IAA/HWJIV

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Wednesday 8 August 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research on warm-season heavy rainfall is cited in the second paragraph of the hydrology section of this morning's AFD issued by NWS ALY.

FXUS61 KALY 080907

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

507 AM EDT WED AUG 8 2012

.SYNOPSIS...

A COLD FRONT WILL APPROACH FROM THE GREAT LAKES REGION LATE TODAY AND TONIGHT...TRIGGERING ISOLATED TO SCATTERED SHOWERS AND THUNDERSTORMS...MAINLY NORTH AND WEST OF THE CAPITAL REGION.

THIS FRONT WILL CROSS THE REGION ON THURSDAY...AND THEN STALL TO OUR SOUTH...AS A LOW PRESSURE SYSTEM DEVELOPS ALONG THE FRONT OVER THE OHIO VALLEY AND TRACKS NORTHEAST INTO THE EASTERN GREAT LAKES FOR FRIDAY INTO SATURDAY. SHOWERS AND THUNDERSTORMS WILL BECOME NUMEROUS AS THE LOW APPROACHES...WITH SOME LOCALLY HEAVY RAINFALL POSSIBLE.

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.HYDROLOGY...

ISOLATED TO SCATTERED SHOWERS/THUNDERSTORMS ARE EXPECTED TO DEVELOP THIS AFTERNOON/EVENING INTO THURSDAY AS A COLD FRONT APPROACHES FROM THE GREAT LAKES. LIMITED AREAL COVERAGE WILL KEEP MEAN AREAL AMOUNTS BELOW ONE QUARTER OF AN INCH THROUGH THURSDAY.

THIS FRONT WILL STALL SOUTH OF THE REGION LATE THURSDAY...AS A MUCH STRONGER DISTURBANCE APPROACHES AND INTERACTS WITH THE STALLED FRONT LATE THURSDAY NIGHT INTO EARLY SATURDAY. BASED ON LOCAL CSTAR III RESEARCH...THE MODELS ARE INDICATING THAT THE SYNOPTIC PATTERN MAY BE SETTING UP TO BE FAVORABLE FOR WIDESPREAD HEAVY RAINFALL ACROSS PART OF THE REGION DURING THIS TIME FRAME. STRONG SOUTHERLY WIND ANOMALY AT 850 MB WILL BE ACROSS THE REGION. NEGATIVE HEIGHT ANOMALIES AT 500 MB WILL BE ACROSS THE GREAT LAKES...MIDWEST...AND OHIO VALLEY. PRECIPITABLE WATER VALUES ARE MODELED TO INCREASE TO 1.5 TO CLOSE TO 2 INCHES. THE ONLY QUESTIONABLE PART IS PLACEMENT OF THE UPPER LEVEL JET...WHICH CURRENT MODELS DEPICT SLIDING VERY CLOSE TO THE REGION. THE MOST FAVORABLE SITUATION FOR WIDESPREAD HEAVY RAINFALL WOULD BE FOR THE UPPER LEVEL JET TO REMAIN JUST WEST OR NORTHWEST OF THE REGION...ALLOWING THE LOCAL AREA TO REMAIN WITHIN FAVORABLE RIGHT ENTRANCE REGION SUPPORTIVE OF PERSISTENT STRONG UPWARD VERTICAL MOTION.

IT IS STILL TOO EARLY TO DETERMINE WHERE THE HIGHEST PRECIPITATION AMOUNTS WOULD BE. FOR NOW...FIGURE ON THE POTENTIAL FOR 1-3 INCHES OF AVERAGE RAINFALL BASIN REGION WIDE. THE BIGGER CONCERN WOULD BE FOR POSSIBLE FLASH FLOODING. AS FAR AS MAINSTEM RIVERS GO...THERE COULD BE SIGNIFICANT WITHIN BANK RISES ON SOME DEPENDING ON WHERE THE AXIS OF HEAVY RAINFALL SETS UP. HOWEVER...GIVEN THE DRY CONDITIONS OF LATE...AT THIS POINT...WIDESPREAD RIVER FLOODING APPEARS UNLIKELY.

DUE TO ALL THESE FACTORS MENTIONED ABOVE...WILL KEEP MENTION FOR THE POSSIBILITY FOR HEAVY RAINFALL IN OUR HAZARDOUS WEATHER OUTLOOK.

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SYNOPSIS...KL/HWJIV

HYDROLOGY...KL/HWJIV/IAA

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Thursday 9 August 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research on warm-season heavy rainfall associated with cutoff lows is cited in the first paragraph of the short-term section of this morning's AFD issued by NWS ALY.

FXUS61 KALY 090804

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

404 AM EDT THU AUG 9 2012

.SYNOPSIS...

A FRONTAL BOUNDARY WILL SLOWLY TRACK SOUTHWARD AND STALL OVER UPSTATE NEW YORK TODAY. MEANWHILE...LOW PRESSURE WILL ORGANIZE OVER THE MIDWEST TONIGHT...AND MOVE INTO THE EASTERN GREAT LAKES BY SATURDAY. ITS ASSOCIATED COLD FRONT WILL ADVANCE TOWARD THE LOCAL REGION FRIDAY AND CROSS THE REGION SATURDAY. THE POTENTIAL EXISTS FOR A SIGNIFICANT RAINFALL EVENT OVER THE NEXT FEW DAYS.

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.SHORT TERM /FRIDAY THROUGH SATURDAY/...

...AN ACTIVE PERIOD OF WEATHER WITH THE POTENTIAL FOR SEVERE WEATHER AND HEAVY RAINFALL...

NCEP MODEL SUITE AND INTERNATIONAL GUIDANCE THIS MORNING CONTINUE TO ADVERTISE AN UNSEASONABLY LOWER HEIGHT ANOMALIES OVER THE MID WEST AS UPPER LOW EVOLVES. THIS LEAVES OUR REGION WITHIN A SOUTHERLY INCREASE OF WARM AND MOIST CONVEYOR BELT AS PWATS CLIMB TOWARD 2 INCHES THROUGH THE SHORT TERM. SEVERE POTENTIAL ON FRIDAY COULD BE RATHER INTERESTING AS IT WILL BE HIGHLY DEPENDENT ON ACCUMULATED INSOLATION. AS THIS UPSTREAM SYSTEM DEEPENS...OUR LOW LEVEL FLOW IS FORECAST TO BACK SLIGHTLY WHICH COULD BE MESOSCALE ENHANCED WITHIN THE HUDSON VALLEY REGION. MUCAPES ON FRIDAY COULD EXCEED 2K J/KG WITH ENOUGH INSOLATION FOR MORE ROBUST CONVECTION. IN COLLABORATION WITH SPC THIS MORNING...SLIGHT RISK WAS ADJUSTED NORTHWARD TO ENCOMPASS THE SOUTHERN 2/3RDS OF THE CWFA. PER THERE EXCELLENT DISC...

SOMEWHAT STRONGER DEEP AND LOW LEVEL SHEAR MAY DEVELOP FROM NRN MID ATLANTIC INTO ERN PORTION OF THE OH VALLEY AND NERN STATES IN ASSOCIATION WITH A MID LEVEL JET ROTATING THROUGH SERN PERIPHERY OF THE UPPER LOW. IF SUFFICIENT INSTABILITY DEVELOPS...STORMS MAY BECOME A BIT MORE ORGANIZED IN THIS REGION WITH POTENTIAL FOR EMBEDDED MESOCYCLOES AND BOWING SEGMENTS. DAMAGING WIND WILL BE THE MAIN THREAT...BUT A CONDITIONAL THREAT WILL EXIST FOR A COUPLE OF TORNADOES.

FURTHERMORE...AS THOSE PWATS INCREASE...SO DOES THE POTENTIAL FOR HEAVY RAINFALL FRIDAY INTO FRIDAY NIGHT. PER THE CSTAR III RESEARCH...SEVERAL PIECES POINT TOWARD HEAVY RAINFALL BUT NOT ALL OF THE PIECES APPEAR TO LINE UP TOO WELL. WHILE THE POTENTIAL FOR SOME TRAINING ECHOES IS APPARENT...FLASH FLOOD GUIDANCE REMAINS RATHER HIGH WITH COUNTY VALUES RANGING FROM 2-4 INCHES

ALONG WITH OUR RECENT DRY WEATHER TRENDS. SO HEADLINES AT THE PRESENT TIME AS WE WILL CLOSELY MONITOR TRENDS AND CONTINUE TO MAKE FORECAST ADJUSTMENTS. WE WILL CONTINUE TO HIGHLIGHT THESE HAZARDS IN THE HWO THIS MORNING.

GUIDANCE IS SOMEWHAT IN TIMING DISAGREEMENTS WITH THE DEPARTURE OF THE FRONTAL BOUNDARY ON SATURDAY. AS SUGGESTED BY THE LATEST ENSEMBLES...WE WILL FAVOR MORE TOWARD THE ECMWF TIMING WHICH KEEPS POPS INTO THE CHC-SCT CATEGORY ALONG AND EAST OF THE HUDSON RIVER WITH DECREASED POPS FURTHER WEST AS THAT DRY SLOT APPROACHES. AS SOME PARTIAL SUNSHINE IS EXPECTED...ALONG WITH A MOIST GROUND...HIGHS SATURDAY AFTERNOON CLIMB INTO THE LOWER 80S FOR VALLEY LOCATIONS AND 70S ELSEWHERE PER 850MB TEMPS INTO THE LOWER-MID TEENS CELSIUS.

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SYNOPSIS...BGM

SHORT TERM...BGM

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Thursday 9 August 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research on warm-season heavy rainfall associated with cutoff lows is cited in the second paragraph of the short-term section of this afternoon's AFD issued by NWS ALY.

FXUS61 KALY 092003

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

403 PM EDT THU AUG 9 2012

.SYNOPSIS...

A STALLED FRONTAL BOUNDARY WILL REMAIN OVER UPSTATE NEW YORK TONIGHT AND FRIDAY. MEANWHILE...LOW PRESSURE WILL ORGANIZE OVER THE MIDWEST TONIGHT...AND MOVE INTO THE EASTERN GREAT LAKES FRIDAY INTO SATURDAY SATURDAY. THE COLD FRONT ASSOCIATED WITH THE STORM SYSTEM WILL ADVANCE TOWARD OUR REGION REGION ON FRIDAY...AND CROSS THE REGION ON SATURDAY. THIS WILL RESULT IN A PROLONGED THREAT FOR SHOWERS AND THUNDERSTORMS THROUGH AT LEAST THE FIRST HALF OF THE WEEKEND...SOME OF WHICH WILL PRODUCE HEAVY RAINFALL.

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.SHORT TERM /6 AM FRIDAY MORNING THROUGH SATURDAY NIGHT/...

FRIDAY IS WHEN THE BEST THREAT FOR AT LEAST LOCALIZED HEAVY RAINFALL AND POSSIBLE FLASH FLOODING WILL OCCUR. CONVECTIVELY DRIVEN SOUTH-NORTH ORIENTED RAIN BANDS WILL DEVELOP BY MID TO LATE MORNING...AIDED BY INCREASING

INSTABILITY AND LARGE SCALE ASCENT ON THE DIFFLUENT SIDE OF A CLOSED 500 MB LOW OVER THE CENTRAL GREAT LAKES REGION.

EVEN THOUGH OUR AREA WILL CONTINUE TO BE MOSTLY CLOUDY...SOME LIMITED HEATING WILL ALLOW FOR SBCAPE TO BUILD TO AROUND 500-1000 J/KG AND WILL BE OF THE TALL-SKINNY VARIETY WITH DEEP LAYER MOISTURE IN PLACE. THIS SET UP...WITH ANOMALOUSLY HIGH PWATS AROUND +2 STDEV WILL RESULT IN THE LIKELIHOOD FOR DOWNPOURS AND ISOLATED FLASH FLOODING. BASED ON LOCAL CSTAR RESEARCH...THE OVERALL SYNOPTIC SET UP DOES NOT APPEAR TO BE CONDUCIVE TO WIDESPREAD FLASH FLOODING. REASONS BEING...ONE UPPER JET IS FORECAST TO BE POSITIONED TOO FAR NORTH INTO QUEBEC...WHILE ANOTHER JET STREAK WILL BE POSITIONED JUST DOWNSTREAM OF THE 500 MB LOW AND ORIENTED SUCH THAT OUR REGION WILL BE GETTING TO THE UNFAVORABLE RIGHT EXIT REGION OF THE JET. ALSO...THE CORE OF STRONGEST 850 MB WINDS WILL BE OVER CENTRAL NY...WITH THE NOSE POINTING TO SOUTHEAST ONTARIO. SO...OVERALL LIMITING FACTORS FOR WIDESPREAD HEAVY RAIN EXIST...BUT THERE REMAINS THE THREAT FOR LOCALIZED HEAVY RAIN AND FLASH FLOODING AND WILL MENTION IN HWO.

ANOTHER POTENTIAL HAZARD ON FRIDAY IS SEVERE WEATHER. BASED ON LATEST DATA...IT APPEARS THE SEVERE THREAT IS NEBULOUS AT BEST. INSTABILITY WILL BE THE MAIN QUESTION...BUT EVEN THE DEEP LAYER 0-6 KM SHEAR MAGNITUDE WILL NOT BE EXCEPTIONALLY STRONG EITHER FOR THIS TYPE OF ENVIRONMENT AROUND 25 TO PERHAPS 35 KT. FEEL THE BIGGER THREAT WILL BE THE LOCALIZED FLASH FLOODING BUT WILL HAVE TO WATCH FOR ANY TALLER UPDRAFTS THAT OCCUR AND MAY BE ABLE TO PRODUCE WET MICROBURSTS. MID LEVEL LAPSE RATES ARE FORECAST TO BE RATHER MEAGER AROUND 5.5 TO NEAR 6.0 C/KM. A SECONDARY FRONTAL BOUNDARY WILL BE POSITIONED ALONG THE MID ATLANTIC REGION...WHICH SHOULD KEEP THE FOCUS FOR ORGANIZED SEVERE STORMS SOUTH OF OUR AREA.

CONVECTIVE BANDS OF RAIN EXPECTED TO CONTINUE TO FEED INTO THE AREA FRIDAY EVENING...BUT SHOULD TEND TO DIMINISH OVERNIGHT AS LARGE SCALE ASCENT DIMINISHES SOMEWHAT WITH THE CORE OF THE UPPER LOW LIFTING MORE NORTHWARD THAN EASTWARD. WILL CONTINUE TO MENTION HEAVY RAIN ASSOCIATED WITH STORMS THROUGH MIDNIGHT.

ON SATURDAY MODELS IN DECENT AGREEMENT WITH SHOWING THE OCCLUDED SURFACE BOUNDARY MOVING THROUGH FROM SOUTHWEST TO NORTHEAST ACROSS THE AREA DURING THE DAY. ENVIRONMENT ALOFT WILL SLOWLY DRY OUT ALOFT...WITH AGAIN SOME MARGINAL INSTABILITY DEVELOPING. HOWEVER...THE THREAT FOR CONVECTION WILL BE AHEAD OF AND ALONG THE OCCLUDED BOUNDARY...WITH SHOWERS AND THUNDERSTORMS FOLLOWING THE BOUNDARY EASTWARD AND STABILIZATION OCCURRING IN ITS WAKE. THERE WILL BE A CONTINUED HEAVY RAIN THREAT ASSOCIATED WITH CONVECTIVE ELEMENTS AND WILL MENTION IN FORECAST...ALTHOUGH THE THREAT OF ANY FLASH FLOODING LOOKS TO BE LOWER THAN FRIDAY.

A DRY SLOT WILL MOVE OVER THE AREA SATURDAY NIGHT AS FLOW ALOFT BECOMES MORE SOUTHWEST. LINGERING LOW LEVEL MOISTURE WILL LIKELY RESULT IN LOW STRATUS WITH A FEW SHOWERS STILL POSSIBLE MAINLY NORTH AND WEST OF THE CAPITAL REGION AS A SPOKE OR TWO OF VORTICITY ROTATES AROUND THE SPRAWLING UPPER LOW.

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SYNOPSIS...JPV

SHORT TERM...JPV

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Friday 10 August 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research on warm-season heavy rainfall associated with cutoff lows is cited twice in the second paragraph of the near-term section of this morning's AFD issued by NWS ALY.

FXUS61 KALY 100752

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

352 AM EDT FRI AUG 10 2012

.SYNOPSIS...

NEARLY STATIONARY FRONTAL BOUNDARY WAS DRAPED ACROSS UPSTATE NEW YORK AND NEW ENGLAND. MEANWHILE...LOW PRESSURE WILL CONTINUE TO ORGANIZE OVER THE OHIO VALLEY WITH ANOTHER FRONTAL BOUNDARY APPROACHING FROM THE WEST. THIS WILL KEEP A WARM AND MOIST ATMOSPHERE ACROSS THE REGION THROUGH SATURDAY MORNING WITH SHOWERS AND THUNDERSTORMS...SOME OF WHICH WILL PRODUCE HEAVY RAINFALL. SOME WEATHER IMPROVEMENTS ARE EXPECTED ON SUNDAY AS THE STORM SYSTEM LIFTS FURTHER AWAY.

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.NEAR TERM /THROUGH SATURDAY/...

...AN ACTIVE PERIOD OF WEATHER THROUGH SATURDAY MORNING...

H2O VAPOR LOOP THIS MORNING REVEALS THE UPPER LOW SPINNING OVER SOUTHERN SHORELINE OF LAKE MICHIGAN. AN ELONGATED AREA OF MOISTURE EXTENDED FROM THE GULF OF MEXICO ALONG THE EASTERN CONUS. THE 00Z SOUNDINGS SHOW PWATS BETWEEN 1.50 AND 2.00 INCHES WITHIN THIS REGION OF MOISTURE AS THIS WILL CONTINUE TO ADVECT INTO THE REGION TODAY. RADAR IMAGERY DEPICTS A BROKEN BAND OF CONVECTION ACROSS THE WESTERN 2/3RDS OF UPSTATE NY WITH A LINE OF SCT-BKN CONVECTION EXTENDING FROM CENTRAL PA INTO CENTRAL VA /WITH ADDITIONAL CONVECTION ASSOCIATED WITH THE UPPER LOW INTO THE MID WEST AND THE GREAT LAKE STATE/. THROUGH THE DAYLIGHT HOURS...DAYTIME HEATING AND SURFACE BOUNDARY/S/ WILL ACT TO ENHANCE CONVECTIVE POTENTIAL. NCEP MODEL SUITE

SUGGESTS AMPLE CLOUD COVER WILL EXIST...AND LESS THAN FAVORABLE MID LEVEL LAPSE RATES OF JUST SHORT OF 6 C/KM...WHICH REDUCES OVERALL SBCAPES TO LESS THAN 2K J/KG BUT INCREASING BULK SHEAR AND 0-3KM HELICITIES MAY RESULT IN ISOLATED SEVERE THUNDERSTORMS. IN COORDINATION WITH SPC...CONCERN WILL BE WHERE BREAKS IN THE OVERCAST OCCUR...POCKETS OF MODERATE INSTABILITY WILL EVOLVE AND WITH MESOSCALE PROCESSES COULD RESULT IN SUPERCELLS AND/OR BOWING SEGMENTS. AS PWATS CLIMB FURTHER...PRECIP LOADING MAY ALSO RESULT IN WET MICROBURSTS. SO THE ENTIRE REGION HAS NOW BEEN PLACED INTO A SLIGHT RISK.

NEXT CONCERN WILL BE HEAVY RAINFALL POTENTIAL. AS HAS BEEN DISCUSSED FOR THE PAST SEVERAL DAYS...ALONG WITH CSTAR RESEARCH REFERENCES...SEVERAL PIECES OF THE PUZZLE ARE AVAILABLE BUT NOT ALL FIT EXACTLY FOR US TO PLACE THE REGION INTO ANY HEADLINES AT THIS TIME. NCEP MODEL SUITE SUGGESTS A SECONDARY WARM FRONT DEVELOPS OVER THE COASTAL WATERS OF THE ATLANTIC SEABOARD AND JUST SOUTH OF LONG ISLAND THIS AFTERNOON. THIS FEATURE IS ALSO TIED INTO THE INCREASED 850-700MB THETA-E ADVECTION AND MAGNITUDES. IF CONVECTION BECOMES QUITE ROBUST...THIS MAY ACT TO DISRUPT MOISTURE TRANSPORT INTO THE REGION. IN ADDITION...PER CSTAR...THE FLOW IS MERIDIONAL MAINLY THIS MORNING BEFORE BACKING TOWARD A GENERAL SOUTHWEST FLOW IN THE MID AND UPPER LEVELS LATER THIS AFTERNOON. THE UPPER JET PATTERN DOES NOT PLACE OUR REGION INTO A FAVORABLE REGION FOR ENHANCED AGEOSTROPIC LIFT AS THESE FEATURES REMAIN WEST OF THE CWFA. SO BASED ON THESE FORECAST OBSERVATIONS...WE FEEL ANY FLOODING WILL BE ISOLATED.

EITHER WAY...RADAR WILL BE CLOSELY MONITORED WITH DUAL POL PRODUCTS AS AN ADDED RESOURCE TO ASCERTAIN RAINFALL DISTRIBUTION. THANKS TO SPC AND NEIGHBORING OFFICES FOR THE EXCELLENT COORDINATION THIS EARLY FRIDAY MORNING.

THE MOISTURE PROFILES AHEAD OF THE FRONTAL BOUNDARY REMAIN HIGH INTO SATURDAY MORNING. MODELS ARE IN RATHER GOOD AGREEMENT WITH TIMING OF FROPA TO OCCUR OVER EASTERN NY BY NOON AND ADJACENT WESTERN NEW ENGLAND COUNTIES BY MID AFTERNOON. DRY SLOT QUICKLY PUNCHES INTO THE REGION WHERE SOME BREAKS OF SUNSHINE ARE EXPECTED. MEANWHILE...THE MAIN UPPER LOW REMAINS OVER THE CENTRAL GREAT LAKES AS IT BECOMES VERTICALLY STACKED.

MOS VALUES ARE RATHER CLOSE WITH THE MAV GUIDANCE SHOWING EXCELLENT RUN-TO-RUN CONTINUITY.

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SYNOPSIS...BGM

NEAR TERM...BGM

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Tuesday 18 September 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR high-wind research is cited in the first paragraph of the near-term section of an AFD issued this afternoon by NWS ALY.

FXUS61 KALY 181824
AFDALY

AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE ALBANY NY
224 PM EDT TUE SEP 18 2012

.SYNOPSIS...

A POWERFUL LOW PRESSURE SYSTEM WILL IMPACT THE REGION THROUGH TONIGHT WITH STRONG SOUTHERLY WINDS...A WIDESPREAD SOAKING RAINFALL AND A CHANCE OF THUNDERSTORMS. HIGH PRESSURE WILL BUILD IN FROM THE WEST DURING WEDNESDAY AND DOMINATE OUR WEATHER THROUGH THE END OF THIS WEEK. ANOTHER STRONG COLD FRONT IS EXPECTED TO IMPACT THE REGION DURING THE WEEKEND.

&&

.NEAR TERM /THROUGH TONIGHT/...

RAIN HAS OVERSPREAD THE ENTIRE REGION WITH INTERESTING MESOSCALE IMPACTS. AS SOUTHEAST WINDS MOVED ACROSS THE BERKS AND TACONICS...THE CAPITAL REGION WAS EXPERIENCING DOWNSLOPING WITH A DECREASE IN PRECIP COVERAGE AND INTENSITY. ON THE OPPOSITE END IS PORTIONS OF THE CATSKILLS ARE AT OR OVER 2 INCHES OF RAIN THUS FAR WITH TANNERSVILLE /TRNN6/ AT PRELIMINARY 2.40 INCHES. SURFACE WARM FRONT CONTINUES TO SURGE NORTHWARD WITH AN INCREASE IN SURFACE DEWPOINTS INTO THE MID AND UPPER 60S. FURTHERMORE...OUR VAD WIND PROFILE NOW SUGGESTS LOW-MID 50KTS WINDS AROUND 3000 FEET WITH A FEW REPORTS OF TREES AND POWER OUTAGES. PER THE PREVIOUS EXCELLENT FORECAST DISCUSSION...CSTAR RESEARCH AND LOCAL MESOSCALE IMPACTS FAVOR HIGHER WINDS ACROSS OUR ADJACENT WESTERN NEW ENGLAND COUNTIES AND TACONICS WITH WIND ADVISORIES ELSEWHERE. HOWEVER...WE MAY STILL UPGRADE TO HIGH WIND WARNINGS ONCE WE SEE TRENDS UNFOLD UPSTREAM.

WE CONTINUE TO BE IN CLOSE COORDINATION WITH SPC AND NEIGHBORING OFFICES WITH CONVECTIVE TRENDS FOR THE REMAINDER OF THE AFTERNOON AND EVENING. WHILE INSTABILITY REMAINS LOW...THE IMPRESSIVE DYNAMIC WIND FIELDS AND SPEED CONVERGENCE COULD RESULT IN THE LOW TOP CONVECTION TAPPING INTO THIS WIND FIELD AND TRANSLATE TO THE SURFACE.

HIGH TEMPS THIS AFTERNOON ARE IN EXCELLENT SHAPE AS VALLEY LOCATIONS SHOULD CLIMB INTO THE LOWER 70S WITH 60S ACROSS THE TERRAIN.

PER THE LATEST NCEP MODEL SUITE AND RAP/RUC...FROPA SHOULD OCCUR BETWEEN 00Z-03Z WEDNESDAY. THERE WILL BE AN ABRUPT SHIFT IN THE WINDS TO THE WEST AND WINDS COULD BE FUNNELING DOWN THE MOHAWK TONIGHT. SO WE WILL KEEP WINDS ELEVATED FOR THESE REGIONS. OTHERWISE...WEATHER IMPROVEMENTS ARE EXPECTED

OVERNIGHT WITH PARTIALLY CLEARING SKIES. SOME LAKE EFFECT CLOUDS MAY IMPACT PORTIONS OF THE MOHAWK AND CATSKILLS AS 850MB TEMPS OVER LAKE ONTARIO DROP TO NEAR 0C.

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SYNOPSIS...IAA/BGM

NEAR TERM...IAA/BGM/SNYDER

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Thursday 18 October 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research is cited in relation to an anticipated heavy rain event in the third paragraph of the hydrology section of this morning's AFD issued by NWS ALY.

FXUS61 KALY 180801

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

401 AM EDT THU OCT 18 2012

.SYNOPSIS...

HIGH PRESSURE WILL PROVIDE ONE MORE NICE DAY FOR EASTERN NEW YORK AND ADJACENT WESTERN NEW ENGLAND BEFORE UNSETTLED CONDITIONS RETURN ON FRIDAY AND INTO THE WEEKEND. THERE COULD BE A PERIOD OF MODERATE TO HEAVY RAINFALL FOR THE REGION ON FRIDAY ALONG WITH AN EMBEDDED THUNDERSTORM.

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.HYDROLOGY...

NO HYDRO RELATED PROBLEMS ARE EXPECTED PRIOR TO THURSDAY NIGHT...WITH RAIN STARTING TO MOVE IN FROM SOUTHWEST TO NORTHEAST BY FRIDAY MORNING.

THE RAINFALL WILL BECOME STEADIER AND HEAVIER FRIDAY MORNING INTO THE AFTERNOON AHEAD OF A WARM OR OCCLUDED FRONT. THERE IS A CHANCE OF THUNDERSTORMS THAT MAY YIELD RAINFALL RATES OF A HALF AN INCH AN HOUR OR SO...WITH ANOMALOUS PRECIPITABLE WATER VALUES IN EXCESS OF AN INCH.

THE HEAVIEST RAINFALL IS EXPECTED ON FRIDAY INTO THE EARLY EVENING. THIS MORNINGS GUIDANCE ALONG WITH CSTAR RESEARCH OF PWAT AND WIND ANOMALIES SUGGEST 1 TO 2 INCHES ANTICIPATED WITH PERHAPS SOME LOCATIONS ALONG THE SE CATSKILLS...WHERE A PERIOD OF STRONG SE WINDS MAY ALLOW FOR OROGRAPHIC ENHANCEMENT TO RECEIVE AROUND 3 TO 4 INCHES OF RAINFALL. ALSO...SOME OF THE GUIDANCE IS SHOWING AROUND 3 INCHES OF RAINFALL BY SATURDAY MORNING IN WESTERN NEW ENGLAND. THE CURRENT MMEFS SUGGESTS WILLIAMSTOWN ON THE HOOSIC MAY EXPERIENCE MINOR FLOODING. HOWEVER...IF 3 INCHES OF MORE OF RAINFALL OCCURS...THEN SOME POOR DRAINAGE FLOODING...OR ISOLATED MINOR MAIN

STEM RIVER FLOODING MAY BE POSSIBLE. LEAVES BLOCKING STORM DRAINS MAY ALSO RESULT IN ISOLATED RAISED WATER LEVELS. THIS SITUATION WILL CONTINUE TO BE MONITORED CLOSELY.

SCATTERED LIGHT RAIN SHOWERS MAY PERSIST ON THE WEEKEND WITH THE UPPER LEVEL LOW.

FOR DETAILS ON SPECIFIC AREA RIVERS AND LAKES...INCLUDING OBSERVED AND FORECAST RIVER STAGES AND LAKE ELEVATIONS...PLEASE VISIT THE ADVANCED HYDROLOGIC PREDICTION SERVICE /AHPS/ GRAPHS ON OUR WEBSITE.

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SYNOPSIS...BGM

HYDROLOGY...BGM

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Friday 19 October 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research is cited in relation to an anticipated heavy rain event in the third paragraph of the hydrology section of yesterday afternoon's AFD issued by NWS ALY.

FXUS61 KALY 182138

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

535 PM EDT THU OCT 18 2012

..SYNOPSIS...

LOW PRESSURE WILL SLOWLY MOVE EAST THROUGH THE GREAT LAKES TONIGHT THROUGH FRIDAY NIGHT. THE FRONTAL BOUNDARY ASSOCIATED WITH THIS LOW PRESSURE SYSTEM WILL MOVE SLOWLY EAST ACROSS THE REGION...BRINGING WIDESPREAD RAIN AND A THE CHANCE OF A THUNDERSTORM LATE TONIGHT INTO EARLY FRIDAY EVENING. AN UPPER LEVEL LOW WILL SLOWLY DRIFT ACROSS SOUTHERN CANADA DURING THE WEEKEND...BRINGING UNSETTLED CONDITIONS TO THE REGION DURING THE WEEKEND...BUT MOST OF ANY SHOWERS THAT DO OCCUR WILL BE OVER THE MOUNTAINS AND ACROSS AREAS NORTH AND WEST OF ALBANY.

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..HYDROLOGY...

WIDESPREAD RAIN WILL BEGIN TO SPREAD ACROSS THE REGION LATE TONIGHT AND EARLY FRODAY MORNING.

THE RAINFALL WILL BECOME STEADIER AND HEAVIER FRIDAY MORNING INTO THE AFTERNOON AHEAD OF A WARM OR OCCLUDED FRONT. THERE IS A CHANCE OF

THUNDERSTORMS THAT MAY YIELD RAINFALL RATES OF A HALF AN INCH AN HOUR OR SO...WITH ANOMALOUS PRECIPITABLE WATER VALUES IN EXCESS OF AN INCH.

THE HEAVIEST RAINFALL IS EXPECTED ON FRIDAY INTO THE EARLY EVENING. GUIDANCE ALONG WITH CSTAR RESEARCH OF PWAT AND WIND ANOMALIES SUGGEST 1 TO 2 INCHES ANTICIPATED WITH PERHAPS SOME LOCATIONS ALONG THE SE CATSKILLS...WHERE A PERIOD OF STRONG SE WINDS MAY ALLOW FOR OROGRAPHIC ENHANCEMENT TO RECEIVE AROUND 3 INCHES OF RAINFALL. LATEST GUIDANCE ALSO SUGGEST THAT THE RAINFALL WILL COME TO AND END FRIDAY EVENING AND NOT EXTEND INTO FRIDAY NIGHT AND SATURDAY MORNING AS EARLIER MODEL RUNS HAD SUGGESTED.

SOME RIVERS MAY REACH CAUTION STAGE WITH THIS AMOUNT OF RAINFALL... BUT UNLESS HEAVIER AMOUNTS OF RAIN FALL...NO RIVER FLOODING IS EXPECTED AT THIS TIME. CURRENT LOW RIVER LEVELS AND RELATIVELY DRY CONDITIONS WILL GREATLY REDUCE THE THREAT OF FLOODING FROM THIS EVENT. HOWEVER...LOCALIZED POOR DRAINAGE FLOODING IS POSSIBLE... ESPECIALLY WHERE FALLEN LEAVES CLOG DRAINS AND CULVERTS.

FOR DETAILS ON SPECIFIC AREA RIVERS AND LAKES...INCLUDING OBSERVED AND FORECAST RIVER STAGES AND LAKE ELEVATIONS...PLEASE VISIT THE ADVANCED HYDROLOGIC PREDICTION SERVICE /AHPS/ GRAPHS ON OUR WEBSITE.

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SYNOPSIS...GJM

HYDROLOGY...GJM

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Friday 19 October 2012

For possible incorporation into the next six-month CSTAR report.

CSTAR research is cited in relation to an anticipated heavy rain event in the third paragraph of the hydrology section of this morning's AFD issued by NWS ALY.

FXUS61 KALY 190757

AFDALY

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE ALBANY NY

357 AM EDT FRI OCT 19 2012

.SYNOPSIS...

A LARGE UPPER LEVEL LOW PRESSURE SYSTEM WAS SITUATED ACROSS THE WESTERN GREAT LAKES REGION. AMPLE MOISTURE ROTATING AROUND THIS UPPER LOW WILL MOVE ACROSS THE LOCAL REGION TODAY WITH PERIODS OF RAIN. UNSETTLED CONDITIONS WILL PREVAIL FOR THE REMAINDER OF THIS WEEKEND AS A BRISK WESTERLY FLOW BRINGS IN COOLER AIR AND STILL THE CHANCE FOR ADDITIONAL SHOWERS.

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.HYDROLOGY...

WIDESPREAD RAIN WILL SPREAD ACROSS THE REGION THIS MORNING.

THE RAINFALL WILL BECOME STEADIER AND HEAVIER THIS MORNING INTO THE AFTERNOON AHEAD OF A WARM OR OCCLUDED FRONT. THERE IS A CHANCE OF THUNDERSTORMS THAT MAY YIELD RAINFALL RATES OF A HALF AN INCH AN HOUR OR MORE...WITH ANOMALOUS PRECIPITABLE WATER VALUES OF 1.25" TO 1.50".

GUIDANCE ALONG WITH CSTAR RESEARCH OF PWAT AND WIND ANOMALIES SUGGEST 1 TO 2 INCHES ANTICIPATED WITH PERHAPS SOME LOCATIONS ALONG THE SE CATSKILLS...WHERE A PERIOD OF STRONG SE WINDS MAY ALLOW FOR OROGRAPHIC ENHANCEMENT TO RECEIVE 3-4 INCHES OF RAINFALL. LATEST GUIDANCE ALSO SUGGEST THAT THE RAINFALL WILL COME TO AND END FRIDAY EVENING AND NOT EXTEND INTO FRIDAY NIGHT AND SATURDAY MORNING AS DRY SLOT APPROACHES AND BECOMES A BIT MORE PROLONGED.

SOME RIVERS MAY REACH CAUTION STAGE WITH THIS AMOUNT OF RAINFALL... BUT UNLESS HEAVIER AMOUNTS OF RAIN FALL...NO RIVER FLOODING IS EXPECTED AT THIS TIME. CURRENT LOW RIVER LEVELS AND RELATIVELY DRY CONDITIONS WILL GREATLY REDUCE THE THREAT OF FLOODING FROM THIS EVENT. HOWEVER...LOCALIZED POOR DRAINAGE FLOODING IS POSSIBLE... ESPECIALLY WHERE FALLEN LEAVES CLOG DRAINS AND CULVERTS.

FOR DETAILS ON SPECIFIC AREA RIVERS AND LAKES...INCLUDING OBSERVED AND FORECAST RIVER STAGES AND LAKE ELEVATIONS...PLEASE VISIT THE ADVANCED HYDROLOGIC PREDICTION SERVICE /AHPS/ GRAPHS ON OUR WEBSITE.

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SYNOPSIS...BGM

HYDROLOGY...GJM/BGM