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Partners or Cooperative Project: Partners Project

Project Title: Variables Associated with Heavy Precipitation Events over Louisiana and Neighboring States

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SECTION 1: SUMMARY OF PROJECT OBJECTIVES

The primary objective of this study was to create a forecasting decision tree of heavy rainfall for Louisiana and surrounding states. This decision tree would assist forecasters in determining when heavy to torrential rainfall may occur. A secondary objective was to determine atmospheric parameters that were common between multiple heavy rainfall events in and near the state of Louisiana. These parameters were needed as a preliminary step in developing the heavy rainfall decision tree.

SECTION 2: PROJECT ACCOMPLISHMENTS AND FINDINGS

A poster was created that depicts a heavy rainfall decision tree for the area in and near the state of Louisiana. This decision tree can be used by operational forecasters to determine when heavy to torrential rainfall may occur, and a Flash Flood Watch may be needed. The decision tree incorporated several atmospheric parameters that were found to be common in the heavy rainfall events that were studied. These atmospheric parameters were listed on the poster, and their contribution to heavy rainfall was noted.

A preliminary poster of findings, listing the parameters found to be common between heavy rainfall events, was presented at the January, 2010, American Meteorological Society (AMS) National Meeting in Atlanta, GA by NWS General Forecaster, Jason Hansford.

The final poster, which included the heavy rainfall decision tree, was presented by Dr. Boniface Mills at the Southeastern Coastal and Atmospheric Processes Symposium (SECAPS) in February, 2010. The final poster was also presented to the staff at NWS Shreveport by Ken Falk, Science and Operations Officer.

SECTION 3: BENEFITS AND LESSONS LEARNED: OPERATIONAL PARTNER PERSPECTIVE

Four heavy rainfall cases studied in the project were loaded into the Weather Event Simulator (WES) at ULM by the NWS. The surface, upper air, radar, and satellite data were analyzed to determine common parameters in the heavy precipitation cases by the partners at both ULM and the NWS.

The NWS personnel involved in the project included the SOO, one forecaster, and one intern in the research and development needed for this study. This heightened the intern's and forecaster's interest in research and collaboration. One of the goals of this study was to create a decision tree checklist for heavy rainfall, and this decision tree has the potential of being utilized in the operational forecast setting of the office. The SOO at the NWS met several people at ULM as a result of this study, and a few of them expressed an interest in working for the NWS sometime in the future.

SECTION 4: BENEFITS AND LESSONS LEARNED: UNIVERSITY PARTNER PERSPECTIVE

The NWS provided software support to the WES at ULM, and several trips were made to ULM to maintain the WES. As a result of this software support, the WES "lab" at ULM was expanded from one WES system to six WES systems.

The installation and usage of the WES at ULM benefited the students' education by enhancing the course material in various courses, especially in the synoptic meteorology courses. Students gained experience with the software and data platforms used by the NWS and increased their understanding of operational meteorology. Both ULM faculty and students developed improved relationships with NWS personnel and additional collaborations are anticipated.

Dr. Boniface Mills attended the Southeastern Coastal and Atmospheric Processes Symposium (SECAPS) in February 2010 and presented results from the project at a poster session. This opportunity allowed Dr. Mills to meet other meteorologists who share similar research interests and to develop a network that may be useful for future collaborations.

SECTION 5: PRESENTATIONS AND PUBLICATIONS

A poster was created by ULM and the NWS to present preliminary findings of this study at the AMS National Meeting in January, 2010 in Atlanta, GA. This preliminary poster did not include the final decision tree for forecasting heavy rainfall, but it did include an analysis of common atmospheric parameters that were noted to be present in several of the heavy rainfall cases.

A final poster which included a forecaster decision tree for heavy rainfall in and near Louisiana was developed in collaboration between ULM and the NWS in late January and early February, 2010. This poster was presented at the Southeastern Coastal and Atmospheric Processes Symposium (SECAPS) in February, 2010, by Dr. Boniface Mills. The final poster was also presented to the staff at NWS Shreveport by Ken Falk, Science and Operations Officer.

SECTION 6: SUMMARY OF UNIVERSITY / OPERATIONAL PARTNER INTERACTIONS AND ROLES

The NWS was responsible for making the cases available in the WES at ULM and general maintenance of the WES at ULM. The NWS also provided a review of the cases and a list of parameters associated with the cases.

A meeting was held at ULM to discuss the progress on the project in October, 2009, and how to proceed from the current point in the study. A preliminary poster of the findings to date was developed by ULM and the NWS office in Shreveport in November and December, 2009. Another meeting was held at WFO Shreveport on 13 January 2010 in which a discussion was held about moving forward with the project and preparing for the upcoming AMS National Meeting. ULM and the NWS reviewed the poster of preliminary results of the study in preparation for the AMS National Meeting at this meeting.

ULM was the principle author of the poster, with final edits of the poster done by the NWS Office in Shreveport. ULM and the NWS collaborated on the list of parameters associated with the heavy rainfall cases, and the parameters' possible contribution to heavy rainfall. ULM and the NWS collaborated to develop a decision tree of parameters associated with heavy precipitation in this study, and the decision tree was shown in the final poster.