

# JSU - Meteorology

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## Making the Weather Count...

The JSU Meteorology Newsletter

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Teaching All students and providing Research Results & Applications

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## *HPVCI Project begins Year 2...*

*Dr. Paul J. Croft, Program Coordinator*

The JSU Meteorology Program has received a continuation of its High Performance Visualization Center Initiative program funding from the Department of Defense. Following a highly successful first year, the DoD has provided nearly \$580,000 for the continued development of operational numerical weather prediction models



(including MM5 and COAMPS) and associated products. In addition, a new initiative with the Army Research Lab (ARL) at the White Sands Missile Range will be started.

The overall project focuses on state-of-the-art visualization techniques using basic analysis and forecasts of various atmospheric fields and parameters of interest. The intent is to develop a modeling and visualization research ability previously not available on campus. Visualization software includes Vis5D, GRADS, and others for viewing model output, and in an immersive environment. One such environment is a

CAVE, a step-in virtual reality in which the viewer dons vision goggles and moves within the data and model space.

## First year efforts...

During the first year, the project established operational model runs of MM5 and COAMPS. These were run on-site through various platforms including Linux and SGI machines in the High Performance Computing Lab. Models were initially tested for convective



initiation, sea-breeze, and snowfall events to study their dynamics as well as to develop user products. A variety of documents have resulted from this initial work including preprints, a technical report, a technical memorandum, and technical transfer items.

Additionally, the project provides for a clearinghouse website

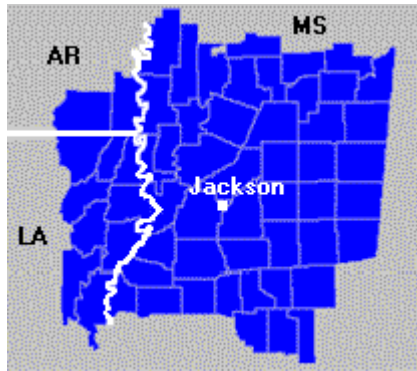
(see the Meteorology Program homepage <http://weather.jsums.edu>) for data, technical, and model product transfer. The website continues under development by undergraduate students. The website will also include the first aspects of a preliminary distance learning plan for mesoscale meteorology as related to the project.

The new collaboration with the ARL was initiated during the late summer and culminated with a visit to New Mexico by Dr. Croft, Project Director. The collaborative will involve the examination and use of the Battlefield Model (BFM) in terms of its performance, comparison with MM5

and COAMPS, and the use of alternative model output data sets for the initialization of the BFM. Two new hires will be required for this work including a postdoctoral research associate and a visualization specialist.

## NOAA Grant Awarded...

The JSU Meteorology Program has received a one-year grant from the National Oceanic and Atmospheric Administration of \$99, 979. The grant is to commence in January 2001 and will be directed by Dr. Croft in cooperation with Mr. Alan Gerard (SOO, Jackson NWS). The award is to be used in operational research relevant to the forecast and warning services provided by the National Weather Service Office in Jackson, and relevant to those in the Gulf States region.



As part of the award, three meteorology majors will be supported in a variety of projects both during the academic year and during the summer. They will work with the meteorology faculty as well as with the staff of the Jackson (and other) NWS office. Student applications, interviews, and selections were to be completed for hire in January. The program is designed to provide practical training and experience for students interested in a career in NOAA/NWS.

The students will be involved directly in research and operational experiences that are related to forecasting issues and the NOAA/NWS mission. All students participating will work within the JSU Meteorology Program during the

regular semester and then spend their summer hours at a participating NWS Office in the region. Various NWS staff will serve as mentors and the students will also gain experience working in the JSU Weather Lab on campus.

Projects are expected to include convective initiation and precipitation forecasting, severe storm identification and verification, and operational forecasting techniques. NWS personnel will work with the Meteorology Program Faculty on the research as coordinated through the Jackson NWS Office. Each student in the program is required to apply to the SCEP program to initiate a career with NOAA/NWS.

### At the meetings...

The JSU Meteorology Program faculty have been on the road quite a bit over the last several months as they work on a variety of research projects, present their results, and to seek more and more opportunities for their undergraduate majors.

In June Dr. Reddy, Dr. White, and Dr. Croft attended the Hydro-Meteorology Workshop offered by COMET and Dr. White attended the MM5 User's Group Meeting. The Hydro-Met course focused on rainfall and flooding in terms of modeling and operational applications. Visits were also made to infamous flood sites for field investigation while several forest and brush fires erupted.

### Did you know? –

The JSU Meteorology Program is the only undergraduate degree program in atmospheric sciences offered in Mississippi and among the nation's HBCUs...

Dr. Croft also attended the DLESE Leadership Workshop in Bozeman, Montana during the end of June and early July and then traveled to Pensacola for a MS DEQ meeting in August. Dr. White attended the AgForest meeting. In addition, research and technical staff (Dr. Hafner, Duanjun Lu, and Rafael Mahecha) and students

traveled for a variety of training workshops.



In September and October Dr. Croft visited with the Army Research Lab in New Mexico and attended the UCAR Members/Affiliates meeting in Boulder, Colorado. Plans and preparations were also being made for undergraduate majors to attend the National Weather Association's Annual Meeting in Gaithersburg, Maryland.

### In progress...

The JSU Meteorology Program has recently initiated a short-term agreement with Global Science and Technology (GST, see <http://www.gst.com/>) for a research project on data retrievals and derivations for vertical temperature profiles. Based on satellite data, the work is to provide a test of the methods currently in use for temperature soundings as compared to radiosonde releases.

Dr. Fitzpatrick and Dr. Croft finalized details with Dr. Edward Stanford (his title) during his visit to the JSU Meteorology Program in September. The project will require the hiring of one temporary consultant staff member in the program. If successful, the company intends to market appropriate applications products and software within the environmental community.

## Faculty News

Dr. Loren White, Visiting Assistant Professor, has continued his work with a numerical model of biosphere-atmosphere interactions (en-BATS) which he helped develop. The model is used to improve seasonal forecasting of

regional climate and hydrological resources.

The en-BATS model was used to simulate the effects and feedbacks of land surface processes (such as soil moisture and vegetation) within a regional climate model (the FSU Nested Regional Spectral Model). Recently he has also begun working with Dr. Reddy to use the MM5 to simulate air-sea interaction in the vicinity of a major hurricane.

Dr. White has also been in charge of making arrangements for student volunteers to attend the NWA meeting. During this past summer he taught an introductory Physics class and attended the American Geophysical Union Spring Meeting at which he presented a poster on the impacts of different domain configurations on intra-seasonal forecasts using en-BATS.

He also presented a paper entitled "Effects of a modified BATS on simulation of the diurnal cycle within a regional climate model" at the 24<sup>th</sup> Conference on Agricultural and Forest Meteorology. He also attended two training workshops in Colorado.

And if that were not enough, Dr. White was blessed with a beautiful baby girl, born July 18<sup>th</sup>. Cynthia Grace White weighed in at seven pounds and five ounces.

**Graduate Student Focus:**

**Michelle Webb**

Recent graduate Michelle Webb is now hard at work on her graduate studies. Working through the Graduate Studies Program, available through NOAA, Michelle is studying in Maryland.

[Program News...](#)

**In the Department**

The Department continues participating in the JSU SACS Review. The review is mandated by the state and considers all academic programs and units in terms of their productivity and mission. It has

also provided an opportunity for the JSU Meteorology Program to review its progress over the last five years.

**New Employees...**

As part of the NOAA and HPVCI grant awards three new positions are being offered through the JSU MP. These include a post-doc associate and a visualization specialist for the HPVCI and a part-time laboratory office assistant. All hires are expected to be made in early 2001.

**Summer Interns...**

A busy summer for JSU MP majors! It was a very very hot time this summer on campus. The temperature soared over 100 degrees many many times and reached as high as 105. In large portions of the country wildfires raged and drought worsened on the heels of the most recent La Nina pattern. The University gave approval for the move into the new research laboratories in the east wing of Just Hall of Science and much work was needed for lab set-up.



Meanwhile, many meteorology majors kept their cool while participating in several summer internships off campus while others spent some time working within the Program in Jackson. Aisha Reed worked as a SOARS protégé while Rondah Smart and Kim Coleman spent their summer in Minnesota at the AHPCRC.

**Meteorology Club...**

*President Aisha Reed*

The student Meteorology Club met at the start of the fall semester to plan a variety of activities and fund-raising for the current academic year. One topic of

discussion was the formation of small groups to plan topics on graduate school, careers and professions, and internships. Another involved delivery of a "Meteorology Fair" for local schools. Plans for a bake sale were developed and members were reminded to pay club dues (ten dollars). A car wash and other possible fund-raisers were also mentioned.

**New Students...**

The Meteorology Program welcomes new students Frederick Howard, Ashton Robinson-Cook, and Ashley Zachary. All have a strong interest in the weather and Ashley is particularly interested in broadcasting. Ashton arrives from Arkansas with the support of an AMS Minority Scholarship.

[What's New in the "JSU Weather Lab"?](#)

**Operational Benefits...practical experiences for Students...and field offices for Operational Research**

*Dr. Paul J. Croft*

The move now complete, Meteorology Program faculty, staff, and students have been hard at work setting up the three meteorology laboratories in Just Hall of Science. The JSU Weather Lab is designed for real-time observation, forecast, and application of weather data, information, and products.

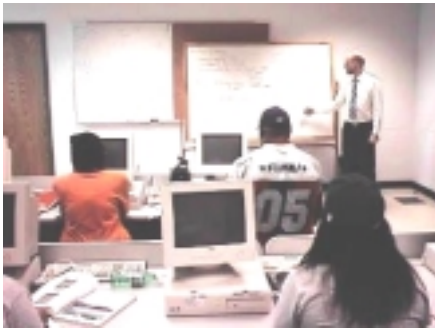


Comprised of a "virtual office" presence of the Jackson NWS, an observer's desk, severe weather spotter station, weather analysis and forecaster desks, an environmental meteorology station, a climatology desk, and a press & public

information station, the lab is available for operational use and student work experiences. The lab is also available to students who make use of the facilities for class-related activities and for their research assignments.

## Electronic Classrooms...

As part of the ILE and HPVCI grants the JSU Meteorology Program will also make use of the new (and temporary) electronic classroom in the east wing of



Just Hall of Science.

Upon completion of the south wing and the full renovation of the west wing, the



JSU Meteorology Program will be able to make use of fully capable electronic classrooms in the south wing. Final renovations are expected to be completed for the entire building by the end of next year.

## Faculty Focus...

Many projects continue to keep the JSU MP faculty busy. These include student recruitment and retention, the attraction of research staff, and the attendance of many meetings and conferences. One of

the main emphases has been on the High Performance Visualization Center Initiative.

## **- HPVCI & the JSU Meteorology Program...**

Dr. Croft's current efforts within HPVCI include leading the establishment of a Clearinghouse for Meteorological Operational Visualization for Environmental Information Transfer as part of the HPVCI project. This and other web sites and materials will be placed with real-time operational model runs of the MM5 and COAMPS on a new SGI 2100 expected to arrive soon.

The HPVCI project has taken Dr. Croft from Monterey to San Diego and many other places (and meetings) throughout the year. Through it all, the many opportunities for students to work and be part of a major project are critical.

In addition to this project Croft is also preparing the ramp-up of the NOAA grant, continues his NASA work on tropospheric moisture and aerosol distributions with Ronnie Guyton (and sophomore Rondah Smart); works with the MS Department of Environmental Quality to attend the Gulf Coast Ozone Study meetings, and is now involved with the USDA (and Forest Service in

Michigan) on a study of the Haines Index (with junior Aisha Reed). Each of these projects involves student workers.

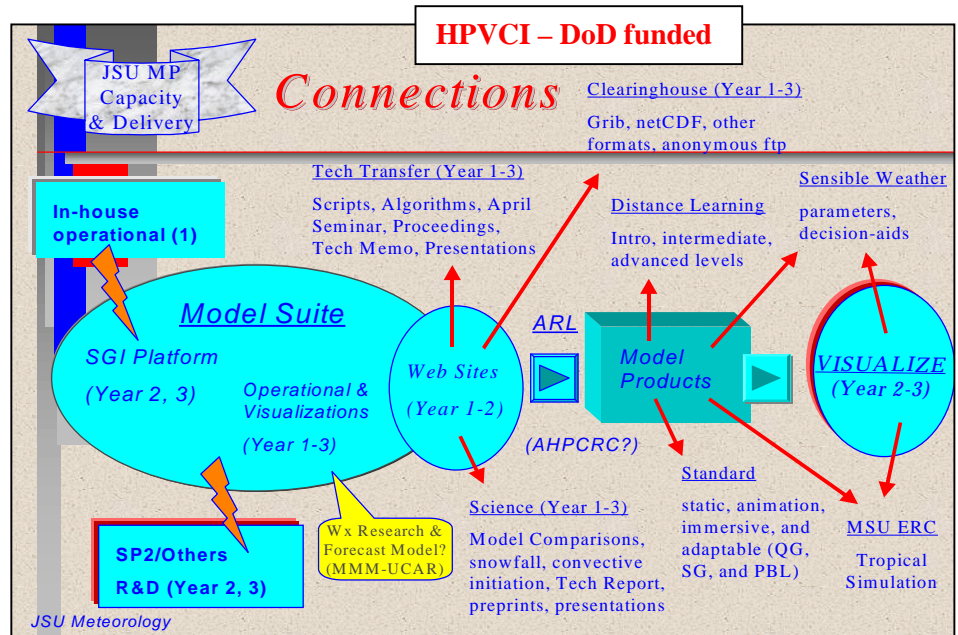
He has also been very involved in the AMS and NWA Education committees as well as ad hoc committees such as the Battan Award, the Board of Continuing Education, manuscript and proposal reviews, and other activities. Croft will continue to oversee the research labs and the meteorology program and efforts towards the establishment of a graduate program.

## Late News...

### *"NOAA Diversity Conference to be hosted by JSU"*

**JSU Meteorology Program to play a key role in the meetings of April 2001** Through President Mason's office, and in cooperation with Dean Mohamed (SST), Jackson State University will play host to the next NOAA Diversity Conference scheduled April 1-3 2001.

The opportunity will be "fantastic!" according to Dr. Croft, "It will provide the JSU Meteorology Program a very important chance to show the nation what it can do". For more information, please contact Jackson State University.



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The JSU Meteorology Program Newsletter is for Alumni and Associates of the Program, Professionals, and friends like you!

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