

## Case Study: NASA's Applied Meteorology Unit



Bridging the gap between  
research and operations

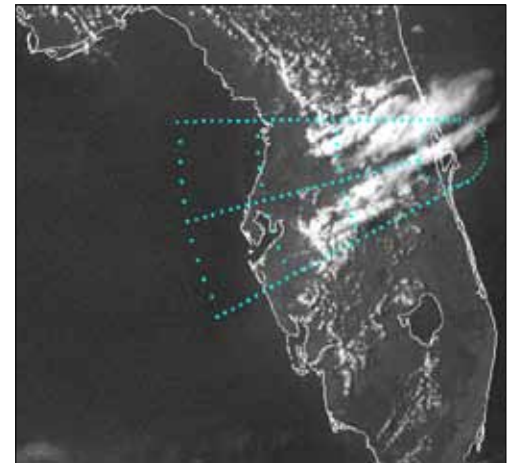
**E**NSCO, Inc. meteorologists have worked in partnership with NASA for the last 19 years to develop, evaluate and transition new technologies into operations for weather support to America's space program. The Applied Meteorology Unit (AMU), exemplifies ENSCO's commitment to successful partnerships that bring research to reality.

### A bridge from research to operations

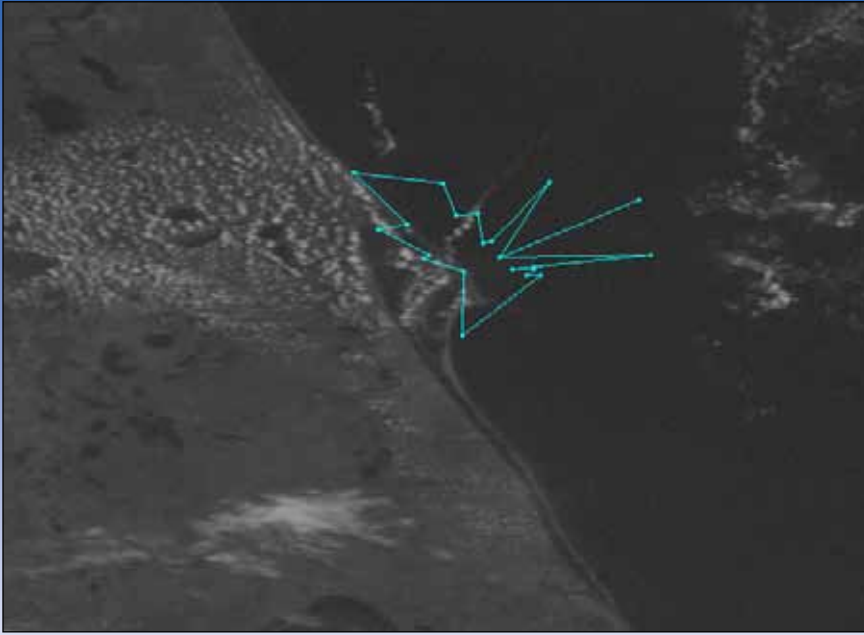
The AMU serves as a bridge between the meteorological research community and operational forecasters at the 45th Weather Squadron at Cape Canaveral Air Force Station, the Spaceflight Meteorology Group at Johnson Space Center and the National Weather Service Office in Melbourne, Florida. At the AMU, ENSCO scientists work with both researchers and forecasters to evaluate new and emerging technologies in an operational setting, develop procedures for implementing new technologies, and help identify new solutions to operational forecasting problems. In addition, the AMU provides expert technical assistance to operations in real-time.

### Demonstrated solutions

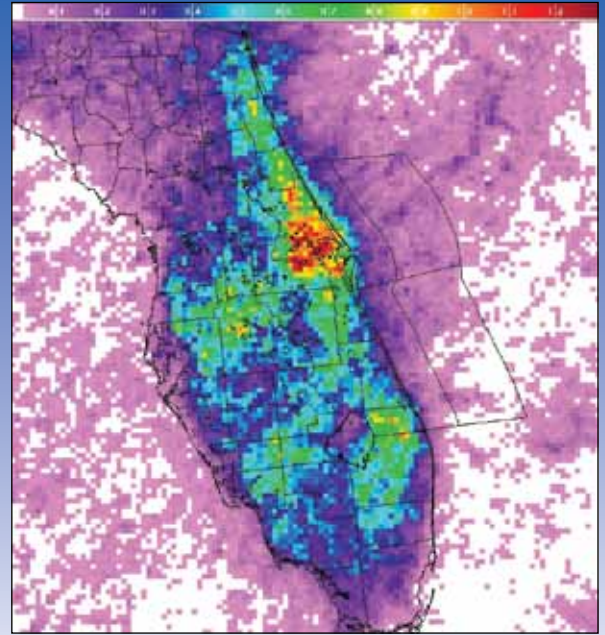
The AMU has transitioned numerous technologies into the real-time operational environment. Much of this successful transfer is due to the collaborative relationship between ENSCO and its customer. For example, the AMU was tasked to develop a short-term anvil forecasting tool to improve predictions of the threat of triggered lightning to space launch and landing vehicles. Anvil forecasting was identified by the customer as one of the most challenging tasks of predicting the probability of a Weather Launch Commit Criteria violation due to the threat of natural and triggered lightning. The AMU delivered a three-phase solution over three years, responding to customer requirements at each stage with technology refinements. The resulting tool can compute an anvil threat sector based on national forecast models with lead times from three hours to seven days, greatly enhancing the customer's operational efficiency and safety.



*An example of the anvil forecast graphic overlaid on a visible satellite image of the Florida peninsula.*



Space shuttle optical imaging tool overlaid on a visible satellite image, which was developed for return-to-flight operations in 2006.



Lightning threat index map based on the climatological cloud-to-ground lightning density and frequencies.

## History of AMU

The AMU was created in 1991 through a partnership between NASA, the United States Air Force and the National Weather Service. It is collocated with Range Weather Operations at Cape Canaveral Air Force Station in Florida. Its customer-directed tasks range from evaluating data from weather sensor systems to improvement and analysis of high resolution numerical weather prediction models.

## The importance of partnership

ENSCO's commitment is always to the customer. But the benefits of our efforts extend beyond these primary relationships as the AMU shares the results of its efforts with numerous agencies including national laboratories, government agencies, universities and private companies. Participation in ongoing technical interchanges such as these ensure that ENSCO scientists are at the forefront of knowledge sharing. Collaboration with industry experts is fundamental to deliver the most innovative technology transition solutions to the customer.

## An award-winning effort

In 2006, the AMU was recognized by the National Weather Association with its Larry R. Johnson Award. The award, which recognizes extraordinary accomplishments that contribute significantly to operational meteorology, was given in recognition of the AMU's:

- long history of outstanding improvements to weather support for the nation's Space Shuttle at Kennedy Space Center and unmanned rockets
- exceptional skill completing 80 research, development and technology transition projects
- contributions to the safety and success of the space shuttle and unmanned rocket missions



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