

# Inside Wallops

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## NASA Launches Airborne Study of Arctic Atmosphere, Air Pollution

This month, NASA begins the most extensive field campaign ever to investigate the chemistry of the Arctic's lower atmosphere. The mission is poised to help scientists identify how air pollution contributes to climate changes in the Arctic.

The recent decline of sea ice is one indication the Arctic is undergoing significant environmental changes related to climate warming. NASA and its partners plan to investigate the atmosphere's role in this climate-sensitive region with the Arctic Research of the Composition of the Troposphere from Aircraft and Satellites (ARCTAS) field campaign.

"It's important that we go to the Arctic to understand the atmospheric contribution to warming in a place that's rapidly changing," said Jim Crawford, manager of the Tropospheric Chemistry Program at NASA Headquarters in Washington. "We are in a position to provide the most complete characterization to date for a region that is seldom observed but critical to understanding climate change."

The campaign begins this week in Fairbanks, Alaska. NASA's DC-8, P-3 (based at Wallops) and B-200 aircraft will serve as airborne laboratories for the next three weeks, carrying instruments to measure air pollution gases and aerosols and solar radiation. Of particular interest is the formation of the springtime "arctic haze." The return of sunlight to the Arctic in the spring fuels chemical reactions of pollutants that have accumulated over the winter after travelling long distances from lower latitudes.

"The Arctic is a poster child of global change and we don't understand the processes that are driving that rapid change," said Daniel Jacob, an ARCTAS project scientist at Harvard University, Cambridge, Mass. "We need to understand it better and that's why we're going."

ARCTAS is NASA's contribution to an international series of Arctic field experiments that is part of the International Polar Year. The National Oceanic and Atmospheric Admini-

stration and the Department of Energy also are sponsoring research flights from Fairbanks this month in collaboration with NASA.

The wealth of data collected also will improve computer models used to study global atmospheric chemistry and climate. This ultimately will provide scientists with a better idea of how pollutants are transported to and around the Arctic and their impact on the environment and climate.

"We haven't looked at pollution transport in a comprehensive fashion," said Hanwant Singh, an ARCTAS project scientist at NASA Ames Research Center, Moffett Field, Calif. "We can see Arctic haze coming in but we don't know its composition or how it got there. One goal of ARCTAS is to provide a comprehensive understanding of the aerosol composition, chemistry and climate effects in the Arctic region."

The new aircraft observations also will help researchers interpret data from NASA satellites orbiting over the Arctic, such as Aura, Terra, and Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO). Interpreting satellite data can be difficult in the Arctic because of extensive cloud cover, bright reflective surfaces from snow and ice, and cold surface temperatures. For example, it's difficult for researchers to look at satellite data and distinguish between light reflected by clouds and light reflected from white ice cover.

"NASA has invested a lot of resources in satellites that can be of value for diagnosing effects of climate change," Jacob said. "Satellites orbit over poles with good coverage and good opportunity, but you



*The P-3 prepares for departure from Wallops.*

really need to have aircraft observations supporting those to make good interpretations of what satellites are telling you."

The new airborne view of the Arctic atmosphere combined with satellite data will provide scientists with a better understanding of the atmospheric side of the climate question.

"We're interested in data that will help models better characterize the current state of the atmosphere, to set a benchmark for them so we can gain confidence in their ability to predict future warming in the Arctic," Crawford said

A second phase of the ARCTAS campaign takes place this summer from Cold Lake in Alberta, Canada, where flights will focus on measurements of emissions from forest fires. Researchers want to know how the impact of naturally occurring fires in the region compares to the pollution associated with human activity at lower latitudes. Understanding the relative influence of each is important to predictions of the Arctic's future climate.

For more information about the ARCTAS field campaign on the Web, visit: [http://www.nasa.gov/mission\\_pages/arctas](http://www.nasa.gov/mission_pages/arctas)

## Mild March Weather

By Ted Wilz

Senior Meteorologist

March was another mild month, continuing our winter time trend of above normal temperatures. Although no new record high temperatures were set, we did average three degrees above normal for the month and we tied a record high when we reached 68 degrees on March 19. The warmest day of the month was March 28 when we reached a balmy 79 degrees. We set no record lows during March, with the temperature only dipping into the twenties twice during the month. The 27 degree reading on the morning of March 10 was the coldest temperature.

Unlike February, which was above average precipitation-wise, March proved to be a dry month. With the mild temperatures, we had no snowfall and we only experienced eight days with measurable rainfall, totaling 2.04 inches, well below our monthly average of 3.80 inches.

March, which often comes in "like a lion," did prove to be a windy month, as we had 15 days with 30mph or greater winds and three days with 40mph or greater winds. The strongest wind of the month occurred on March 8 when the winds reached 53mph.

May usually brings some very pleasant weather to Wallops, as we usually see high temperatures in the mid to upper 60s at the beginning of the month and we warm to the mid 70s by month's end. Low temperatures are usually in the upper 40s at the beginning of March and warm to near 60 as June approaches. The coldest May temperature on record was the 34 degree reading that occurred on May 8, 1974, and the warmest temperature was the sweltering 97 degree reading that occurred on May 31, 1991. The coastal sea breeze usually becomes more active during May, helping to keep us more pleasant than some inland location where the temperatures can get quite warm. May rainfall can vary greatly, evidenced by the 1965 monthly total of a scant .27 inch and the other extreme of 7.81 inches that occurred in 1972, a more typically showery month. Late spring can bring an increase in thunderstorm potential, as we had in 1972, so be prepared to exercise caution when thunderstorms, lightning and hazardous weather occur.

## First Aid and CPR Class

The last day to register for first aid and CPR class is April 20, 2008. The class is limited to 16 people per session. If you are interested in taking this course, sign up even if you are waitlisted as cancellations can and do occur. Sign up for this course through SATERN.

## Words of Wisdom

The ultimate measure of a man is not where he stands in moments of comfort, but where he stands at times of challenge and controversy.  
-Dr. Martin Luther King, Jr.



## Wallops Shorts.....

### Launch

A balloon launch took place from Ft. Sumner, New Mexico on March 30, 2008. The experiment was the micro-instrumentation package (MIP). The MIP is a compact telemetry system developed by the Columbia Scientific Balloon Facility for use on lightweight balloon payloads. The MIP will provide uplink and downlink communications, interface to the science package, and house-keeping information, including global positioning system (GPS) position. The balloon failed while going into float. All MIP test flight objectives were met during ascent and/or descent. The MIP test objectives were met. The experimenter was Jill Juneau. Total flight time was 2 hours and twenty minutes.

### On the Road

David Wilcox, Wallops Mechanical Systems Branch, did a science fair demo for Metompkin Elementary School in part of their "FLY" night.

## Sympathy Extended

Sympathy is extended to the family of Harry Hammond. Hammond, 86, of Pocomoke, died Friday, March 28, 2008.

Hammond retired from Wallops in 1977 with 33 years of service. He worked in the Wallops Procurement office. After retirement, he and his son opened H&H furniture in Pocomoke,

He is survived by his wife, Elizabeth, two children, three grandchildren, and other family members and friends.

## Recycle Old Glasses



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