Preliminary Results from the First Atmospheric Study on the NASA Global Hawk Unmanned Aircraft Systems (UAS)

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NOAA ESRL scientists participated on the first autonomous, high altitude (>60kft), long-range (21,000 km), long endurance (>30 hours) aircraft to observe the atmosphere using the NASA Global Hawk UAS. Two NOAA ESRL instruments were operated on the Global Hawk Pacific Mission (GloPac) in March-April 2010. Results presented here will focus on the airborne gas chromatograph that is called the UAS Chromatography for Atmospheric Species (UCATS). It has two gas chromatograph channels that can be swapped out to measure different trace gases, for example, carbon monoxide, methane, hydrogen, nitrous oxide, sulfur hexafluoride, chlorofluorocarbons 11 and 12, and halon-1211, and a 0.2 Hz response ozone ultraviolet absorption photometer.

The U.S. Air Force gave NASA two of the original Global Hawks. The GloPac mission is the first civilian-based research project involving these planes. NASA, NOAA, and Northrop Grumman, the aircraft's manufacturer, are funding the mission. GloPac is comprised of at most five long-range flights over the Pacific Ocean and one remote Arctic flight based out of NASA Dryden Flight Research Center at Edwards Air Force Base, California. We will report on our preliminary UCATS findings. Monitoring of these "greenhouse gases" on the ground and at altitude helps climate modelers verify models and predict future climate change.

For more information: http://www.espo.nasa.gov/glopac/

Figure 1. Global Hawk UAS (left) and Operations Center (right). Photos courtesy of NASA.