18 June, 2009 **Global Monitoring Division Hot Items**

Flying High for 30-Hours Without an Onboard Pilot:

Global Monitoring Division - **ESRL-GMD**
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Joint NOAA, NASA, and Northrop Grumman GloPac, (Global Hawk Unmanned Aircraft System) flights over the Pacific Ocean, Alaska, and the Arctic Ocean will begin in mid-July and run through August from the NASA Dryden flight center, California. The primary purposes of these missions are to validate Aura satellite measurement of trace gases, aerosols and radiation, and to perform capability tests of this UAS that can operate at altitudes as high as 65,000 ft. with a range of 11,000 miles. For these missions, Global Hawk operates on a preprogrammed flight path stored on the plane's computers. Pilots on the ground can only change the direction and altitude of the plane by entering new waypoints on a flight path via a satellite link. Four, 30 hour flights are planned, with one deep into the Arctic Basin north of Alaska.

Background: NOAA is utilizing UAS platforms to study and monitor remote regions of the globe, and has contributed significant funds to purchase hardware, integrate NOAA instruments onto the NASA Global Hawk and to support research using the Global Hawk for missions that will include dimate, weather, water, hurricane, sea ice, and ecosystem management research and monitoring. NOAA ESRL scientists have developed an ozone photometer, water vapor laser absorption spectrometer, and a two-channel gas chromatograph that operates unattended on the Global Hawk. The gas chromatograph can measure the greenhouse gases nitrous oxide (N2O), sulfur hexafluoride (SF6) and methane (CH4); air quality gas, carbon monoxide (CO); hydrogen (H2); and chlorofluorocarbons (CFC-11 & -12) and halon (H-1211) which are involved in stratospheric ozone depletion. Dr. David W. Fahey of ESRL/CSD is the co-mission scientist, along with Dr. Paul A. Newman of NASA Goddard Space Flight Center. Scientists for GloPac are from a number of U.S. institutions and universities including NASA, NOAA, Northrop Grumman, CIRES, University of Denver, Droplet Measurements Systems, and Jet Propulsion Laboratory, in addition to NOAA ESRL.

Significance: Defining the vertical and spatial distribution, and trends of greenhouse gases, ozone depleting chemicals, stratospheric ozone, and air quality trace gases are important elements in NOAA's Climate Goal. The Global Hawk UAS platform provides a unique platform form which to collect such data over remote areas up to high altitudes better and safer than with manned aircraft

More information: http://uas.noaa.gov/projects/demos/glopac/

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