

# NASA Dryden Flight Research Center



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Last year may prove to be a pivotal year for the National Aeronautics and Space Administration (NASA) in the Unmanned Aircraft Systems (UAS) arena, especially in relation to routine UAS access to airspace as NASA accepted an invitation to join the UAS Executive Committee (UAS ExCom). The UAS ExCom is a multi-agency, Federal executive-level committee comprised of the Federal Aviation Administration (FAA), Department of Defense (DoD), Department of Homeland Security (DHS), and NASA with the goals to:

- 1) Coordinate and align efforts between key Federal Government agencies to achieve routine safe federal public UAS operations in the National Airspace System (NAS);
- 2) Coordinate and prioritize technical, procedural, regulatory, and policy solutions needed to deliver incremental capabilities;
- 3) Develop a plan to accommodate the larger stakeholder community at the appropriate time; and
- 4) Resolve conflicts between Federal Government agencies (FAA, DoD, DHS, and NASA), related to the above goals.

The committee was formed in recognition of the need of UAS operated by these agencies to access to the National Airspace System (NAS) to support operational, training, development and research requirements. In order to meet that need, technical, procedural, regulatory, and policy solutions are required to deliver incremental capabilities leading to routine access. The formation of the UAS ExCom is significant in that it represents a tangible commitment by FAA senior leadership to address the UAS access challenge. While the focus of the ExCom is government owned and operated UAS, civil UAS operations are bound to benefit by the progress made in achieving routine access for government UAS.

As the UAS ExCom was forming, NASA's Aeronautics Research Mission Directorate began to show renewed interest in UAS, particularly in relation to the future state of the air transportation system under the Next Generation Air Transportation System (NextGen). NASA made funding from the American Recovery and Reinvestment Act available in order to continue addressing the issue of routine civil UAS access.

### UAS Operations and Science Activities

This year marked the first flight of NASA's Global Hawk. The Global Hawks, acquired by NASA, are slated to be workhorses for both science and the technical community, as we learn how to safely integrate UAS operations into national and international airspace and understand the role UAS can play in furthering our science objectives. The NASA Global Hawk will be conducting its first major science mission (GloPac) in March 2010, which will involve several flights over the Pacific Ocean and up into the Arctic to validate satellite data. GloPac is a joint mission between NASA and National Oceanic and Atmospheric Administration (NOAA) and the science community is very excited about the potential applications of the Global Hawk. In the summer of 2010, Global Hawk will participate in a hurricane research mission called the Genesis and Rapid Intensification Processes (GRIP) experiment, which will involve coordinated flights with several other manned aircraft in the storm environment.

UAS missions conducted by NASA this past year included the NASA Sierra UAS operation out of Svalbard, Norway, which was focused on sea ice characterization and mapping. NASA

worked closely with the Norwegian Civil Aviation Authority to ensure the operation was conducted safely and in accordance with Norwegian regulations. The mission was a great success, both scientifically and operationally, and more operations similar to this are planned in the coming years.

Several different national and international groups have been created within the science and operations community to look more carefully at UAS issues; NASA supported many of these efforts throughout the past year. The Interagency Coordinating Committee for Airborne Geoscience Research Activities (ICCAGRA) created a UAS working group, lead by NASA, and is working to coordinate efforts between many US agencies using UAS for science applications. NASA has also been providing subject matter expertise to the European COST Action 0802, "Applications of UAS for Atmospheric Research." The Arctic Monitoring and Assessment Program (AMAP) UAS Expert Group, which NASA is co-chairing with NORUT of Norway, was established last year. The AMAP UAS Expert Group was created at the request of the Arctic Council in response to needs voiced by the scientific community for access to gather important environmental and climate data using UAS. The mission of the UAS Expert Group is to enable safe and responsible use of UAS for scientific environmental monitoring and data collection within the arctic region. With representation from the arctic science community and the Civil Aviation Authorities (CAAs) of each arctic country, the UAS Expert Group is poised to make significant progress towards safe airspace access in the Arctic for important environmental monitoring.

NASA recognizes that the issue of airspace access is a problem that requires significant effort and collaboration on an international level to address policy, procedures, and standards and will continue to play an active role in these activities. With the science community expressing stronger desires to use UAS for data gathering, NASA will continue to support UAS operations that address important science research in the Arctic and other regions. NASA will also continue to support the UAS ExCom and will be developing a series of concept of operations documents to help understand what technology investments are appropriate.



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