NASA Conducts Airborne Science Aboard Zeppelin Airship

October 7 2009

(PhysOrg.com) -- NASA launched its first airborne science mission this week featuring a 246-foot-long Zeppelin NT airship equipped with two imaging instruments to learn more about environmental conditions in the San Francisco Bay Area.

Scientists from NASA Ames Research Center's Earth Science Division are collaborating with Airship Ventures, Inc., Moffett Field, Calif., to conduct experiments using the airship's unique flight characteristics, including its high maneuverability and airframe stability, as well as its capability to fly at low altitude over selected target areas. NASA is interested in using these capabilities to measure reflected solar and emitted thermal radiation and conduct atmospheric sampling of aerosols and gas constituents.

"We are very interested in the unique capabilities of the Zeppelin to enable remote sensing and atmospheric science measurements not previously practical," said Stephen Dunagan, a research scientist at NASA Ames.

On Tuesday, Oct. 6, 2009, scientists embarked on an eight-hour flight from Moffett Field to conduct three science experiments aboard the airship using a large format Bayer array color camera and a hyperspectral scanning imager. The camera provides high-resolution imagery that is not affected by vibrations or movement of the airship during the exposure. The hyperspectral instrument measures 256 bands of color imagery in the visible and near infrared spectrum.

In collaboration with the Search for Extraterrestrial Intelligence (SETI) Institute, scientists studied the extremophile biota in the south bay salt ponds using a hyperspectral scanning imager to identify photosynthetic pigments. Working with the Monterey Bay Aquarium Research Institute (MBARI) scientists studied the distribution and density of harmful algae bloom organisms in Monterey Bay that are poisonous to wildlife, particularly sea birds and fish. They also collaborated with the Pipeline Research Corporation International (PRCI) to search for subsurface natural gas pipeline leaks causing plant root poisoning.

This week's flight featured the first science experiments conducted under the terms of a Space Act Agreement NASA signed with Airship Ventures earlier this summer to use the Zeppelin NT as a platform for conducting airborne science experiments. Future experiments are anticipated to involve such subjects as remote sensing observations, atmospheric sampling collection and electromagnetic field observations.

"We often talk about the airship's stability, maneuverability and panoramas as benefits to sightseeing passengers when, in fact, they are just as beneficial to scientific work. Working with NASA and other esteemed scientific organizations, we will demonstrate that the airship's flight characteristics not only make it a great way to see the world, but also to understand it better," commented Airship Ventures Co-founder and CEO Alexandra Hall.

Moffett Field was closed as a military base on July 1, 1994, and NASA Ames took over supervision of Moffett Field's many facilities, including two runways and three aircraft hangars. NASA now operates Moffett Field as part of NASA Ames Research Center. NASA and Airship Ventures entered into a lease agreement on Oct. 1, 2008, to base the Zeppelin NT at Moffett Field.

NASA collaborates with more than 50 academia, industry and non-profit

entities in the NASA Research Park (NRP) to stimulate innovation and education in science and research disciplines critical to space exploration. Airship Ventures, which brought the first Zeppelin to fly passengers over the United States in more than 70 years, is one of NASA's newest NRP partners. Three of only 12 remaining airship hangars in the U.S. are located at Moffett Field, and Airship Ventures Zeppelin Eureka uses Hangar 2 as its home.

Provided by JPL/NASA (news : web)