AN INFORMATION NEXUS: THE NASA GLOBAL HAWK LINK MODULE

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The Link Module described in this paper was first developed for the NASA Global Hawk Pacific Mission (GloPAC), four flights of 30 hour duration, supporting the Aura Validation Experiment (AVE). Its second use was during the Genesis and Rapid Intensification Processes (GRIP) experiment, a NASA Earth Science field experiment to better understand how tropical storms form and develop into major hurricanes.

In these missions, the Link module negotiated all communication over the high bandwidth Ku satellite link, archived al the science data from onboard experiments in a spatially enable database, routed command and control of the instruments from the Global Hawk Operations Center, and retransmitted select data sets directly to experimenters control and analysis systems. The availability of aggregated information from collections of sensors, and remote control capabilities, in real-time, is revolutionizing the way Airborne Science is being conducted.

Also described is the next generation Link Module now being designed and tested to support the NASA Earth Venture missions, the Hurricane and Severe Storm Sentinel (HS3) mission, and Airborne Tropical Tropopause Experiment (ATTREX) mission. Advanced data fusion technologies being developed will further advance the Scientific productivity, flexibility and robustness of these systems.

Historically, the Link module evolved from the instrument and communication interface controller used by NASA's Pathfinder and Pathfinder plus solar powered UAS's in the late 1990's. It later was expanded for use in the AIRDAS four channel scanner flown on the NASA Altus UAS, and then again to a module in the AMS twelve channel multispectral scanner flying on the NASA (Predator-b) Ikhana UAS. The current system is the next step in the evolution, a multi board system packaged in a Curtiss Wright MIL-spec, flight qualified enclosure.

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