An integrated data acquisition/user request/processing/delivery system for airborne remote sensing data

By Bruce Chapman, Anhua Chu, and Wayne Tung

Airborne science data has historically played an important role in the development of the scientific underpinnings for spaceborne missions. When the science community determines the need for new types of spaceborne measurements, airborne campaigns are often crucial in risk mitigation for these future missions.
However, full exploitation of the acquired data may be difficult due to its experimental and transitory nature. Externally to the project, most problematic (in particular, for those not involved in requesting the data acquisitions) may be the difficulty in searching for, requesting, and receiving the data, or even knowing the data exist. This can result in a rather small, insular community of users for these data sets. Internally, the difficulty for the project is in maintaining a robust processing and archival system during periods of changing mission priorities and evolving technologies.
The NASA/JPL Airborne Synthetic Aperture Radar (AIRSAR) has acquired data for a large and varied community of scientists and engineers for 15 years. AIRSAR is presently supporting current NASA Earth Science Enterprise experiments, such as the Soil Moisture EXperiment (SMEX) and the Cold Land Processes experiment (CLPX), as well as experiments conducted as many as 10 years ago. During that time, it's processing, data ordering, and data delivery system has undergone evolutionary change as the cost and capability of resources has improved. AIRSAR now has a fully integrated data acquisition/user request/processing/delivery system through which most components of the data fulfillment process communicate via shared information within a database. The integration of these functions has reduced errors and increased throughput of processed data to customers.