NASA SBIR 2006 Phase I Solicitation

A1.06  Aviation External Hazard Sensor Technologies

Lead Center: LaRC

Participating Center(s): ARC

NASA is concerned with new and innovative methods for airborne detection and identification of tactical hazards to aviation. These hazards may include weather and other atmospheric phenomena, terrain, traffic, and runway contamination. Examples of hazards include: convective weather, wind shear, wind gusts, turbulence, volcanic ash, hail, low visibility, wake vortices, lightning, terrain, air traffic, runway incursions, man-made obstacles, and wet/icy runways. Technologies may take the form of tools, models, techniques, procedures, substantiated guidelines, prototypes, and devices. Although the emphasis is on airborne hazard detection, prediction, and avoidance; mitigation techniques using real-time sensor data, sharing of information to support hazard avoidance by other aircraft, collaborative decision-making, updates to terrain/obstacle databases, and provision of observations for input to weather models and forecast/nowcast products are also of interest. Examples include:

- New and improved airborne forward-looking sensor systems;
- Data fusion technologies for integrating disparate sources of flight-related information with on-board and off-board sensor data to detect and generate alerts of aviation hazards;
- Innovative technologies and methods to detect, predict, and quantify hazards in order to provide accurate information and guidance to enable pilot avoidance hazards, or to instigate strategies for mitigation;
- Decision-support tools and methods to improve collaborative and distributive decision-making.