



NASA SBIR 2014 Phase I Solicitation

A1.02 Inflight Icing Hazard Mitigation Technology

Lead Center: GRC

NASA is concerned with the prevention of encounters with hazardous in-flight conditions and the mitigation of their effects when they do occur. Under this subtopic, proposals are invited that explore new and dramatically improved research tools and technologies related to inflight airframe and engine icing hazards for manned and unmanned vehicles. Technologies of interest should address the detection, measurement, and/or the mitigation of the hazards of flight into super-cooled liquid water clouds and flight into regions of high mass concentrations of ice crystal.

Areas of particular interest include:

- Technology to measure the phase (ice or liquid), size, and mass concentration of ice and liquid density of water particles as they are ingested into a turbofan engine core flow path and in upstream wind tunnel ducts.
- Technology to measure the mass of water that impinges on the leading edge of airframe components for droplet spectra having median volumetric diameters from 20 to 1000 microns. Past measurement methods using dye-tracers and blotter paper have demonstrated limitations, particularly for larger drop sizes. More advanced methods are sought that can improve accuracy and measurement time.
- Non-destructive 3-D ice density measurements of ice accretions on wind tunnel models. NASA has a need for non-optical methods to digitize ice shapes with rough external surfaces and internal voids as can occur with accretions on highly swept wings. Technologies proposed must be compatible with working within a wind tunnel testing environment.