

Icing Remote Sensing at NASA Glenn Research Center

David Brinker

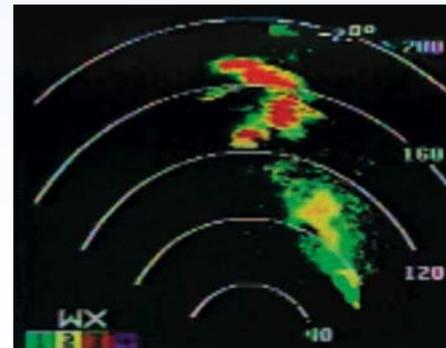
Friends/Partners in Aviation Weather Forum
September 27, 2007

Goal - Icing detection capability similar to current thunderstorm detection

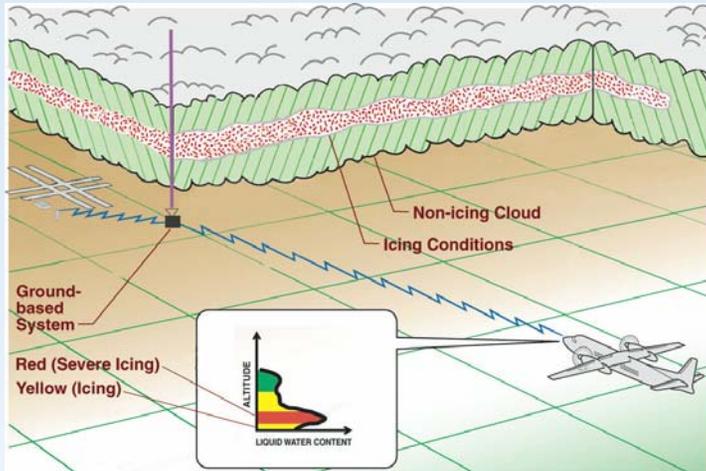
Icing Capability

- Currently: no ground-based icing detection to give the big picture
- Currently: no airborne icing detection to help crews avoid encounters

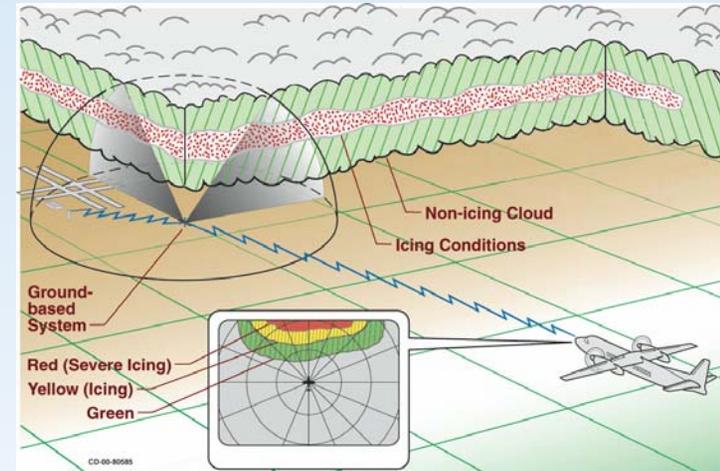
Thunderstorm Capability



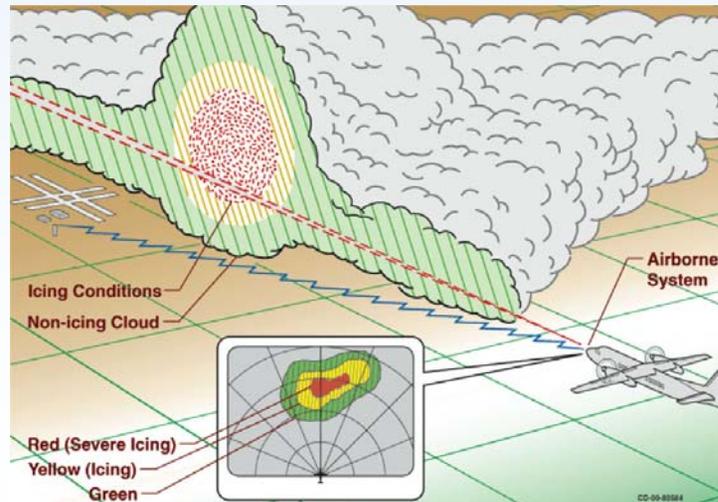
NASA Icing Remote Sensing Vision



Ground-based:
testbed



Terminal-based:
data for all A/C



Airborne: Data
for entire flight

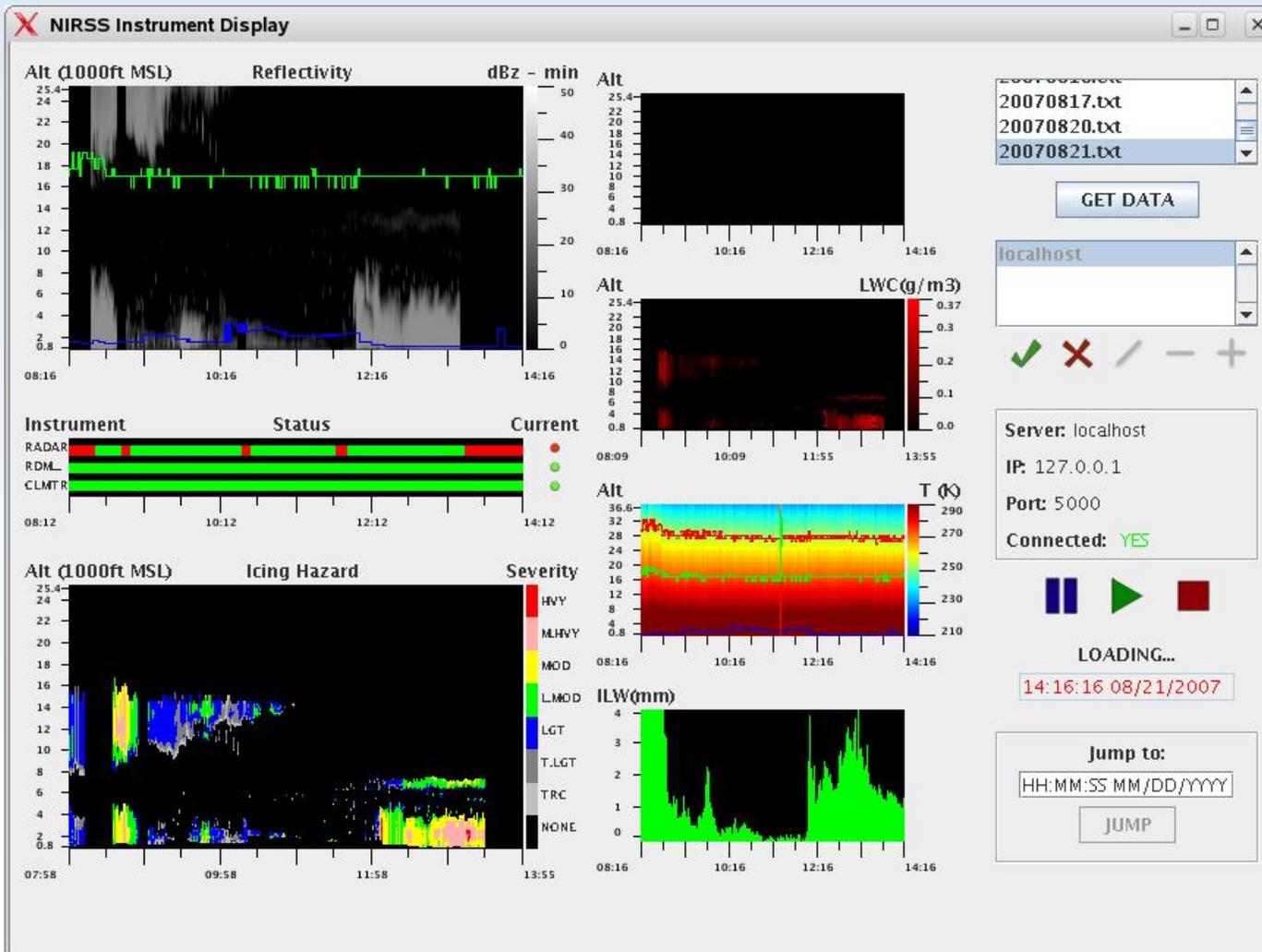
Icing Detection 101

- Looking for supercooled liquid water
- At a minimum need to know:
 - Temperature distribution
 - Liquid water content distribution
- We're currently doing this with:
 - Multi-frequency Microwave Radiometer
 - Total water content
 - Temperature distribution
 - Radar
 - Cloud boundaries
 - Lidar (ceilometer)
 - Cloud base/precipitation discrimination

NASA Ground-based Testbed System



Web-based Fusion Software



Testbed Data Available On-line

<http://icebox.grc.nasa.gov/RSDData/index.html>

Current Remote Sensing Data

Most current data from the instruments of the NASA Glenn Icing Remote Sensing project
Images are updated every 15 minutes

These displays represent experimental products that are undergoing changes and tests on a regular basis.
Please consult standard information before making any flight decisions.

Instrument	Status	Current
RADAR		
RDML		
CLMTR		

Alt (1000ft MSL) Icing Hazard Severity

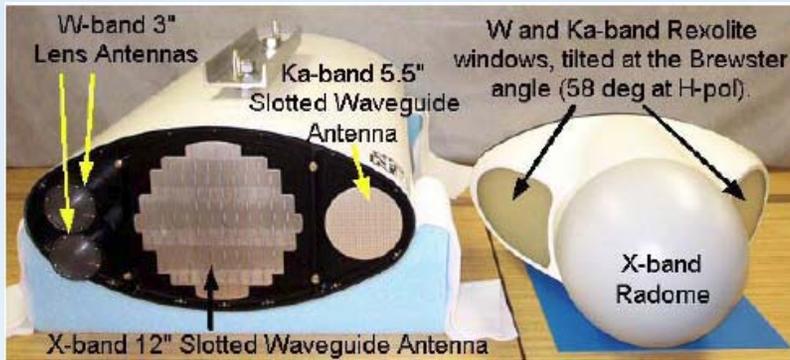
- HWY
- MHWY
- MOD
- L/MOD
- LGT
- T.LGT
- TRC
- NONC

Display of Radiometrics TP/WVP-3000 radiometer
[\(generated with Vizmet using Thresholding option\)](#)
Click on image to enlarge
[Current data file](#)

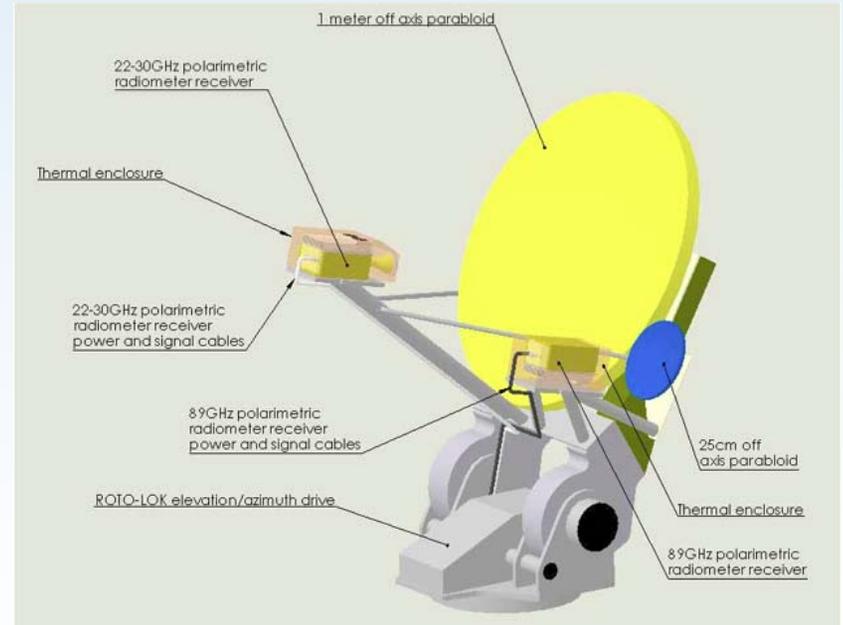
METEK MIRA-36 Ka-band radar
Click on image to enlarge

Vaisala CT-25K Ceilometer
Click on image to enlarge

Advanced System Development



Airborne Multi-Frequency Radar



Scanning Ground-based Radiometer