Contributions to InFlight Icing Activities: NASA ASAP Efforts at NCAR

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The NASA ASAP Project InFlight Icing Component

Primary Objective

Incorporate NASA satellite products into CIP and FIP as an additional data source

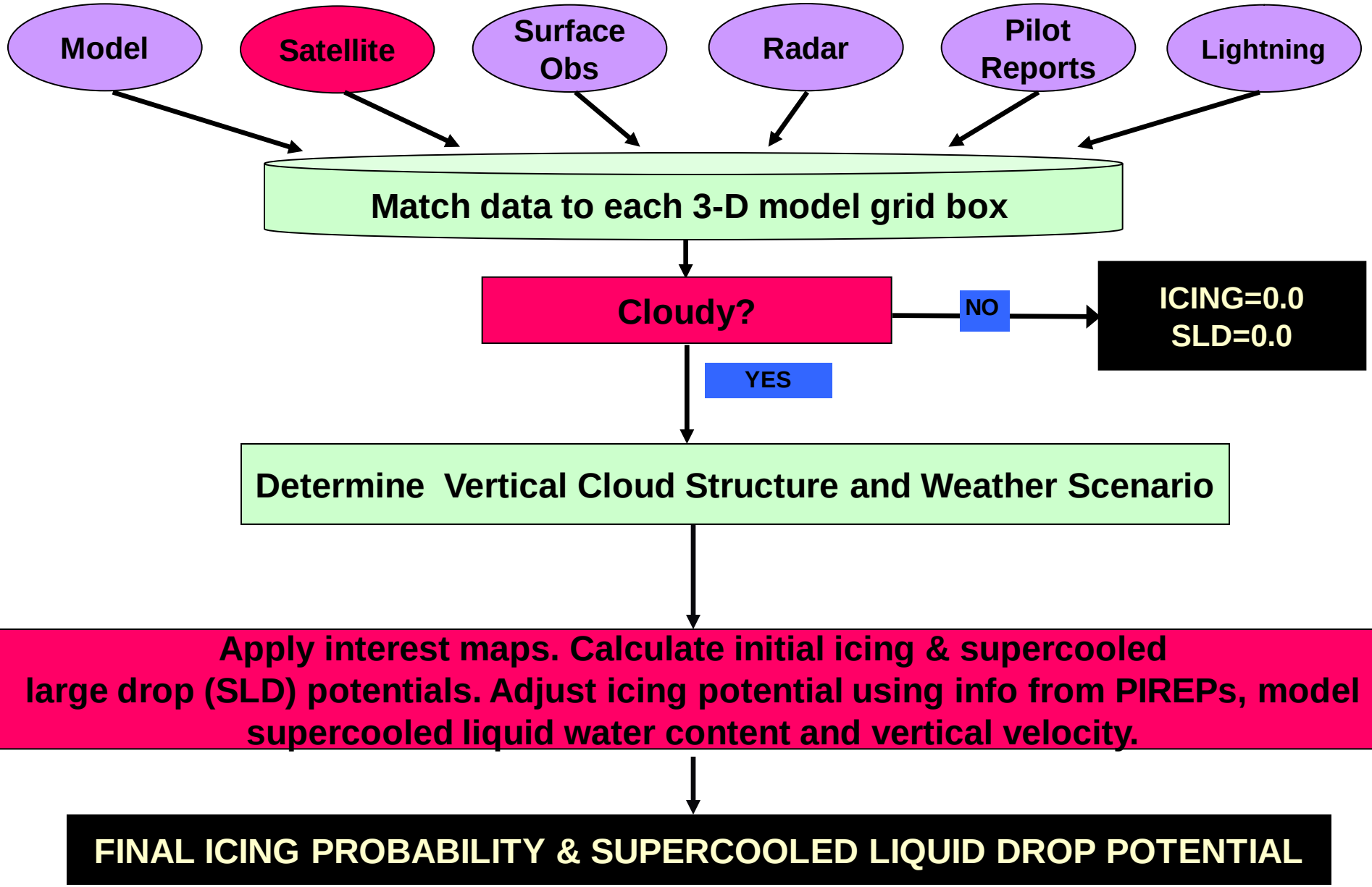
Overview of Effort

Evaluate specific satellite products in collaboration with NASA LaRC group

Integrate products deemed useful into CIP and FIP algorithms in collaboration with IFIPDT

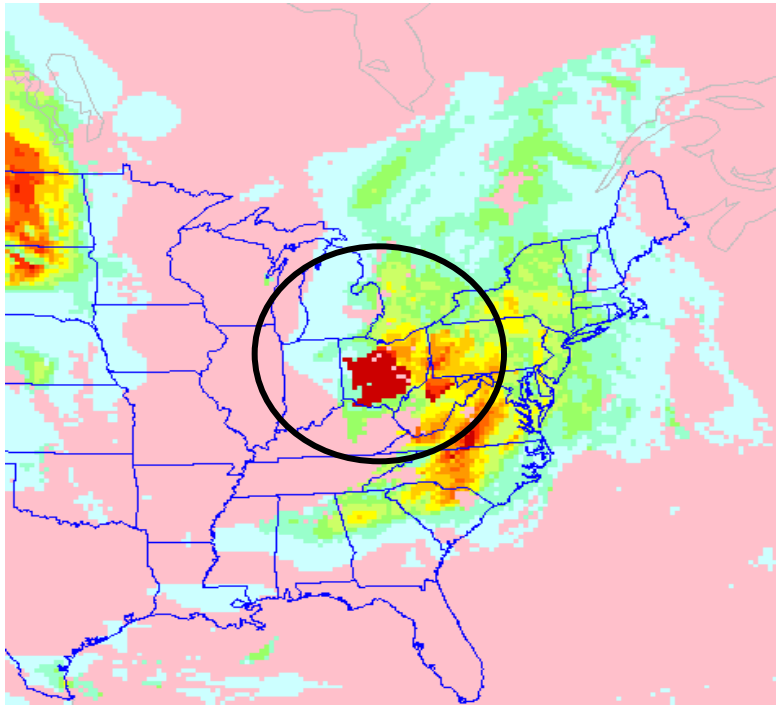
Investigate path to operations

Current Icing Product (CIP)

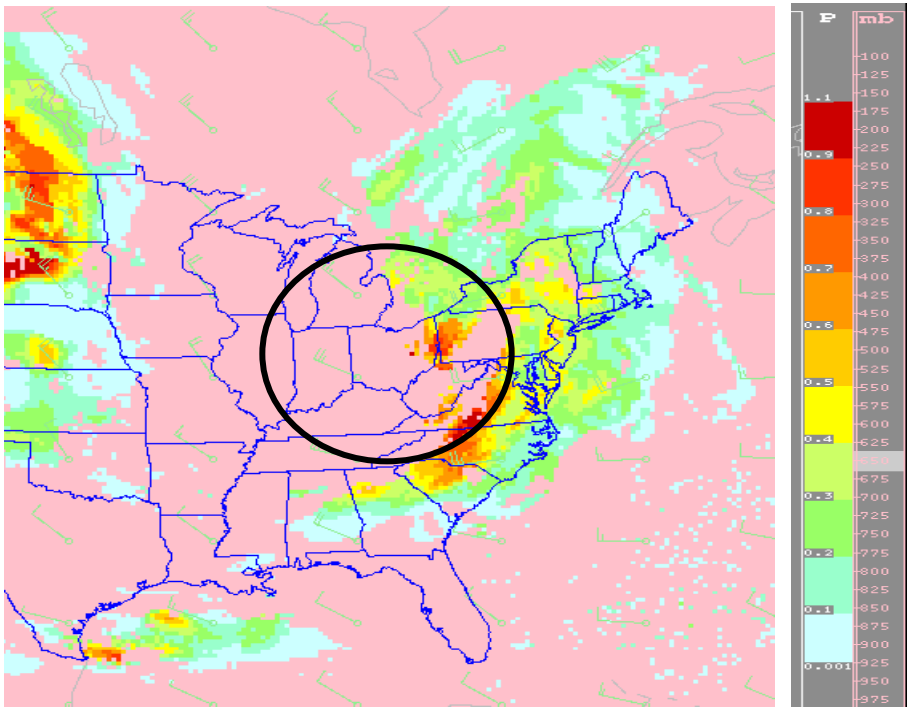


Impact of Satellite Products

Icing Probability at 3500 m -- 19 January 2005



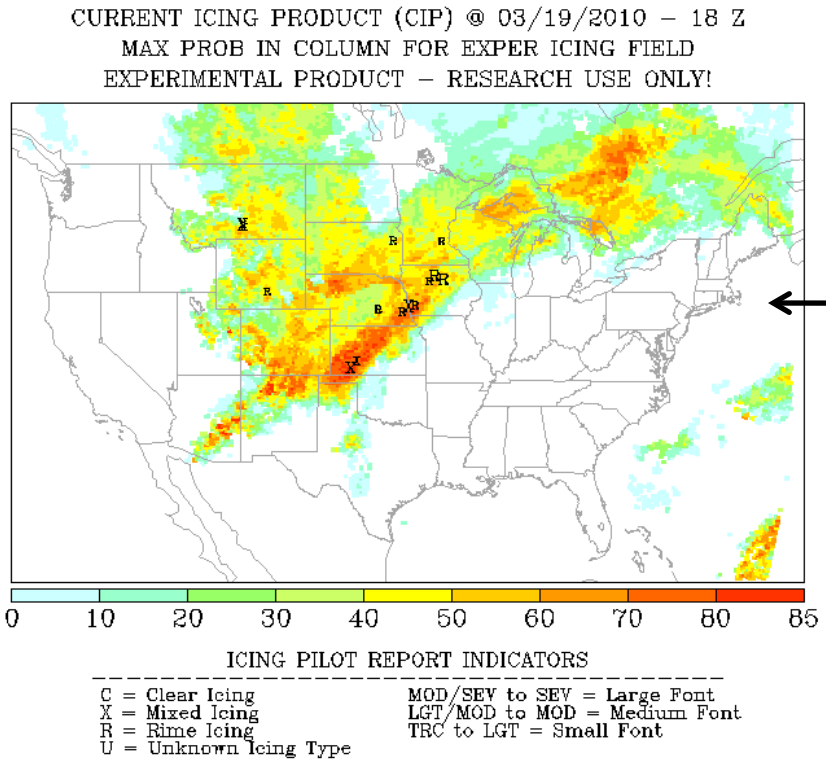
CIP

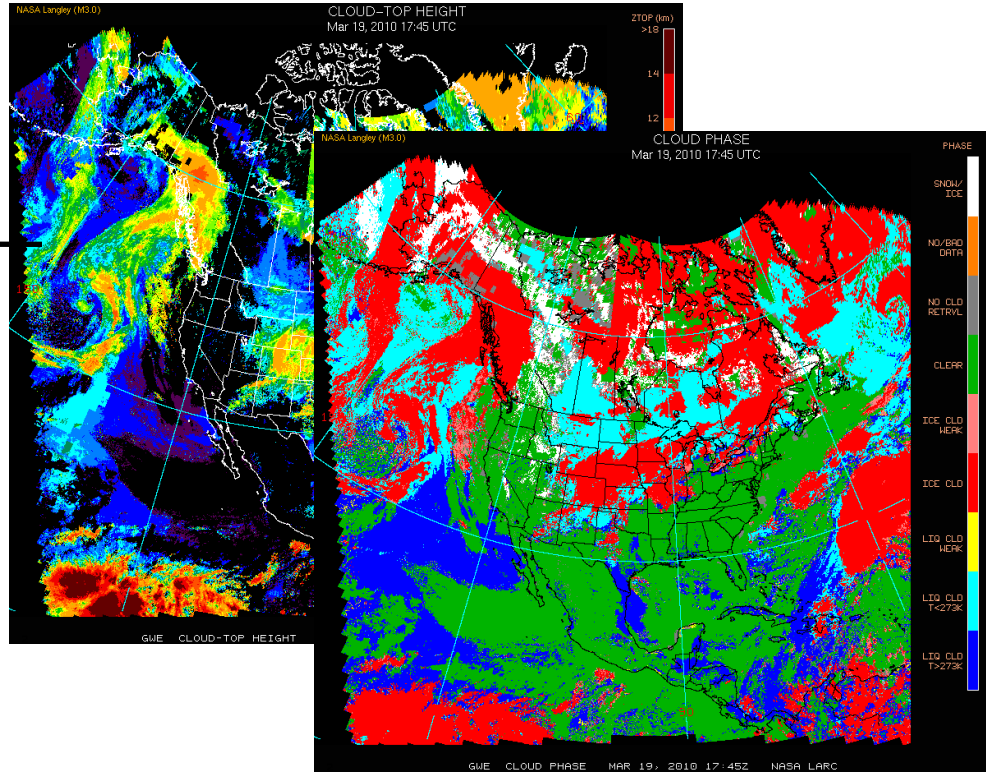


CIP with ASAP enhancements

Summary of 4D Weather Functional Requirements Related to InFlight Icing: ASAP Sponsored Enhancements

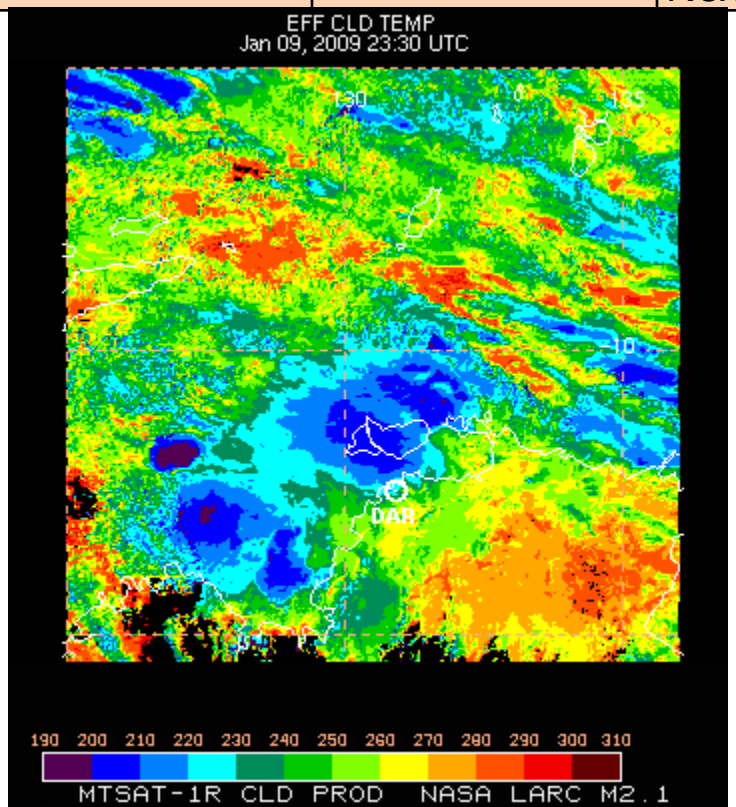
Application	Resolution	ASAP Icing
NAS over North America and adjacent coastal waters	8 km 30 minute	NASA LaRC currently provides a suite of satellite-based cloud products that have shown potential for enhancing diagnoses of icing conditions. Products are available on the North American domain at 30 minute intervals. They provide current information near cloud top that can be integrated with other CIP input data.

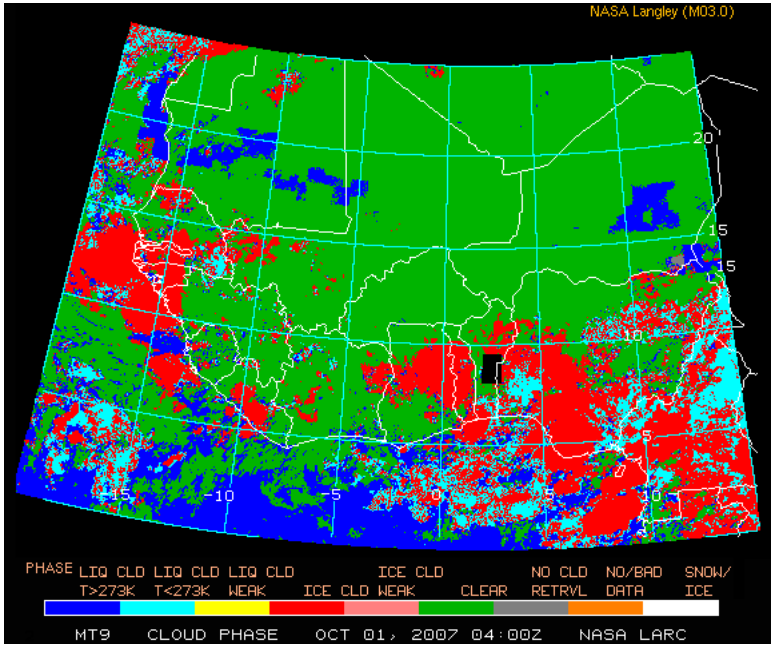




Summary of 4D Weather Functional Requirements Related to InFlight Icing: Future ASAP Contributions

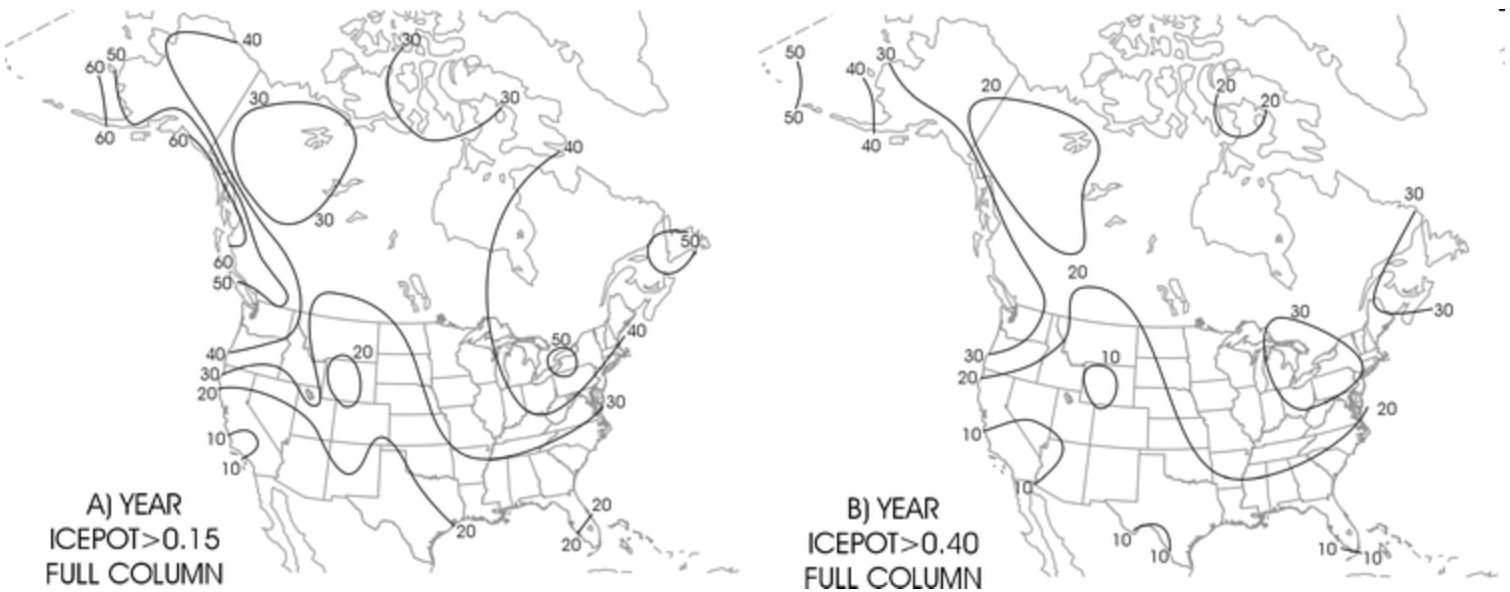
Application	Resolution	ASAP Icing
Outside NAS	Dependent on specific sensor/platform	Similar cloud products from other GEO/LEO sensors could be incorporated into global icing products assuming data are accessible. This is outside the current ASAP Icing plan but could be undertaken for NextGen.





Summary of 4D Weather Functional Requirements Related to InFlight Icing: ASAP Enhancements

Application	Resolution	ASAP Icing
Climatological forecasts	Monthly	Not in current plans, but satellite products could support this application. Would base on our historical satellite data and could be highly useful in areas where surface or in situ data sets are not available.



Bernstein et al., JAMC, 2007

ASAP In-Flight Icing Ongoing Work

- Bring together individual components of CIP that now use LaRC satellite products
- Benchmark against operational version of CIP
- Evaluate and incorporate LaRC multi-layer cloud product
- Consider value of new satellite products, e.g., IWC/LWC profiles