

## **EXTICE- EXTreme ICing Environment**

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More recent aircraft incidents and accidents have highlighted the existence of icing cloud characteristics beyond the actual certification envelope defined by the JAR/FAR Appendix C, which accounts for an icing envelope characterized by water droplet diameters up to 50  $\mu\text{m}$  (so-called cloud droplet).

The main concern is the presence of super-cooled large droplets (SLD) such as freezing drizzle, in the range of 40-400  $\mu\text{m}$ , or freezing rain, with droplet diameter beyond 400  $\mu\text{m}$ . International airworthiness authorities, namely are intending to jointly develop and issue updated regulations for certification in SLD: Appendix X .

If implemented, the proposed new rules will require aircraft manufacturers to demonstrate that their product can safely operate in SLD environments. To do so, they will be requested to demonstrate that specific capabilities comply with the new regulation. Compliance has typically involved actual flight into natural icing conditions. Since SLD icing conditions occur less frequently than the current Appendix C icing specifications, it will be difficult and expensive to demonstrate compliance by the use of natural icing flights alone. Therefore, it is expected that a greater reliance will be placed on the use of so-called engineering tools (icing tunnels, tankers & computer codes).

The objectives of this proposal are twofold. One objective is to reduce aircraft development cost by improving tools and methods for aircraft design and certification in an icing environment. On the other hand, since the proposal will address the development and validation of Means of Compliance and tools for aircraft icing certification, this research activity will also have a direct impact on aircraft safety, allowing future aircraft to be designed safer with respect to the icing and the SLD environment.

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### **Other participants**

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