



Ben C. Bernstein
Meteorologist, Consultant
Leading Edge Atmospheric
Longmont, Colorado USA

Mr. Bernstein has been working in aircraft icing since 1990 as a research scientist, forecaster, icing product developer, and consultant. Currently, he works as a consultant for the Federal Aviation Administration (FAA) and aircraft manufacturers that are flight testing helicopters, business jets and large transport jets. The primary goal of his aircraft manufacturer work is to guide test aircraft safely into and out of icing conditions that are required for certification, and provide support for other weather-related certification tests. Through such guidance, successful icing flight tests have been accomplished across the U.S., Canada, Scandinavia and western Europe.

Mr. Bernstein's current FAA work supports the "TAIWIN" (Terminal Area Icing Weather Information for NextGen) program. TAIWIN is focused on providing critical, highly-resolved icing information for decision making in the terminal area, with particular focus on meeting user needs related to recent changes in icing regulations on flight in large-drop icing, including freezing drizzle and freezing rain. Mr. Bernstein has also worked extensively on near-surface icing issues in recent years, studying cold-season events that affected wind power production in Scandinavia, and developing real-time diagnostic and forecast systems to assess the presence and severity of icing conditions in the near-surface environment (within ~500 ft of the ground). While these systems were applied primarily to wind turbines, the concepts have also been related to a broader range of low-altitude icing applications. He has also served as a forecaster for the NASA DC-8 HIWC (High Ice Water Content) flight campaigns focused on conditions associated with engine rollback events and pitot tube effects due to encounters with ice crystals.

Prior to transitioning to full-time consulting work, Mr. Bernstein worked for the National Center for Atmospheric Research from 1990 to 2008. While there and since departing, he has researched the mechanisms causing icing conditions to develop, evolve and dissipate, completed studies of the climatology of icing at the surface and aloft, worked with the National Transportation Safety Board on high-profile icing accidents, and contributed to the meteorological aspects of the FAA's large-drop icing envelopes known as "Appendix O". During this period he also served as the lead developer of the FAA/NWS icing products Current and Forecast Icing Products (CIP and FIP), which became operational in 2002 and 2005, respectively. To this day, these products provide comprehensive, gridded icing guidance to pilots, dispatchers and meteorologists across the NAS.

As a research meteorologist, Mr. Bernstein also worked jointly with researchers and pilots at the NASA-Glenn Research Center, National Research Council of Canada, and Environment and Climate Change Canada to seek out and sample a wide variety of icing conditions, including Supercooled Large Drops (SLD). He spent a great deal of time forecasting icing research flights from the ground before going on board to serve as a flight scientist, gaining the valuable perspective of relating pre-flight icing assessments to first-hand experiences in flight, while working closely with pilots and engineers to plan, sample and negotiate icing flight operations with air traffic control. Through these programs, a great deal has been learned about the effects of flight in SLD, how to detect and avoid them, and how to communicate this information effectively to users. This experience has translated directly to the development of the icing products described above, the support of certification testing for aircraft manufacturers, and the delivery of training materials for meteorologists, pilots, flight test engineers and certification authorities.