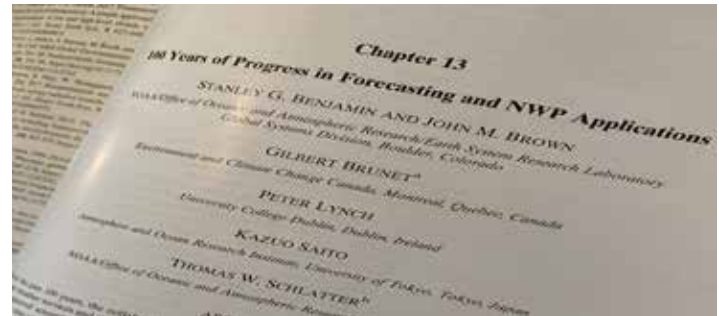




The NOAA Global Systems Division (GSD) of the Earth System Research Laboratory researches ways to provide the National Weather Service (NWS), the Federal Aviation Administration (FAA), and the public with rapidly-updating environmental models, state-of-the-art decision support tools, innovative visualization systems, and high-performance computing technologies to support commerce and a Weather-Ready Nation.

GSD researchers contribute to the AMS Centennial Monograph

GSD researchers were lead authors on a chapter in the American Meteorological Society Centennial Monograph called “100 Years of Progress in Forecasting and NWP Applications.” This chapter traced the evolution of forecasting starting in 1919 (when the American Meteorological Society was founded) over four eras separated by breakpoints at 1939, 1956, and 1985.



Improved lake-effect snow forecasts through experimental coupling of weather prediction with lake hydrodynamics

Lake-effect snowfall is one of the most hazardous weather events in the Great Lakes region, and forecasting the timing and amount of snow is extremely challenging. GSD and the Great Lakes Environmental Research Lab reached a key milestone in late February 2019 as they began to run experimental “coupled” versions of the Great Lakes Operational Forecast System (GLOFS) and the High-Resolution Rapid Refresh (HRRR) model.

GSD co-hosts workshop to demo aviation tools that support forecasters

GSD Forecast Impact and Quality Assessment Section (FIQAS) scientists co-hosted a workshop to demonstrate GSD experimental tools to NWS meteorologists from the Aviation Weather Center and 21 aviation-focused regional offices. The tools can help forecasters better manage air traffic flows around hazardous weather.

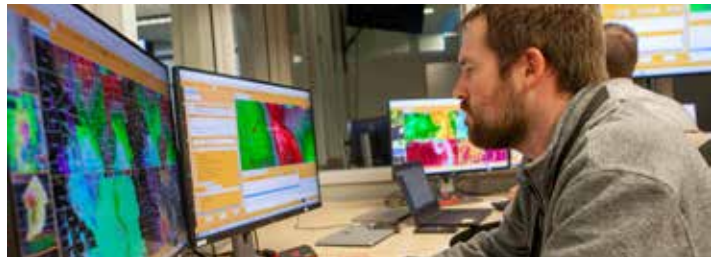


Scientists demo real-time experimental prediction Systems in Hazardous Weather Testbed

GSD’s modeling team demonstrated an enhanced physics suite that improves how the experimental Rapid Refresh (RAP) version 5 and High-Resolution Rapid Refresh (HRRR) version 4 represent sub-grid-scale clouds and their effect on the local environment, and how sub-grid terrain impacts horizontal flow.

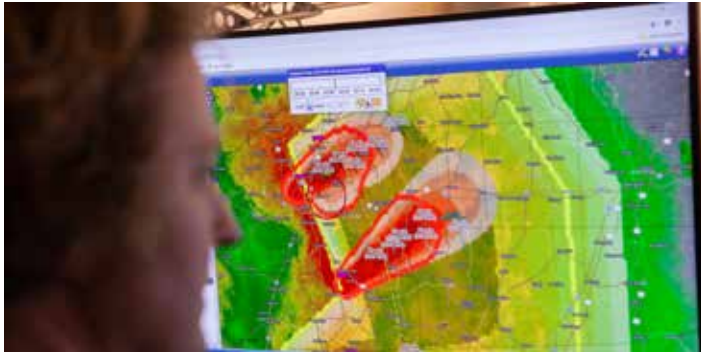
GSD hosts forecasters to evaluate new Hazard Services features

GSD researchers hosted more than a dozen NWS forecasters to evaluate the workflows being developed in the Hazard Services system. Hazard Services is a pathway for promising science and technology to be more rapidly incorporated into the operational warning decision-making process.



Hazard Services - Probabilistic Hazard Information application tested by forecasters

The experimental Hazard Services - Probabilistic Hazard Information (HS-PHI) application continued its third year of testing. HS-PHI is a graphical depiction of plumes of probabilities of a severe weather hazard occurring at grid points across a continuum of minutes to days. Forecasters evaluated how well HS-PHI helped them convey hazardous weather threats to the public, provided suggestions to improve the software, and helped formulate operational best practices.



New GSD app brings Earth and space animations to your phone

NOAA's SOS Explorer™ Mobile, a free app for personal mobile devices, tells Earth science stories by playing visually stunning animations of observations of the ocean, atmosphere, space, and land collected by satellites, and the output of numerical models used by scientists to predict and monitor Earth and space.



GSD modelers support 2019 In-Cloud ICing and Large drop Experiment (ICICLE)

GSD modelers created a 1km High-Resolution Rapid Refresh (HRRR) nest over the Great Lakes region to support the FAA-led In-Cloud ICing and Large drop Experiment (ICICLE) project from January through March 2019. GSD focused on identifying the advantages and disadvantages of 1-km grid spacing versus the current 3-km grid, how to optimize the physics in the HRRR model to run at 1-km, testing methods to improve forecasts of cloud development, icing conditions, and the location and type of precipitation at the surface.

GSD transitions a significant upgrade to NWS's MADIS

GSD met a major multi-year milestone on September 4, 2019, when a significant upgrade to the Meteorological Assimilation Data Ingest System (MADIS) went live in NOAA National Weather Service (NWS) operations. MADIS ingests weather data from both NOAA and non-NOAA providers, applies quality control checks, and provides an interface for the public to access a wide array of observations from hundreds of sources in a uniform format. MADIS ingests observations from over 2.3 million locations a day, providing more than 68 million quality-controlled observations to users daily, which is just over 2.8 million observations per hour.

