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Upper Ocean Data Collection during Operational Hurricane Reconnaissance Missions

Tuesday, 11 June 2019 16:30 (30 minutes)

In 2011 the U.S. Working Group for Hurricane and Winter Storms Operations and Research approved a multi-year AXBT Demonstration Project to assess whether the collection of upper-ocean temperature observations during operational tropical cyclone (TC) reconnaissance missions could improve coupled numerical model forecasts of TC track and intensity. In 2017, the program was expanded to include salinity observations and was incorporated as a Navy-Air Force partnership in the U.S. National Hurricane Operations Plan. Over the past eight years, with support from the Office of Naval Research, we have collaborated with the U.S. Air Force 53rd Weather Reconnaissance Squadron in the deployment of more than 1000 AXBTs and 80 ALAMO floats in 29 named storms, and with the Naval Oceanographic Office, National Data Buoy Center, and Naval Research Laboratory –Monterey in the transmission, assimilation, and analysis of the observations and impact. We have also begun research collaborations with scientists from ECMWF and the UKMET Office.

Achievements and results to date include near-real-time assimilation of upper-ocean temperature and salinity observations, increased accuracy of ocean model forecasts, improved track and intensity forecasts in coupled dynamical models, and development of a targeting system to identify critical ocean observation areas ahead of tasked tropical cyclone missions. Challenges include understanding when and where the observations are most impactful, and identifying an optimal sampling strategy to facilitate transition to an operational program. Topics in focus here will include the operational construct of the research program, an overview of the observations collected to date, a discussion of current objectives and future plans, and an invitation to collaborate with workshop participants to maximize the effectiveness of future observations.

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Session Classification: Tropical cyclones - Chair: Linus Magnusson

Track Classification: Workshop: Observational campaigns for better weather forecasts