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## Application of Ensemble-based Sensitivity to ECMWF Ensemble Forecasts in Field Campaigns

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Although the most popular application of ensemble forecasts is the mean and forecast standard deviation, there is substantial information within the higher moment statistics of these datasets that can be used to evaluate the dynamics and predictability of dynamical systems. In addition, these ensemble-based sensitivity methods can be used to identify locations where additional observations could change and/or reduce the variance in a forecast metric of interest, such as tropical cyclone (TC) position or rainfall. One of the advantages of this approach is that it is a computationally inexpensive post-processing application that can be quickly produced given ensemble forecast output. The goal of this talk is to provide examples of how ensemble-based sensitivity applied to ECMWF ensemble forecasts has been used in past field programs. During 2017 and 2018, experimental ensemble-based sensitivity has been used to guide where to deploy aircraft dropwindsonde locations that are meant to improve TC track forecasts. In 2019, this technique will be used to evaluate the forecast uncertainty and target locations for landfalling atmospheric rivers along the west coast of North America.

**Primary author:** TORN, Ryan (University at Albany, SUNY)

**Presenter:** TORN, Ryan (University at Albany, SUNY)

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