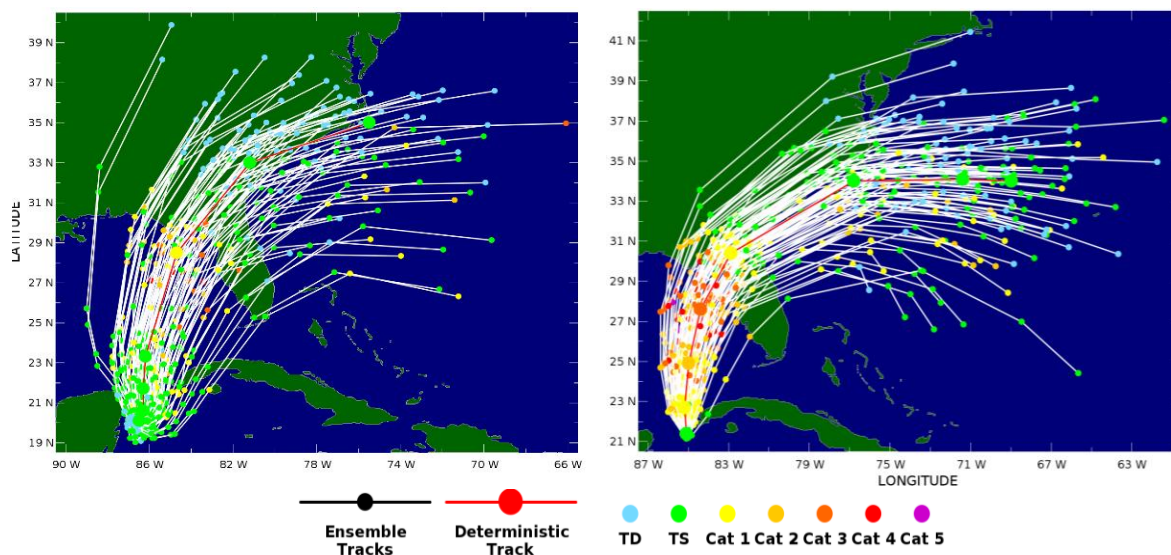


# 100-Member Wind and Gust Ensemble Forecast

For each forecast advisory produced by the National Hurricane Center and the Joint Typhoon Warning Center, a robust characterisation of 100 potential alternative storm tracks and intensities is generated, with each member having an equal chance of occurrence. From assessing the likelihood of different storm tracks to evaluating the range of possible impacts on affected regions, ensembles enable users to accurately model risk, providing valuable insights for informed decision-making and risk management strategies.



*Hurricane Idalia (2023). Left – Several days before landfall, a small number of the ensemble tracks suggested the possibility of a Cat 3 landfall. Right – 24 hrs later, deterministic track shows Cat 3 Landfall was made.*

- High-accuracy wind modelling (assessed against post-event station wind observations 2018-2022).
- Models the forecast uncertainty and provides an alternative perspective to the simulated event output of catastrophe models.
- An ensemble set of 100 different forecast wind/gust swathes, each with the same chance of occurrence. Each track opens as an individual 5km resolution footprint for GIS and risk platforms.
- Insurers with access to a wind loss model may calculate the impact on their portfolios of each of the 100 outcomes. The likelihood that portfolio wind loss will exceed different thresholds can be calculated.
- Models the uncertainty in storm track, storm intensity, and storm size.
- Models storm size and its effect on the rate of inland windfield decay.
- Models the impact of the change in surface roughness and topography at landfall on wind/gust speed.
- Advisories and error margins are from NHC and JTWC advisories only.
- Data available for global historical events back to May 2010.