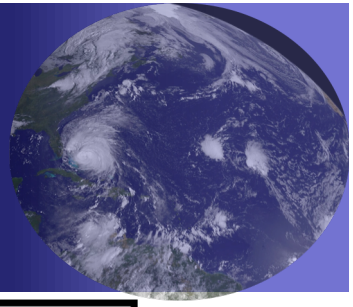
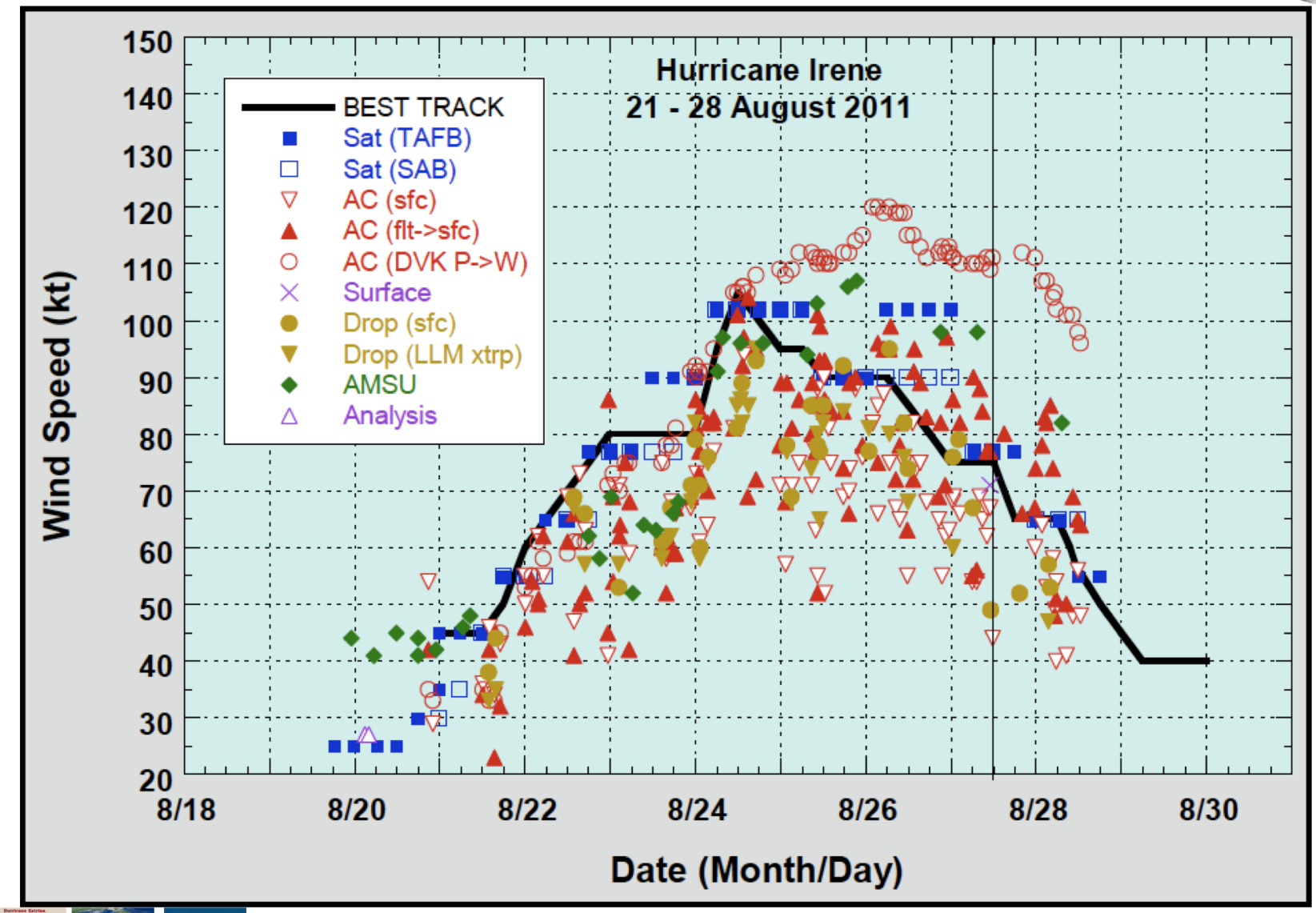
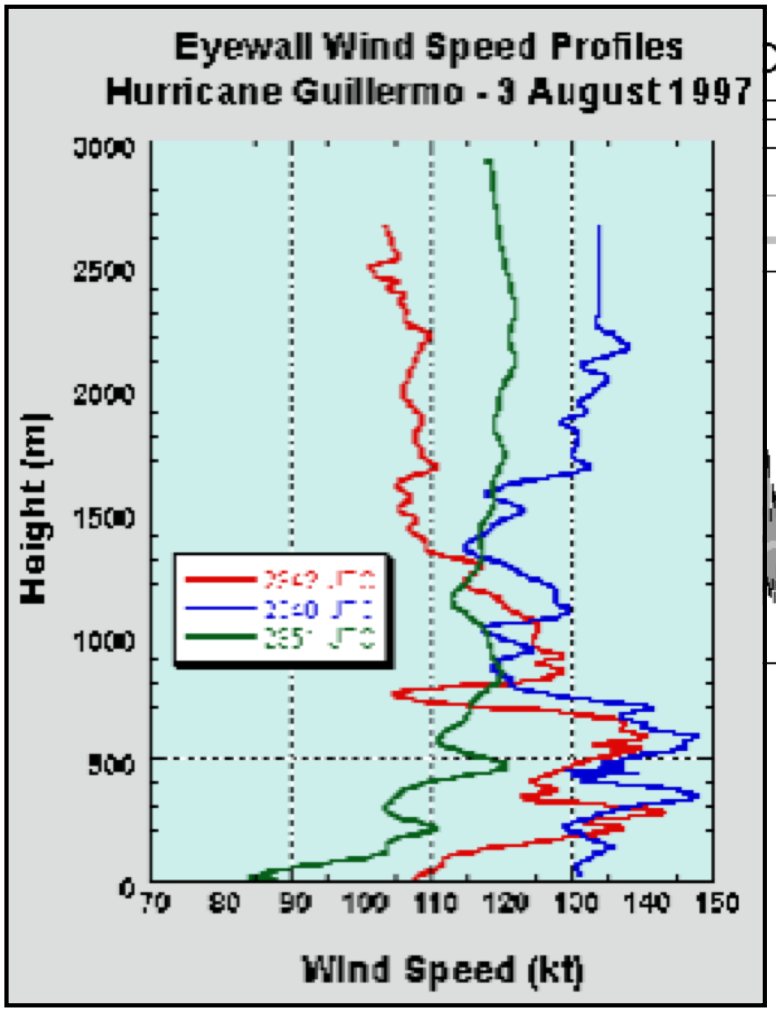
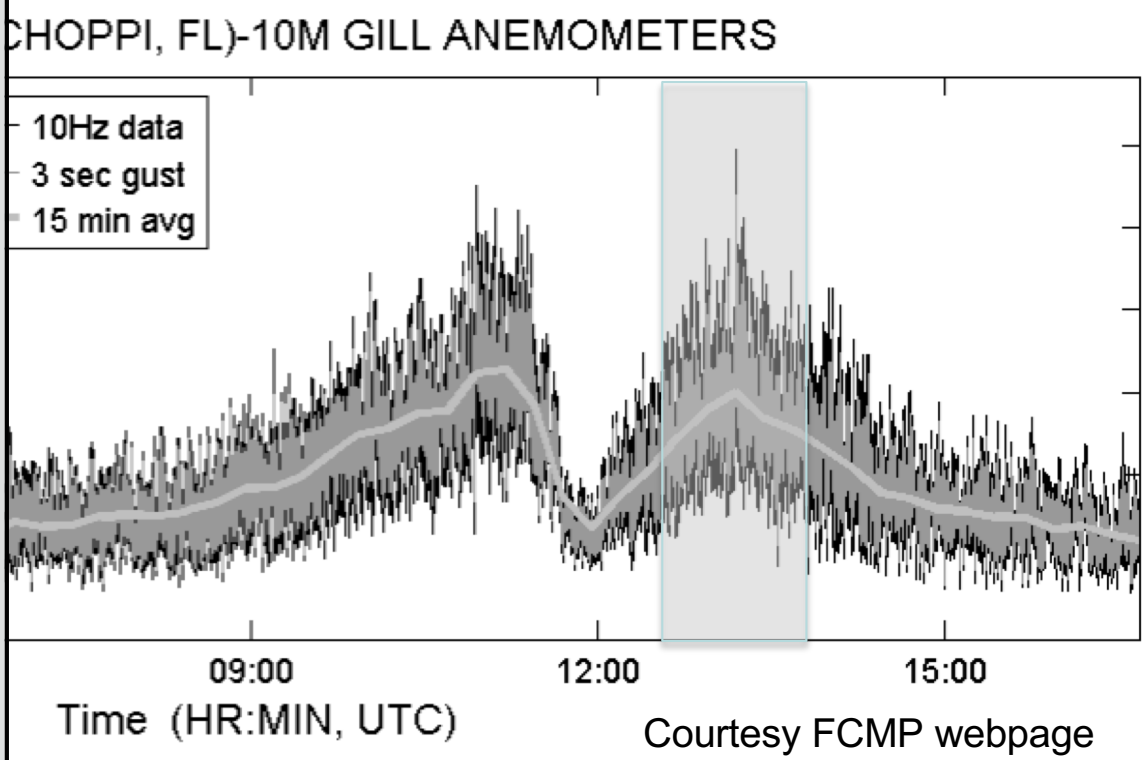
Observation Reality





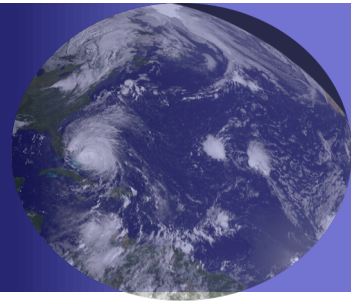
Observation Reality

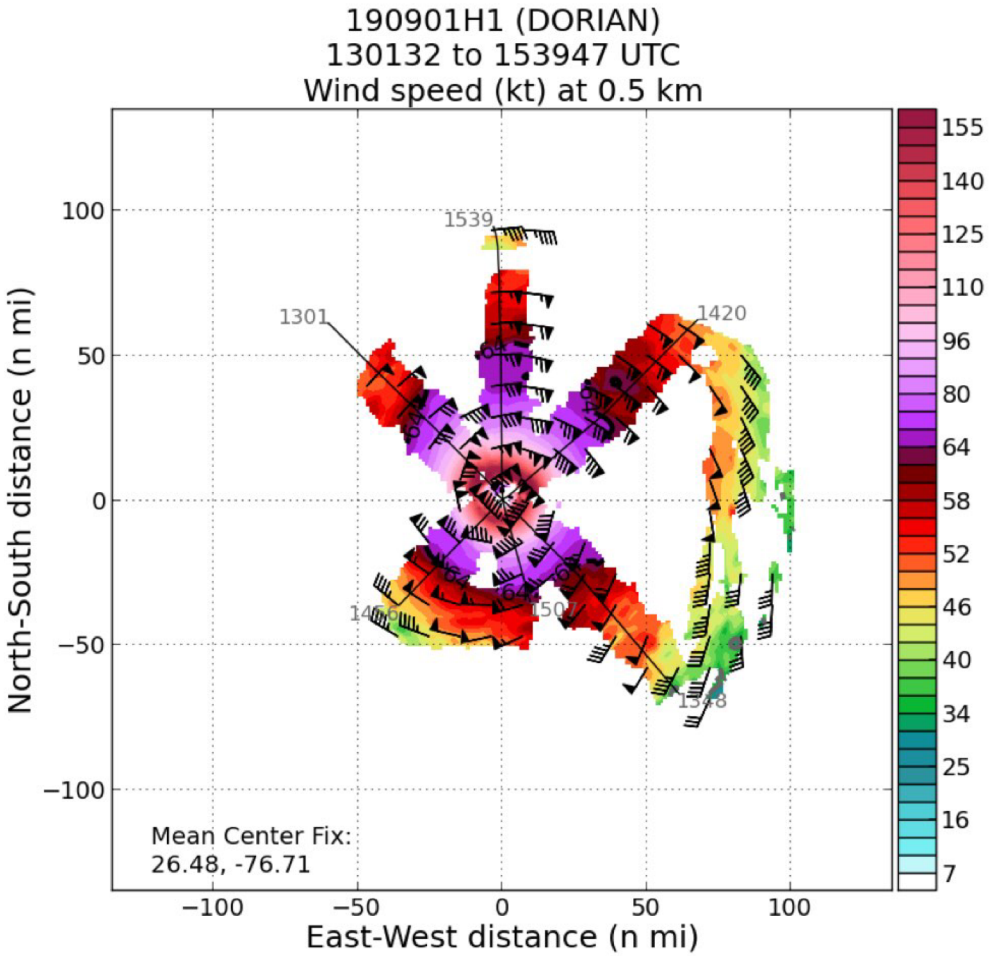


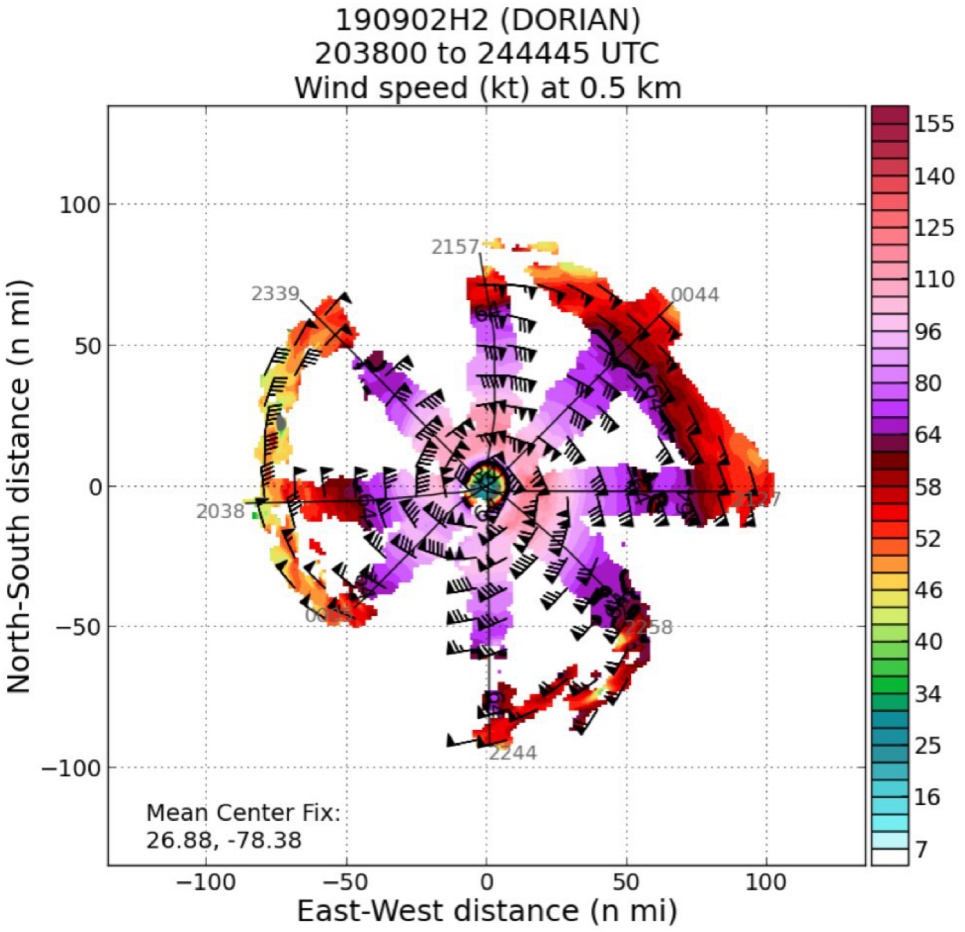


Courtesy FCMP webpage

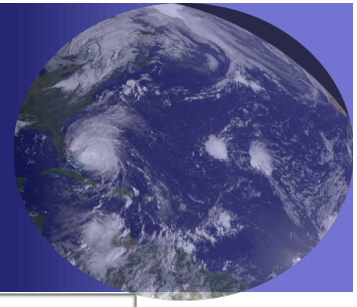
Observation Reality

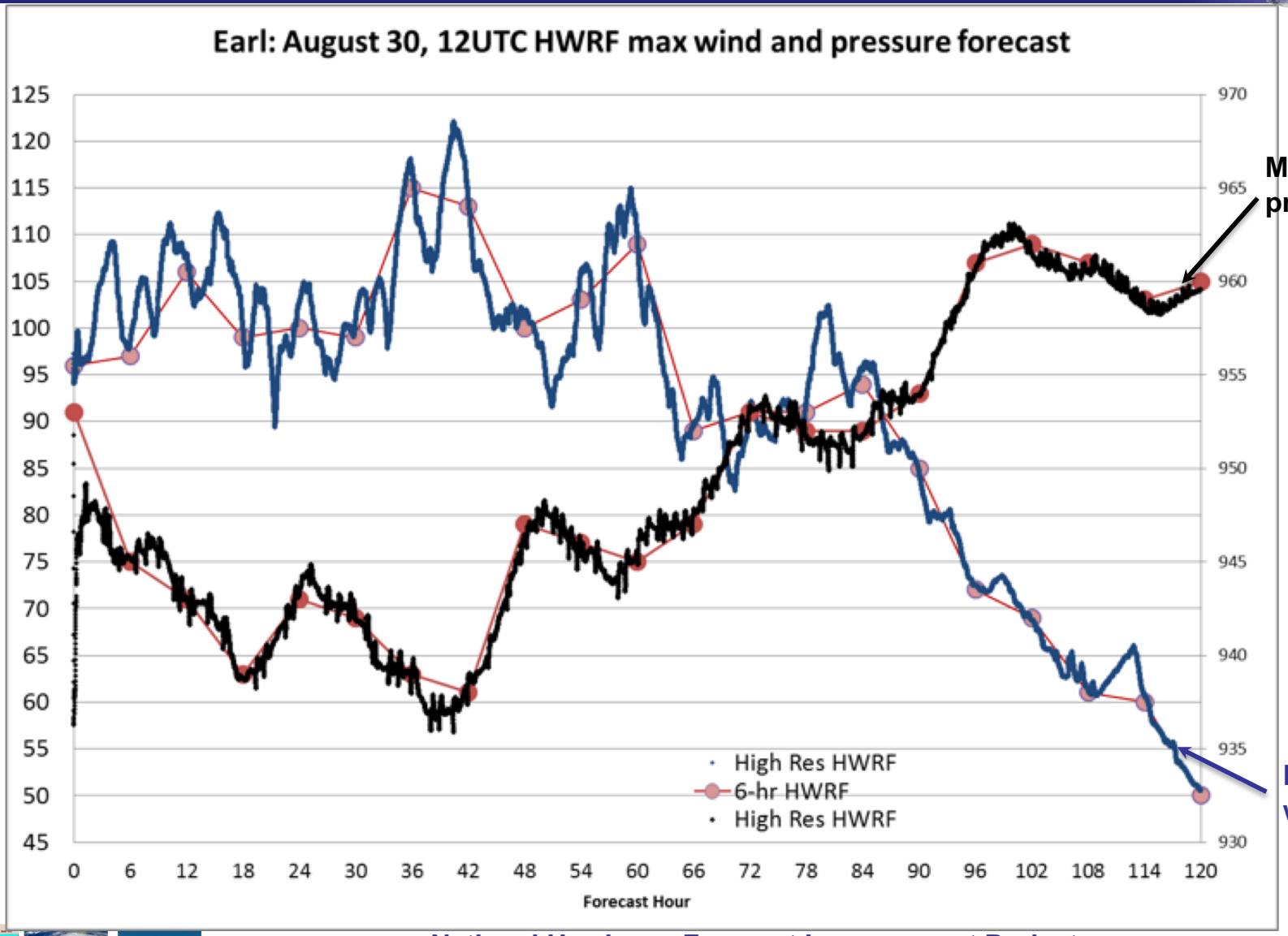




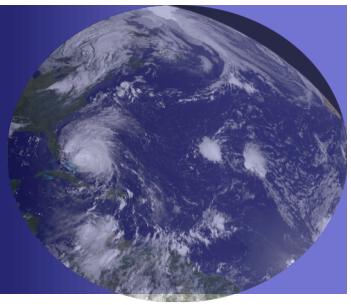


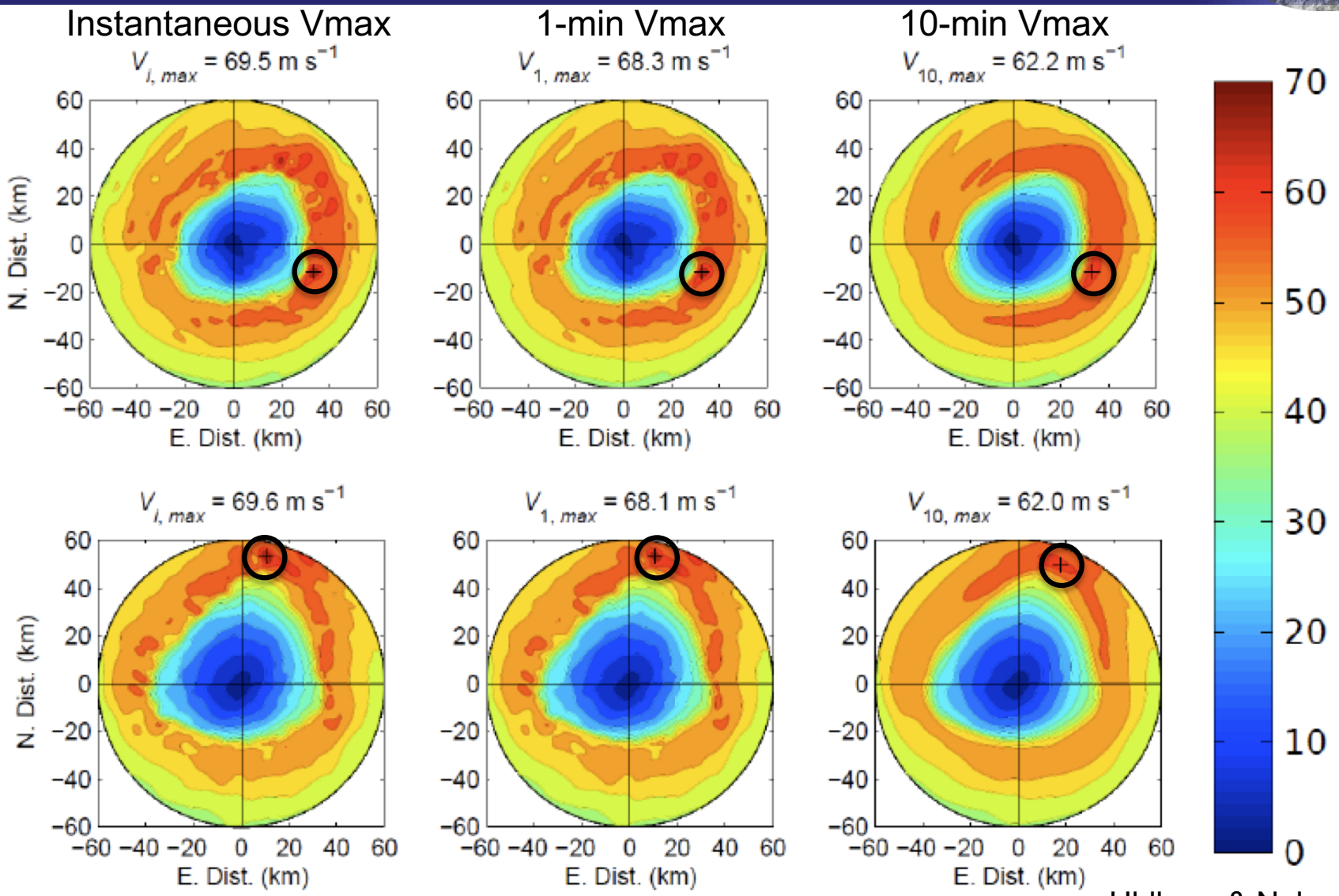
Model Reality





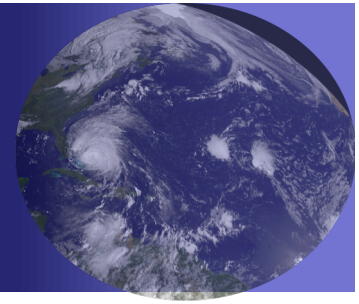
Model Reality





Uhlhorn & Nolan (2011)

Simple Model



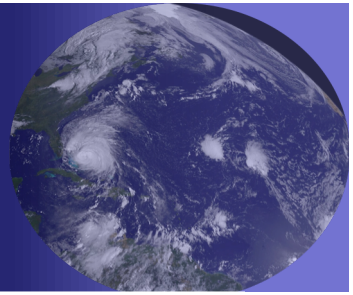
- In storm centered coordinates $V_{max}(r, z)$ is defined

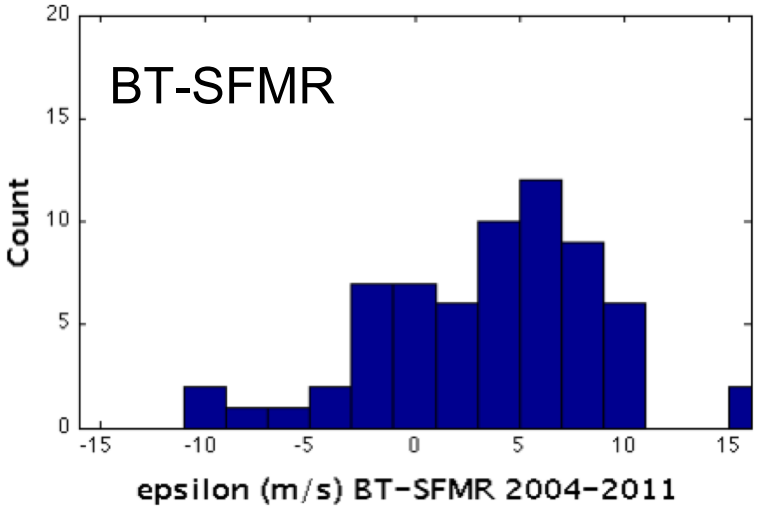
$$V\max_{\theta}[V(\theta, rmw, 10m)] = V_0(r,z) + V_1(r,z) + \varepsilon$$

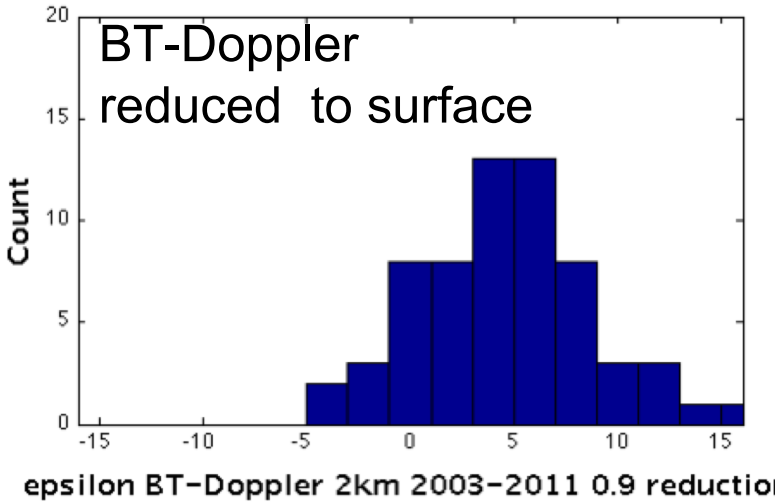
$$\varepsilon = V_{\max}(10m) - \alpha[V_0(rmw,z) + V_1(rmw,z)]$$

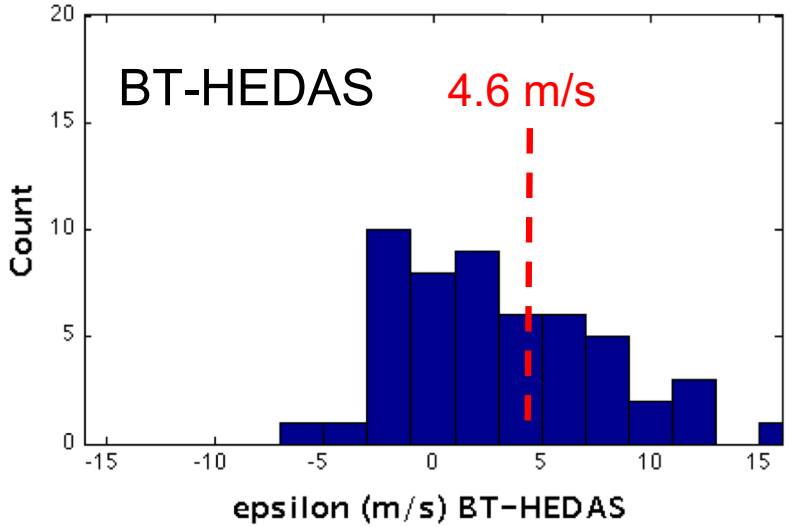
- ε is a stochastic quantity with variance within observation uncertainty

Uncertainty (ε)



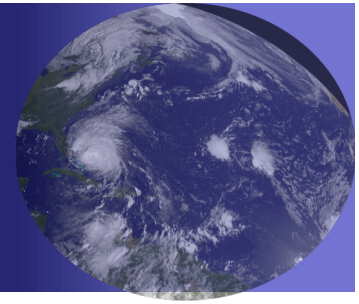






Courtesy P. Reasor, E. Uhlhorn and B.Klotz

Conclusions



- PDFs suggest ε is stochastic and V_{max} can be treated statistically consisting of low-wavenumber plus residual
- Residual standard deviation $<V_{max}$ observation error
- Residual can be interpreted as maximum V_{max} error
  - PDF shows V_{max} is represented in analyses, and is accurate to within observation error of ~4.6 m s^{-1}
- Results suggest that **if** low-wavenumber amplitudes and RMW are predictable, V_{max} should be predictable within observation uncertainty
- ε is likely predictability limit for 1-min sustained wind