In-situ Measurements of 3D Turbulence in Hurricanes Frances and Ivan Using a Pressure-Sphere Anemometer

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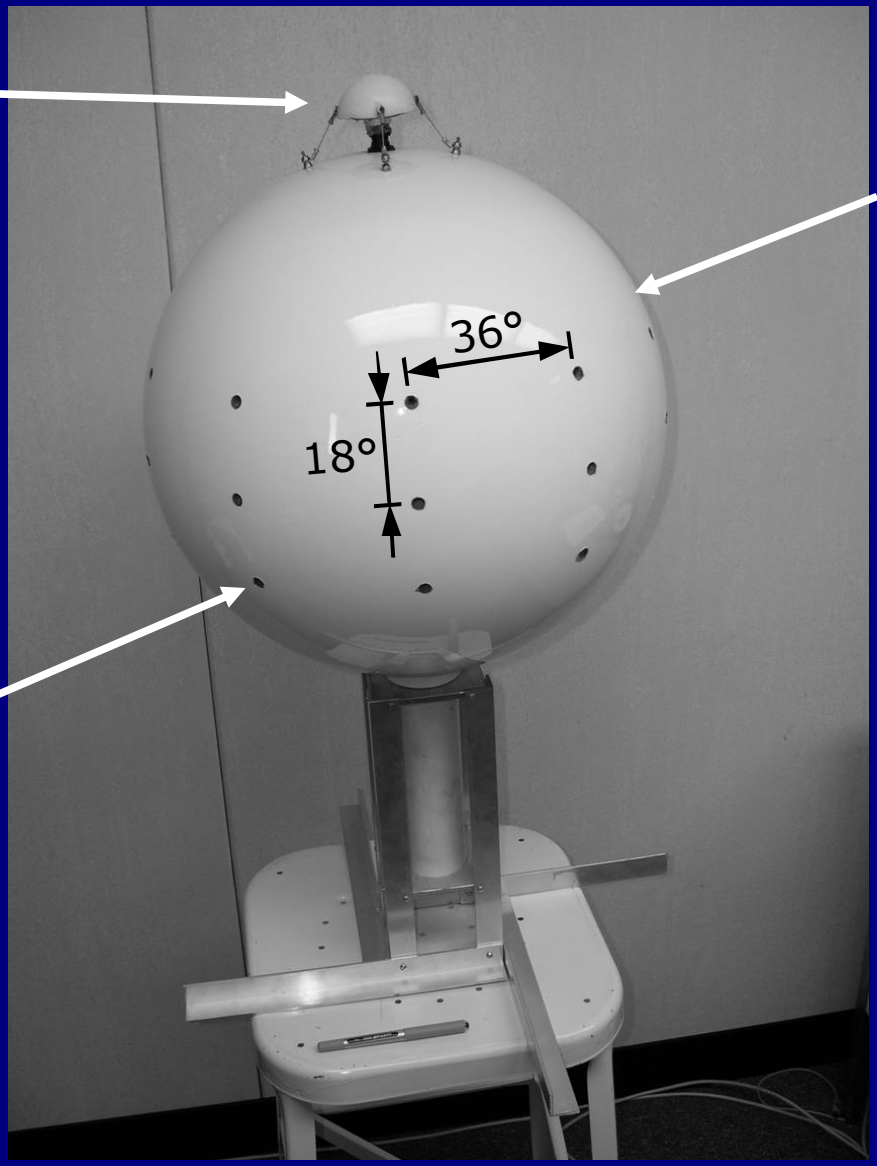
ET Probe Exterior Design

Temperature sensors

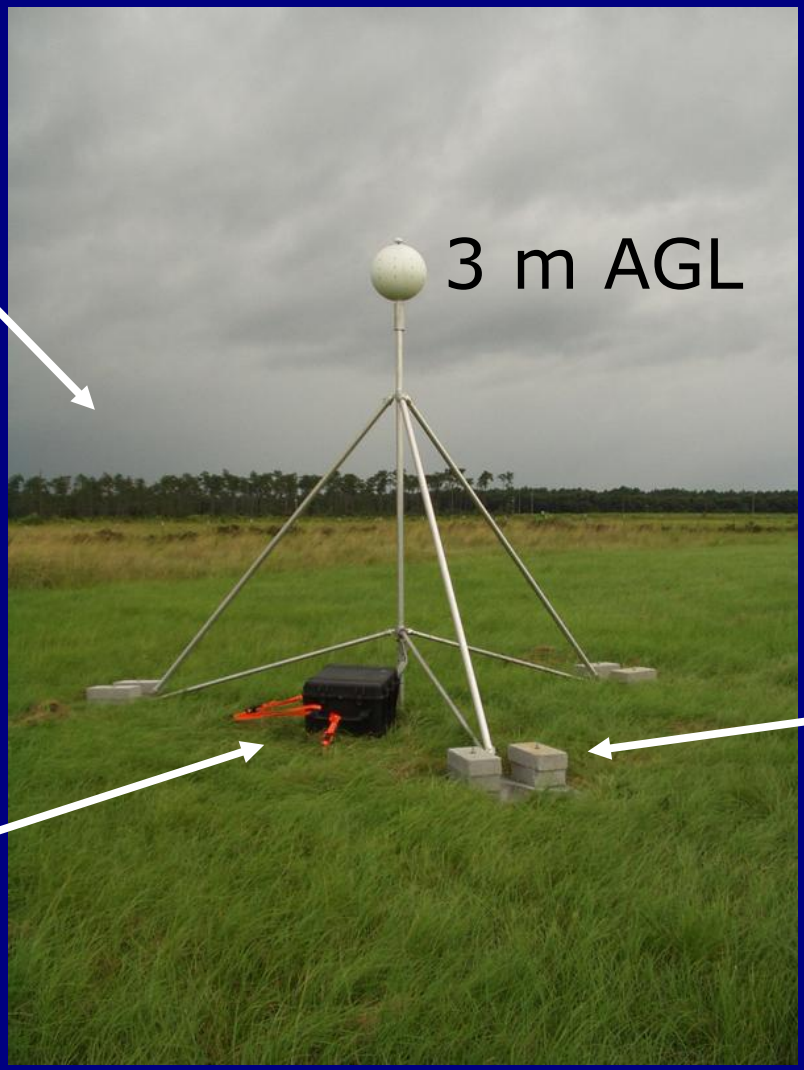


43 cm fiberglass shell

6.4 mm pressure ports

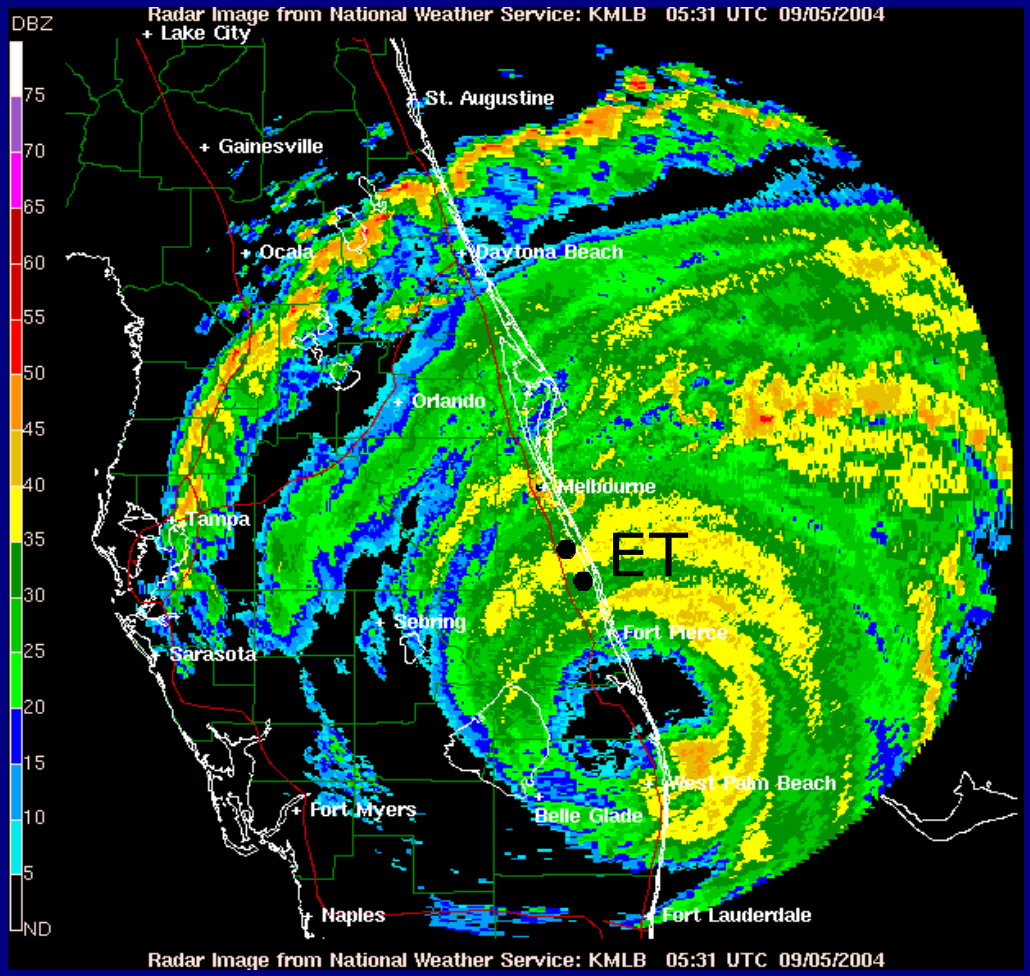
Same technology as aircraft gust probes

Deployment Tower



Hurricane Frances, Sept 2004

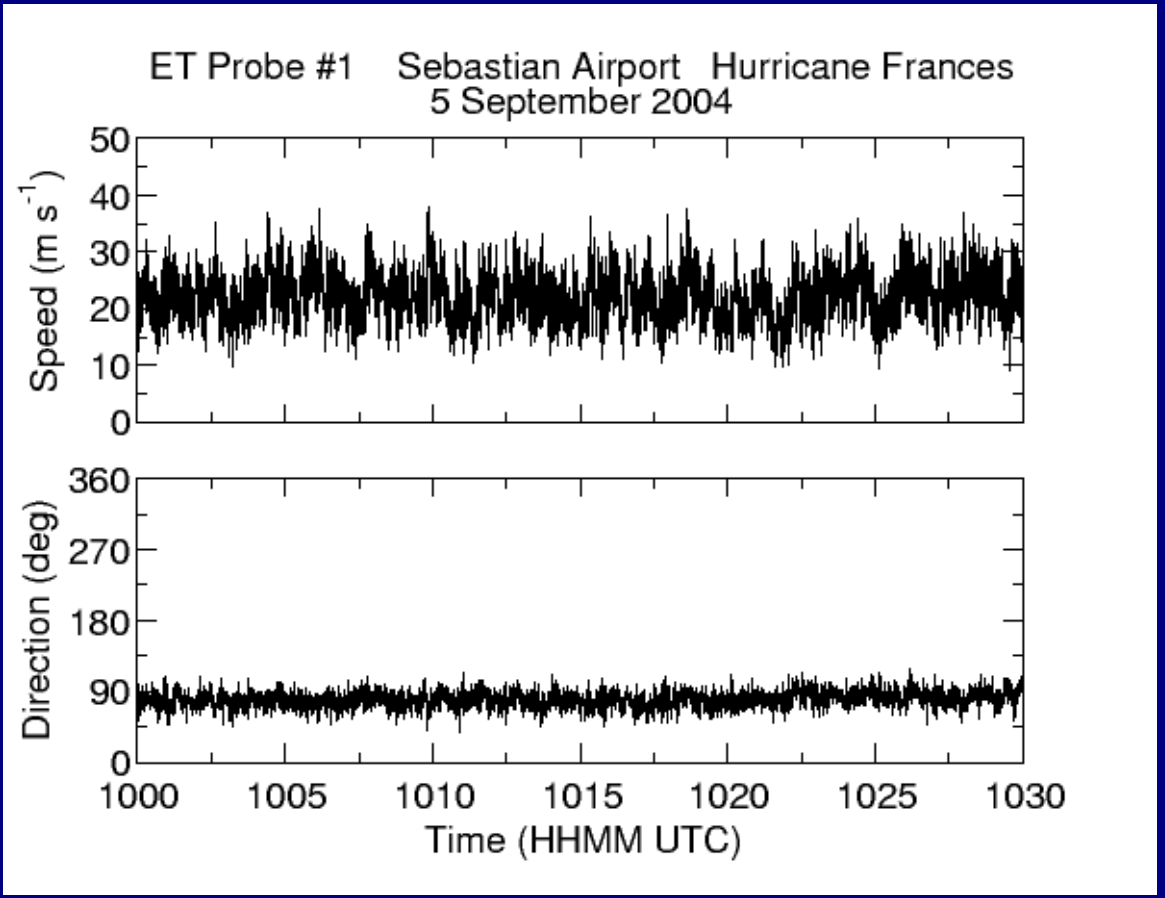
Right side of storm, onshore winds



3 probes, 2 locations

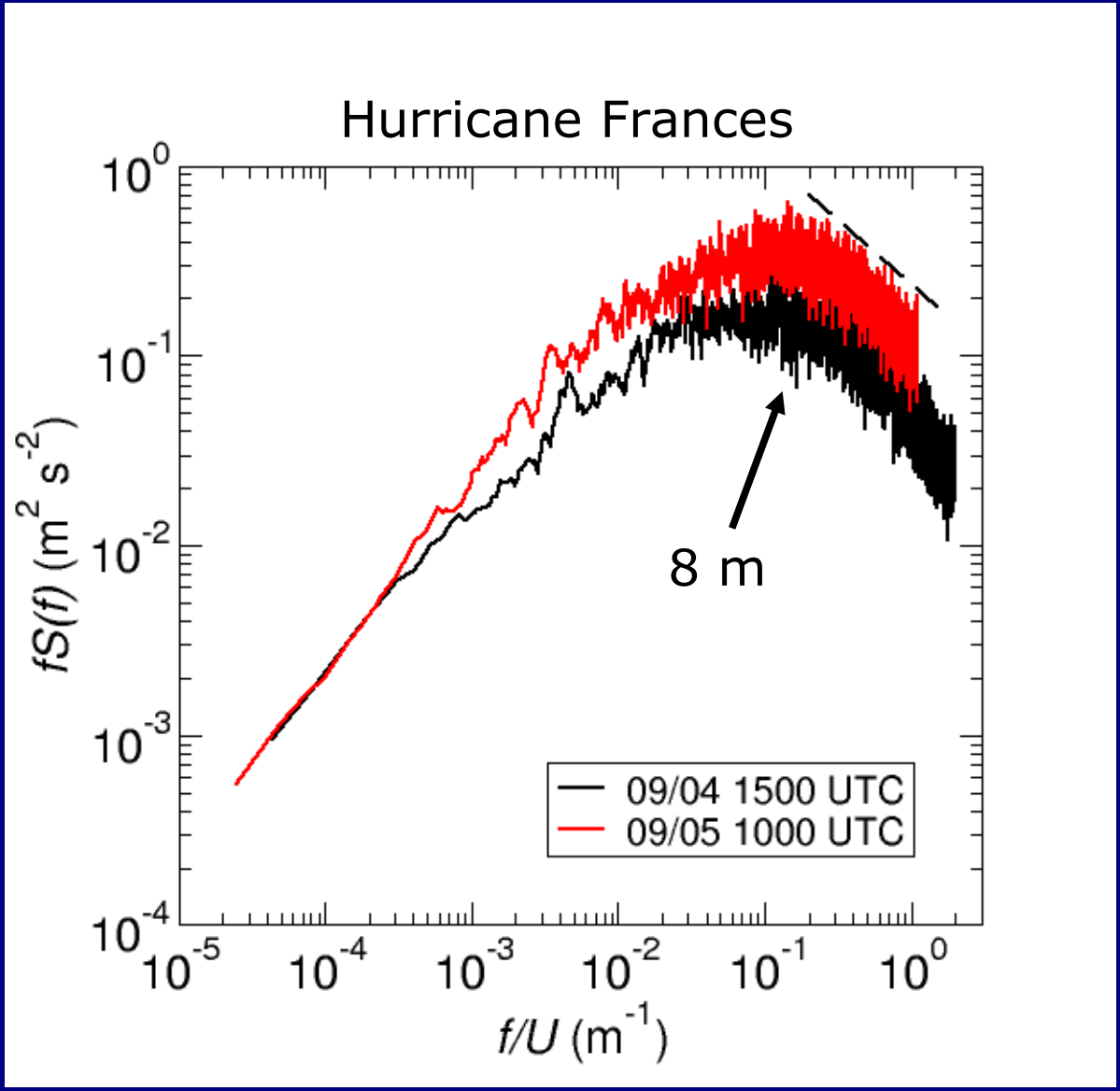
Cat. 2 at landfall

Frances Example Data

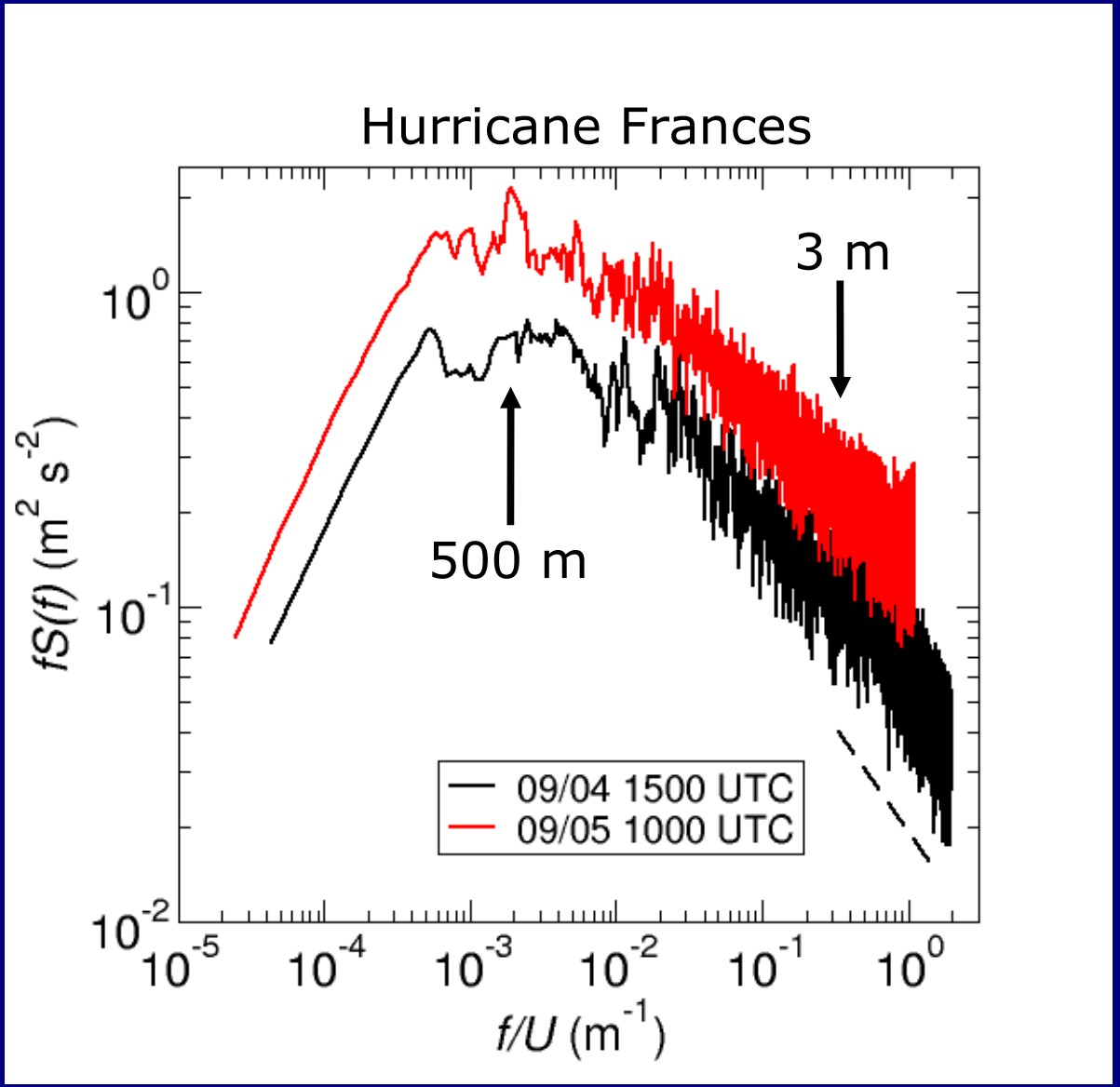


Little evidence of rainwater intrusion
Only 42/90000 points flagged

Vertical Velocity Spectrum

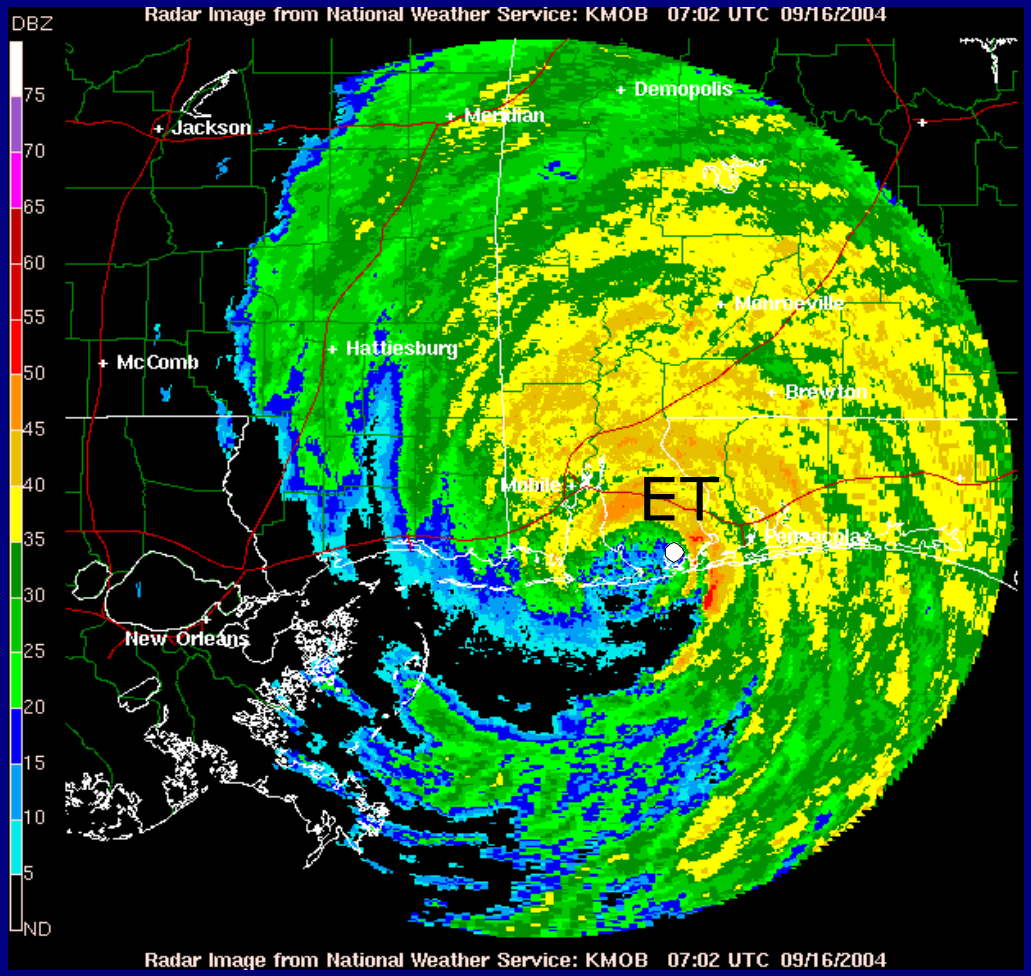


Longitudinal Spectrum



Hurricane Ivan, Sept 2004

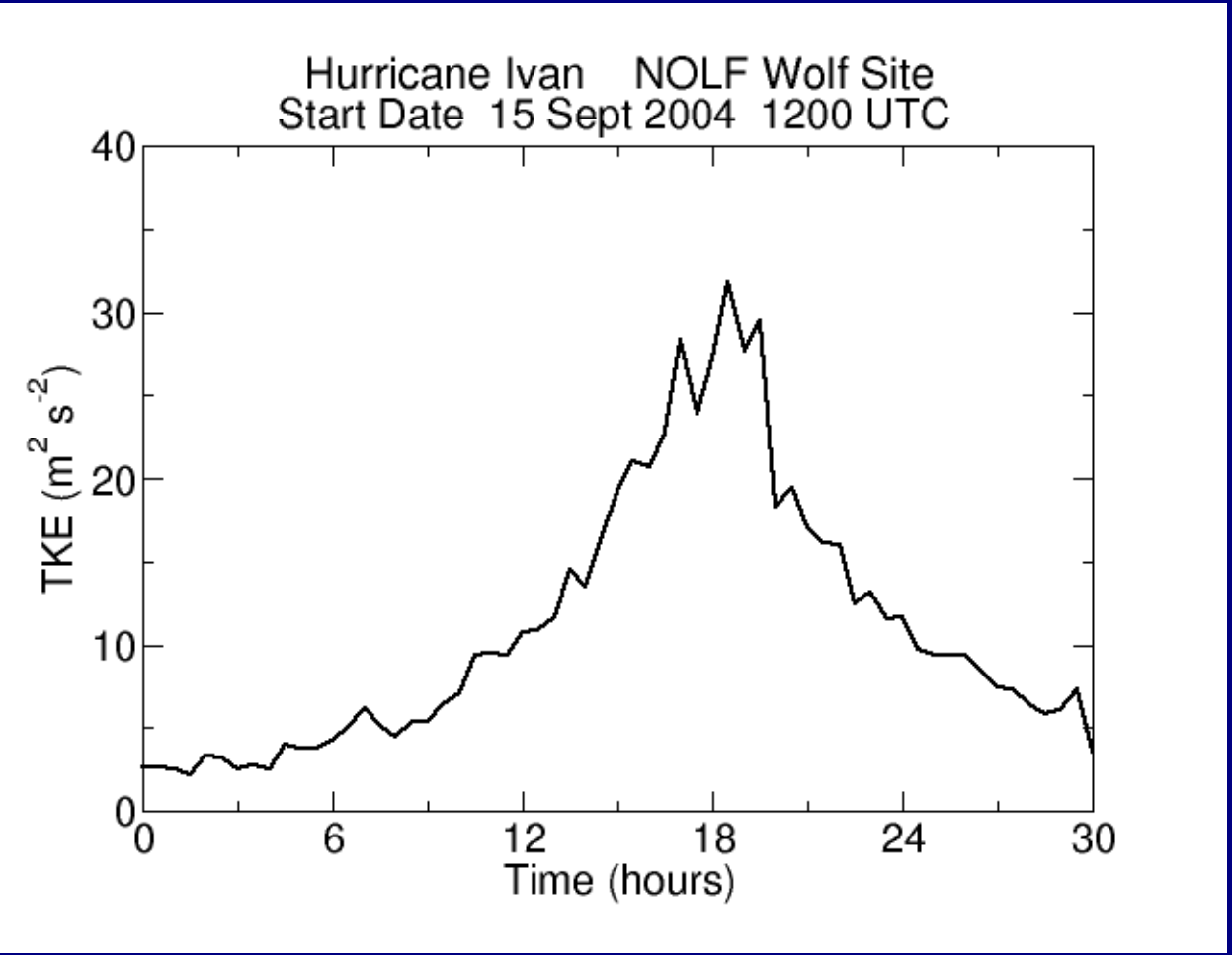
Probes on eastern edge of Ivan's eye



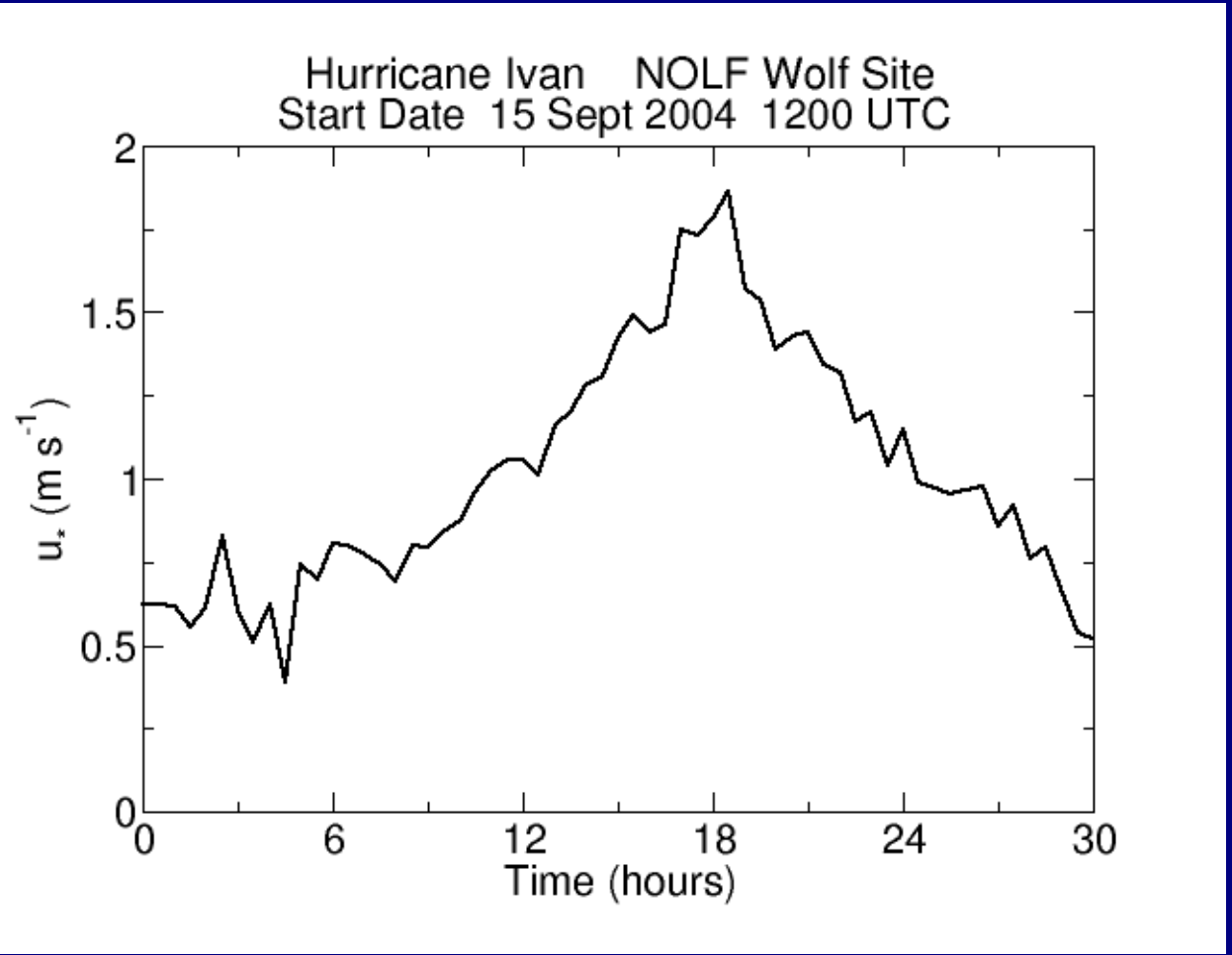
One location 2 probes

Cat 3 at landfall

Ivan Turbulent Kinetic Energy



Friction Velocity



Future Plans

- More complete data analysis
  - Texas Tech comparison
- Improve temperature-sensor housing
- More compact system using PC/104 computer modules or something similar
- Future deployments (C-MAN stations, NOAA buoys)