

# Concurrent Observations of Eyewall Mesovortices and Concentric Eyewalls in Atlantic Hurricanes

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# About Me

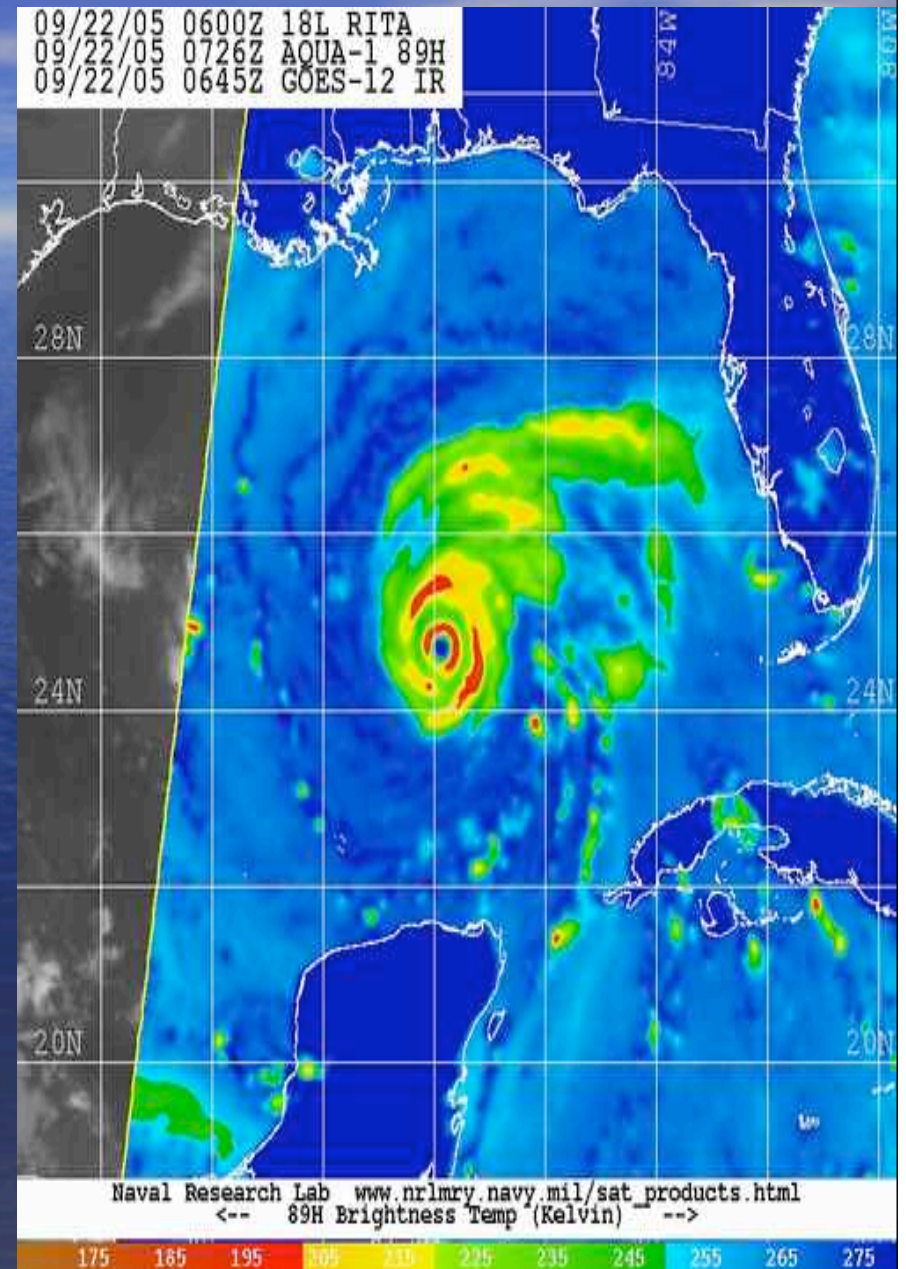
- ❖ Physics major
- ❖ Field Interest: Atmospheric Science and Medical Physics
- ❖ Plan to attend Graduate School

# Motivation

- ❖ The consequences of having Eyewall Mesovortices and Concentric Eyewalls take place just before landfall
- ❖ Useful for research in improving hurricane intensity forecasting based on observed conditions
- ❖ Useful for research within the study of hurricane dynamics

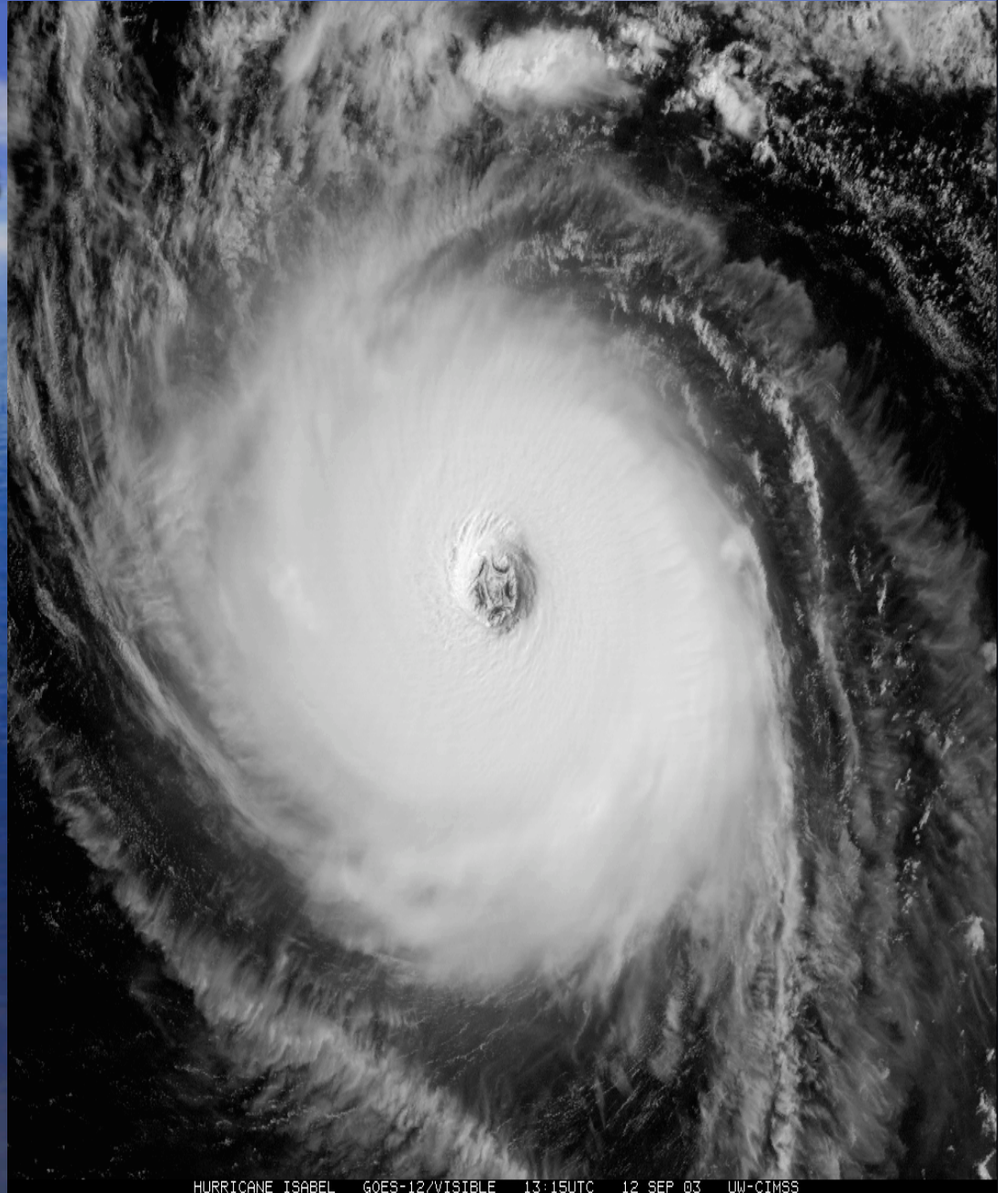
# Concentric Eyewalls

- Generally described as “quasi-circular rings of convective cloud at a distance outward from, and roughly concentric with, the primary eyewall of a hurricane”.
- The results of a Secondary Eyewall Formation process.
- Hurricane Intensity

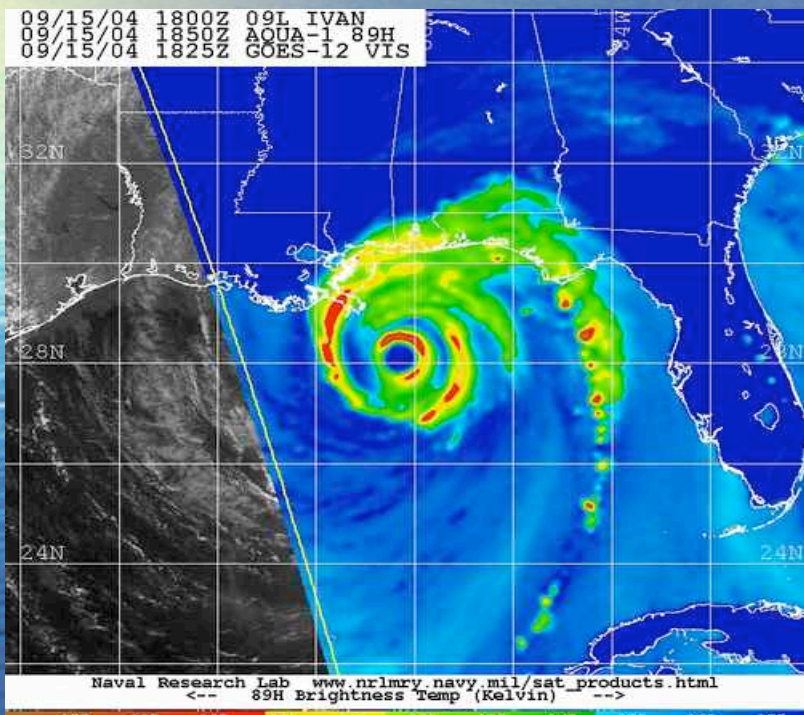


# Eyewall Mesovortices

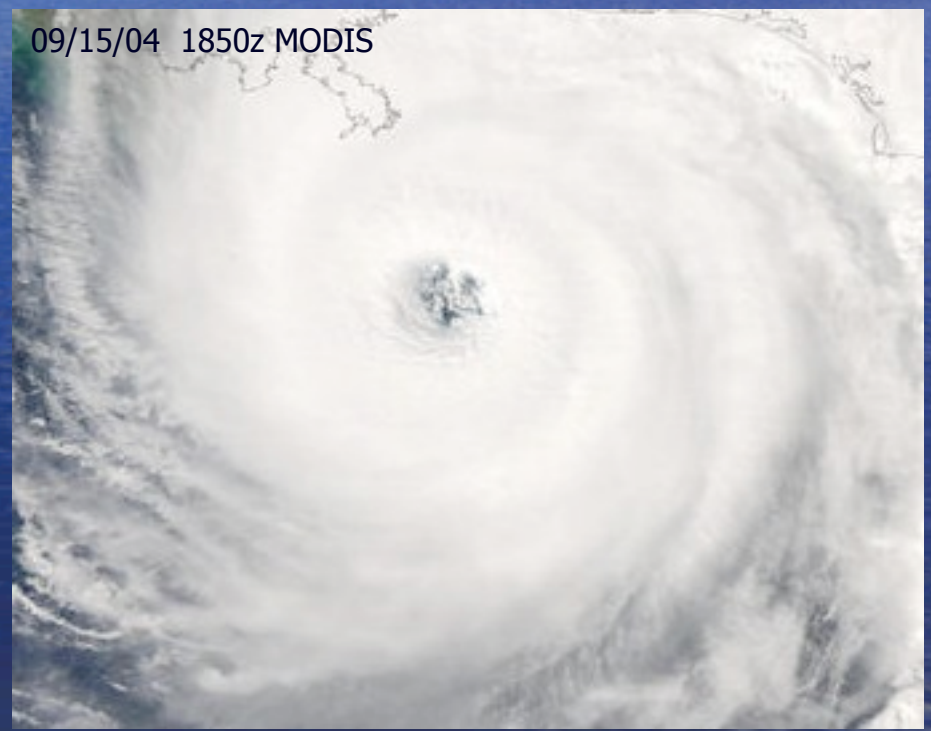
- Generally described as vortices within or near the eye region.
- Hurricane Intensity



09/15/04 1800Z 09L IVAN  
09/15/04 1850Z AQUA-1 89H  
09/15/04 1825Z GOES-12 VIS

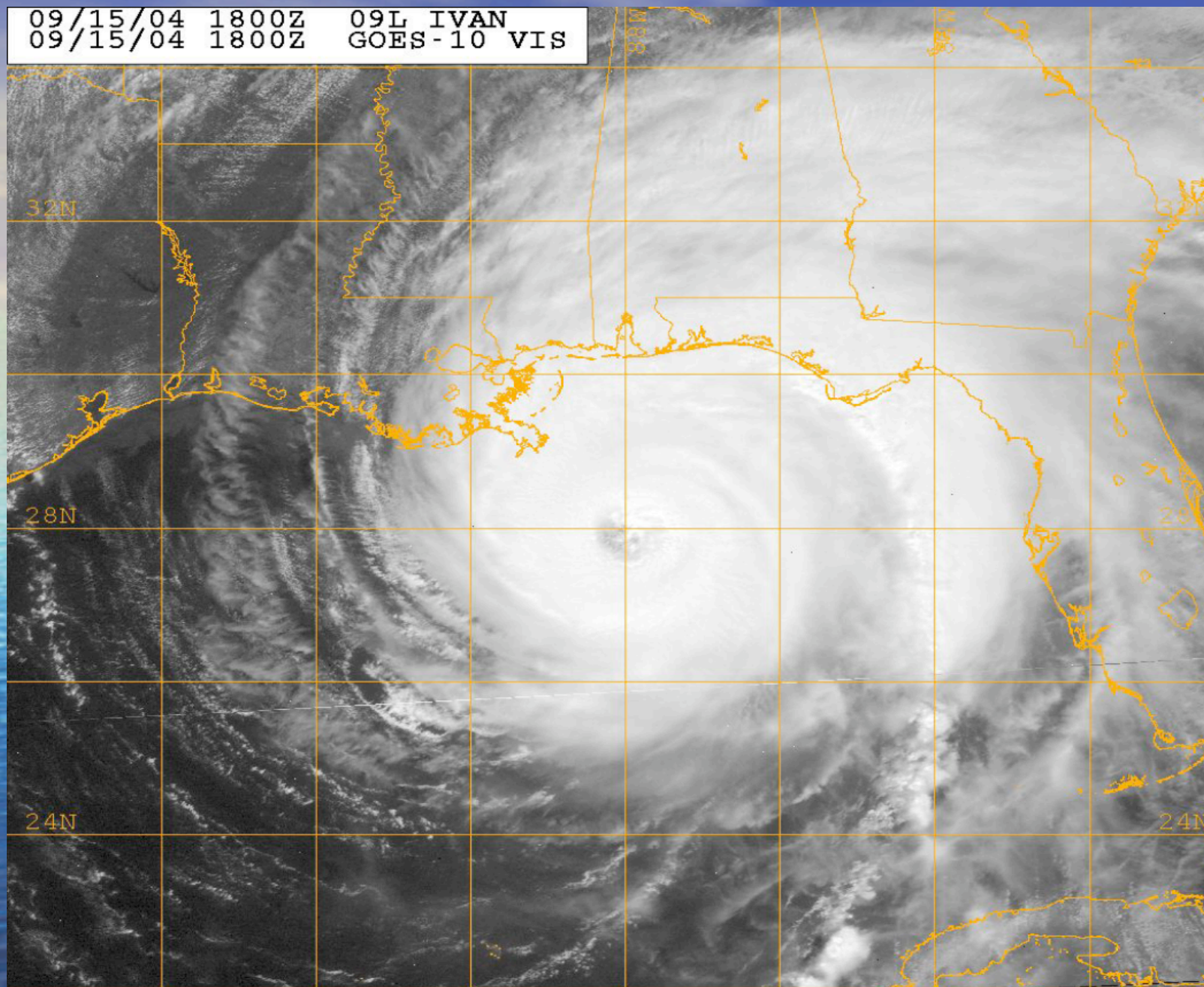


09/15/04 1850z MODIS



Images provided by NRL website

09/15/04 1800Z 09L IVAN  
09/15/04 1800Z GOES-10 VIS



Naval Research Lab [http://www.nrlmry.navy.mil/sat\\_products.html](http://www.nrlmry.navy.mil/sat_products.html)  
<-- Visible ( Sun elevation at center is 64 degrees) -->

# Future Research

- Observation of mesovortices and concentric eyewalls in West Pacific hurricanes
- Differences between Atlantic and East Pacific hurricanes for observed eyewalls
- The Relationships between Observed Hurricane Intensity and Mesovortices and Concentric Eyewalls



# References and Acknowledgements

Kossin, J. P., and M. Sitkowski, 2009: An objective Model for Identifying Secondary Eyewall Formation in Hurricanes. *Mon . Wea. Rev.*, **137**, 876-892.

Schubert, W. H., M.T. Montgomery, R. K. Taft, T.A. Guinn, S.R. Fulton, J. P. Kossin, and J.P. Edwards, 1999: Polygonal eyewalls, asymmetric eye contraction, and potential vorticity mixing in hurricanes. *J. Atmos. Sci.*, **56**, 1197- 1223.



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