ATS/CIRA Colloquium

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The role of asymmetric features during secondary eyewall formation in tropical cyclones

Hosted by Michael Bell

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ATS room 101

Secondary eyewall formation is often associated with intensity and structural changes during a tropical cyclone's evolution. These changes are generally difficult to predict given that the underlying dynamical mechanisms for secondary eyewall formation remain uncertain. Many current hypotheses focus on the axisymmetric projection (or azimuthal mean) of inner core features, but they do not fully explain the role of asymmetric features, such as inner core spiral rainbands. Observations show that these rainbands spiral inward and often coalesce to form the axisymmetric secondary eyewall, but the exact processes of this evolution are not yet fully understood. Here we examine several aspects of rainbands and secondary eyewalls, including their detailed structures and their impact on the overall storm. We investigate airborne observations of inner core convection from several case studies and a composite study, and we also investigate these features using model simulations. These results provide a better understanding of the evolution of inner core convection, which can help improve forecasts of intensity and structure in future storms.

Link to colloquia page: https://www.atmos.colostate.edu/colloquia/