



ATOC COLLOQUIUM

Welcome!

Please join us for the first ATOC Colloquium of the spring semester on **Friday, January 24**, from **11:00 AM–Noon** in **SEEC S228**. This week's colloquium features **James Brasseur** from the **Smead Aerospace Engineering Sciences Department** at **CU Boulder**. Come early for coffee at 10:45 AM; lunch will be served after.

The Surprising Transition in Atmospheric Boundary Layer Turbulence Structure from Neutral Stability to the Development of Large-Scale Atmospheric Rolls

The scales, strengths, and structure of atmospheric boundary layer (ABL) turbulence eddies are strongly dependent on the relative contributions of buoyancy-driven vertical motions and shear-driven horizontal motions, characterized by a global stability parameter given by the ratio of boundary layer depth z_i and Obukhov length scale L . We use large-eddy simulation (LES) to study the transition between the neutrally stable shear-driven ABL ($z_i/L = 0$) with surface “streak” structure, and the unstable “moderately convective” ABL with large-scale roll structure. The interactions between shear-driven surface layer streaks and convectively-driven outer eddies generate surprising turbulence dynamics that includes a critical phenomenon with sudden dramatic change in ABL structure at low $|z_i/L|$.



About the ATOC Colloquium

The Department of Atmospheric and Oceanic Sciences Colloquium is held **every other Friday** from **11:00 AM–Noon**, in **SEEC S228**. Colloquia will alternate between the following formats: (A) Full-length talk by a faculty member or invited speaker, (B) Three conference-length talks by graduate students. If you would like to nominate a speaker (including self), please email the ATOC Colloquium Committee Chair, Prof. Jan Lenaerts (jan.lenaerts@colorado.edu). Please visit www.colorado.edu/atoc/colloquium for further details and the upcoming schedule.