**ATS/CIRA Colloquium**

# Tim Myers

**from NOAA Physical Sciences Laboratory**

**Hosted by Dave Randall**

**3 p.m. Thursday, Oct. 6**
**ATS 101 and Microsoft Teams**

# Observational constraints on the cloud feedback pattern effect

Historically, the response of clouds to planetary warming has been among the most uncertain of all climate feedbacks. In this seminar, I highlight advances in observational methods that have substantially reduced this uncertainty. Recent observational evidence stemming from the framework of cloud-controlling factor analysis suggests that, in response to increasing $CO_2$, low clouds over the global oceans exert a positive feedback to warming. I also provide observational evidence for a strong time-dependence of the marine cloud feedback over the last ~100 years, driven by fluctuating sea-surface temperature patterns and associated meteorological perturbations. From 1980 to near-present, increasing estimated inversion strength produced a negative cloud feedback to planetary warming, opposite to the positive feedback expected from increasing $CO_2$. This indicates that the processes responsible for marine cloud changes in recent decades are distinct from those associated with an increase in $CO_2$.

Colloquia page: atmos.colostate.edu/colloquia