

Understanding the mechanisms and forcings of the atmosphere/ocean interaction in the extra-tropics

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There is increasing evidence of the impact of the ocean on the atmospheric circulation in the extra-tropics. Our recent studies show that the SST change associated with the Atlantic Multi-decadal Variability (AMV) plays an important role in explaining the observed multi-decadal variation of NAO and stratospheric NAM (Omrani et al. 2013) and that SST changes over the Gulf Stream can drive significant local precipitation variability in these regions (Hand et al. 2013). Other studies, using idealized aqua-planet experiments, show the importance of oceanic fronts in setting the structure and meridional position of the stormtrack and the associated Annular Mode variability (Nakamura et. al. 2008, Ogawa et al. 2012, Sample et al. 2010a and 2010b). The focus of our project is on:

- a) Understanding the impact of fronts on large-scale circulation and stratosphere/troposphere coupling
- b) Understanding the multi-decadal coupled ocean/atmosphere interaction over the north Atlantic regions
- c) Understanding the impact of SST changes associated with global warming on extra-tropical circulation.

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