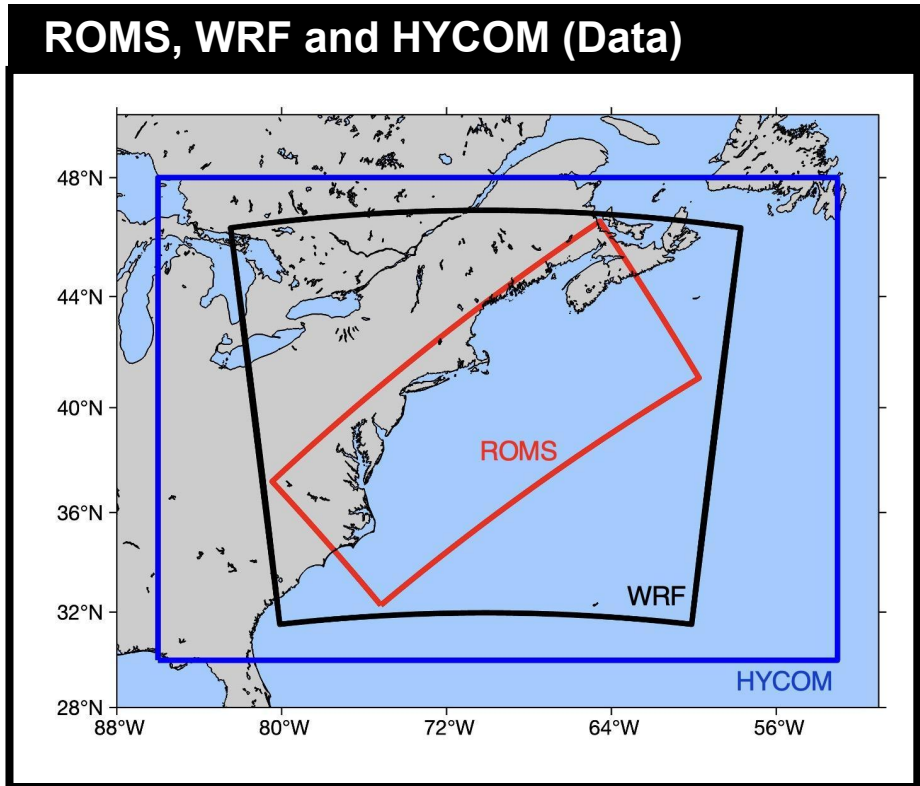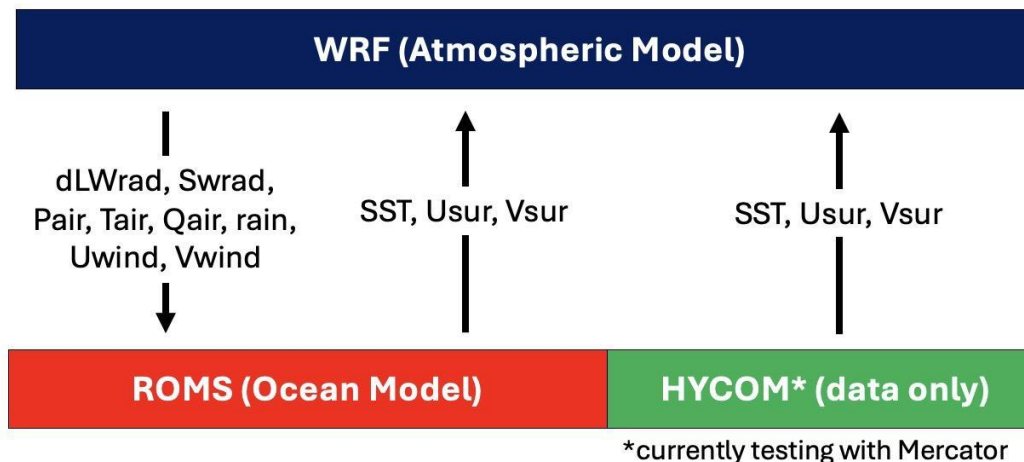# Integrating COARE 3.5 and Wind-Current Feedbacks into ROMS-WRF Coupling

L. Fernando Pareja-Roman, John Wilkin, Hernan Arango
Department of Marine and Coastal Sciences, Rutgers University

ROMS, WRF and HYCOM (Data)

NUOPC/ESMF Coupling with non-matching model grids

*currently testing with Mercator

Relative wind speed

$$U_{air} = U_{wind} - U_{sur}$$
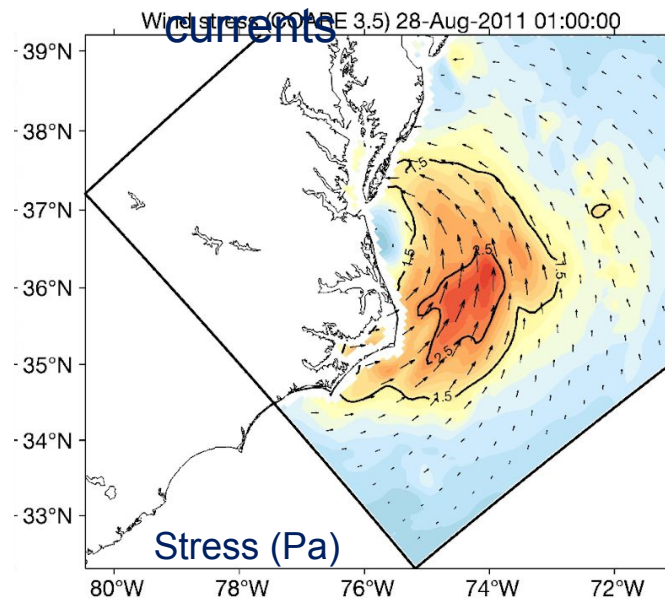
$$V_{air} = V_{wind} - V_{sur}$$

Gustiness-augmented speed

$$W_{mag} = \sqrt{U_{air}^2 + V_{air}^2}$$

$$W_{speed} = \sqrt{U_{air}^2 + V_{air}^2 + W_{gus}^2}$$

Changes to Charnock alpha (v3.0 to v3.5)

COARE 3.5 No currents

COARE 3.5 With currents

Wind stress (COARE 3.5) 28-Aug-2011 01:00:00

Stress (Pa)

Wind stress (COARE 3.5 + WMC) 28-Aug-2011 01:00:00

Stress (Pa)