

Interactions between sub-systems

Ocean-Atmosphere coupling and interaction

The atmosphere and oceans evolve as a couple system. The physics of the coupled modes of variability are important to understand because they form a cornerstone of the variability in the climate system and potential for climate change to express itself regionally, and because they contain the potential for longer term predictability from seasonal to decadal time scales. Observations provide a rich source of information on these coupled motions, but are limited by the length of observational record. Consequently, modelling plays an important role in this topic. Our ability to model the coupled atmosphere-ocean system depends on our ability to model the atmosphere and oceans, and also our ability to represent the physics that couples the two systems together. This is an exciting time for this subject: our understanding of the physics of the marine atmospheric boundary layer and the ocean surface boundary layer are undergoing a revolution at present, and the new generation of weather and climate models have sufficient horizontal resolution that we are seeing more clearly the coupled modes of variability. This session will cover (i) the physics that couple the ocean-atmosphere system, particularly when a global perspective can be given, (ii) the emergence of coupled modes of variability and their impacts on regional weather patterns, and (iii) the potential for predictability of coupled modes of variability.