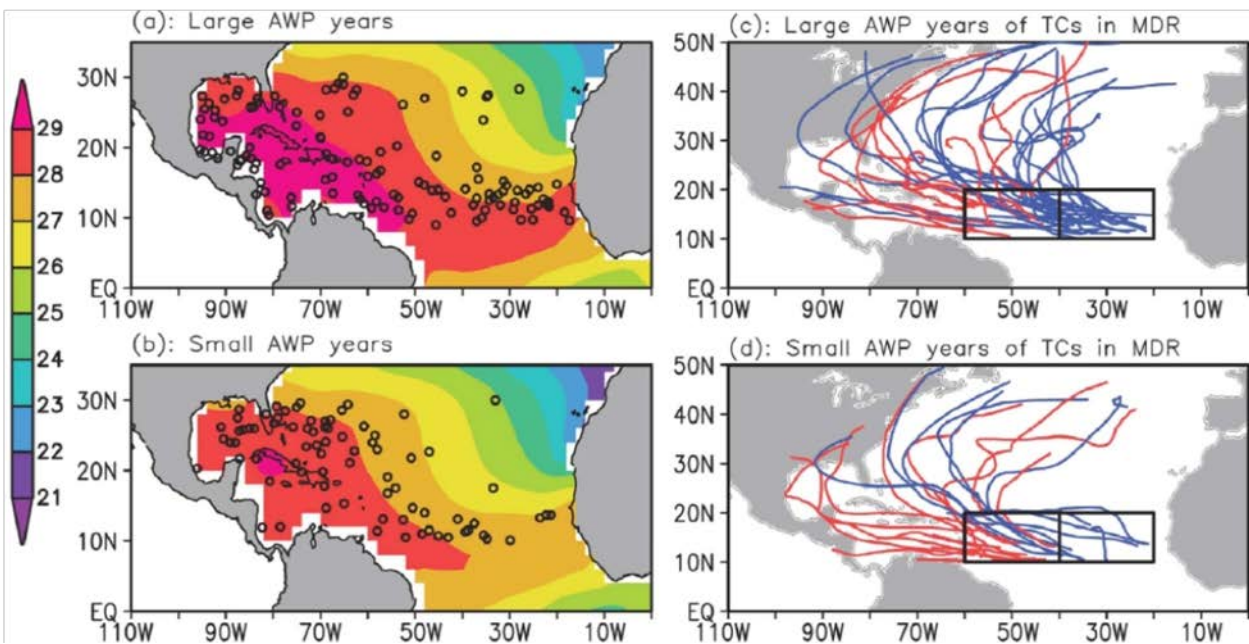


Atlantic Warm Pool and Tropical Cyclone Activity in the North Atlantic

Sang-Ki Lee

The 2010 Atlantic hurricane season was extremely active, but no hurricanes made landfall in the United States, raising a question of what dictated the hurricane track. Work done in collaboration with Dr. Robert Atlas (AOML/OD) indicates that the Gulf of Mexico, the Caribbean Sea and the western tropical North Atlantic play an important role in determine hurricane tracks. An eastward expansion of the AWP all shifts the hurricane genesis location eastward, decreasing the possibility for a hurricane to make landfall. A large AWP also induces barotropic stationary wave patterns that weaken the North Atlantic subtropical high and produce eastward steering flow anomalies along the eastern seaboard of the United States. Due to these two mechanisms, hurricanes are steered toward the northeast without making landfall in the United States. Although the La Niña event in the Pacific may be associated with an increased number of Atlantic hurricanes, its relationship with land-falling activity has been offset in 2010 by the effect of the extremely large AWP. We continue to work on influences of climate variability and changes on hurricane activity. In addition, we also investigate climate/oceans and tropical cyclone activity in the western North Pacific. In particular, we will focus on how climate/oceans and global warming affect the number, tracks and intensification of tropical cyclones in both the North Atlantic and the western North Pacific.



Tropical Cyclone genesis location (dots) and sea surface temperature (color shading) for (a) large and (b) small Atlantic warm pool years and the tracks of TCs that formed in the main development region for (c) large and (d) small Atlantic warm pools.