



Circulation regimes: Bridging weather and climate predictability

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The concept of circulation regimes represents one method of organizing the large and varied set of atmospheric circulation patterns which have been identified on time scales longer than a few days. The goals of this talk are to demonstrate that the occurrence of preferred patterns is at least a useful hypothesis, to demonstrate this utility by connecting circulation regimes and extremes of weather, and to study the influence of tropical sea surface temperature (SST) on regime behavior. While circulation regime influence on weather regimes and weather predictability can be demonstrated, the problem of predicting transitions between circulation regimes in real time is challenging.

In the process of pursuing these goals, I will present a brief overview of the rich history of regimes from a dynamical point of view, and of the statistical methodologies behind the identification of regimes in real and simulated data. Due respect will be given to the point of view that multi-modality can not stand up to truly rigorous statistical inspection. This point will be taken head-on, with discussion drawn from many papers. Results from both Pacific and Atlantic basins, for both winter and summer, will be used to demonstrate the regime – weather connection. The long history of El-Nino related changes to Pacific patterns / regimes will be summarized with reference to recent work on very large ensembles of atmospheric simulations. In this context a connection to optimal signal-to-noise patterns will be mentioned.