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*Some Applications of EMD Analysis in Climate Change Studies, and Some Challenges.*

The Empirical Mode Decomposition method is particularly well suited to analyzing climate signals, as these are usually distinguished from each other by their quasi-periods. The possibility of representing different climate phenomena compactly, allowing both frequency and amplitude modulation, is a main advantage of EMD. This property has facilitated greatly the physical interpretation of the various decomposed modes.

Some important challenges remain. It is currently difficult to practically implement a multi-dimensional EMD. As a purely time series analysis tool it is not taking advantage of the additional information contained in the spatial domain. I hope others have found a way around this problem. I will discuss some of our solutions to the spatial-time decomposition, using the solar-cycle signal at the surface of the earth as an example, which is only extracted recently. (Received September 11, 2007)