



## **Evaluating Teleconnections against a stochastic null hypothesis**

**D Dommenges**

IFM-GEOMAR

In this note it is suggested that a diffusive process driven by spatially unstructured forcing, representing a spatial auto regressive process (AR-1 process), can be used as a null hypothesis for the spatial structure of climate variability. By projecting the leading principal components (EOFs) of the null hypothesis onto an EOF mode of an observed data set inferences about the nature of the observed teleconnections can be made.

The formulation of a stochastic null hypothesis also allows to define a factor analysis model, in which the leading factor (teleconnection mode) represents the mode, which is most distinguished from the stochastic null hypothesis.

The analysis introduced in this note is applied to several artificial and real data examples including the sea surface temperature (SST) variability of the three tropical oceans and the northern hemisphere wintertime sea level press