Predictable component of the observed land variability

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A generalized multivariate regression method based on the Coupled Manifold technique [Navarra & Tribbia, 2005] is applied to decompose climate anomalies over land into a predictable component that is a remotely-forced signal from the ocean and a predictable component that is locally forced. The analysis is applied to the grand ENSEMBLES-CliPAS/APCC MME. Using the coupled manifold approach the MME retrospective forecasts have been used as predictor for 2-metres temperature observed data (from ERA-INTERIM; Berrisford et al., 2009). The forecasts are projected through the coupled manifold into the target observation using a cross-validation leave-one-out approach. In this way, it is evaluated how much of the real field variability can be predicted based on the signal present in the ensemble forecasts. To simplify the computation the data are transformed beforehand by calculating the respective EOFs and then using the EOF coefficients in the analysis. It is found a considerable improvement of the performance over land compared with the poor original seasonal APCC-ENSEMBLES forecasts for JJA 1983-2005 considering 2-metres temperature. The Coupled Manifold is here proposed as a promising tool for the exploitation of the prediction signal over land.