Geophysical Research Abstracts,
Vol. 11, EGU2009-2168, 2009
EGU General Assembly 2009

Role of external forcing on a seasonal reconstruction of European temperatures

G. Hegerl and J. Luterbacher
(gabi.hegerl@ed.ac.uk)

Predicting impacts of climate change requires information about seasonal changes on subcontinental scales. We have analyzed regional reconstructions of European temperatures in the last 5 centuries using fingerprint and EPOCH analysis techniques to investigate to what extent external forcing has influenced temperature patterns in the past, and how successful models are in simulating these changes. The results reveal that European temperatures show a clear and detectable response to external forcing, which is strongest in annual means and winter (DJF) reconstructed data, and weakest and insignificant in summer temperature reconstructions. Consistently, response of different climate models simulating the last millennium are most robust in winter and least in summer, suggesting that radiative forcing shows the strongest and most detectable influence in winter and spring temperatures. The multi-model mean spatial pattern of response to volcanism is quite consistent with that in the reconstruction, despite questions about models' ability to simulate changes in dynamics associated with volcanic eruptions. The evidence for solar forcing of European temperatures is mixed.