

# Global Warming Signals in Observed Chinese Climate

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## **Project Summery**

Is there any global warming signal in the observed seasonal climate variations in China ? This is a subject of considerable scientific and practical interest. We propose to firstly analyze the observed long-term variations of seasonal climate in China, and then investigate the possible influence of the increase in greenhouse gas concentrations on these variations by comparing the observations with the CMIP2 simulations.

## **Background**

Precipitation and temperature anomalies, especially the summer and spring floods and droughts in China are intimately related to the country's economy and people's life. These floods and droughts have often been considered among the most severe natural disasters for the country. Thus, the long-term climate variations in China and their possible connection to the increase in greenhouse gas concentrations are a subject of considerable scientific and practical interest.

Recently, it was found that in the coupled general circulation model (CGCM) simulations the increase in greenhouse gas concentrations intensifies the South Asian summer monsoon and its variability [Meehl and Washington, 1993; Hu et al., 2000a] and diminishes the Asian winter monsoon [Hu et al., 2000b]. After analyzing model simulations of climate change, Hulme et al. [1994] also pointed out the potential impact of global warming on the variations of temperature and precipitation in East Asia. These raise the questions what

the observed long-term variations of the seasonal climate in China are and whether these variations are connected to the global warming. CMIP2 simulations [Meehl et al., 2000] provide additional data to explore the problem.

### **Proposed Objectives**

To understand the long-term climate trends in China, it is necessary to analyze the trends for each season, because they are characterized by a pronounced seasonality. Furthermore, the impact or potential impact of global warming on the seasonal precipitation and temperature variations in China may be understood by comparing the observed climate trends with those in the CMIP2 simulations. We will also explain the projected seasonal climate variations and their uncertainty using the CMIP2 results by analyzing the divergence of individual simulations and by examining the composite features for some selected models.

### **References**

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