



## **Anthropogenic methane emissions and recent trends in atmospheric methane concentrations**

E. Matthews

NASA Goddard Institute for Space Studies

Observations of atmospheric methane concentrations show a declining growth rate and large interannual variations in growth over the last two decades. The atmospheric burden grew by 25-40 Tg/yr in the 1980s. During the 1990s, growth was slower - generally less than 20 Tg/yr - but more variable. Reduced emissions from the former Soviet gas/oil industry have been implicated in the lower growth rate in the early 1990s; response of natural wetlands to climate variations has been shown to account for several large anomalies. Most anthropogenic sources exhibit flat or slightly increasing/declining emissions since 1980 but the time series of fossil fuel (FF) source differs in magnitude and trend among researchers. We previously reported on our FF time series that diverges from earlier estimates due to improved methods that capture impacts of technological innovations and use of alternative energy statistics that reflect realistic (higher) levels of natural-gas production for most countries. We now report on this time series for all anthropogenic methane sources - newly extended from 1998 through 2004 - and assess the potential role of these emissions in explaining recent interannual variations in the growth rate of atmospheric methane.