Climate change and tropical total lightning

While global warming is regarded as a fact by many in the scientific community, its future impact remains a challenge to be determined and measured. The International Panel on Climate Change (IPCC) assessment report (IPCC, 2007) shows inconclusive answers on global rainfall trends and general agreement on a future drier climate with increased global warming. The relationship between temperature, humidity and convection is not linear and is strongly dependent on regional scale features, such as topography and land cover. Furthermore, the relationship between convective lightning production (thunderstorms) and temperature is even more complicated, being subjected to the cloud dynamics and microphysics. Total lightning (intracloud and cloud-to-ground) monitoring is a relatively new field of observation. Global and tropical total lightning began to be more extensively measured by satellites in the mid 90s. In this scope, the Lightning Imaging Sensor (LIS) onboard of the Tropical Rainfall Measurement Mission (TRMM) has been operational for over 11 years. Here we address total lightning trends observed by LIS from 1998 to 2008 in different temporal (annual and seasonal) and spatial (large and regional) scales. The observed 11-year trends are then associate to different predicted/hypothesized climate change scenarios.