



The Earth Radiation Budget and climate.

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The Earth Radiation Budget (ERB) and its geographical distribution is intimately linked with the earth's climate and with the general circulation. Due to the low thermal inertia of land compared to ocean, tropical convection has a strong diurnal cycle and is centered over land. Centered on the tropical land masses of South/Middle America, Africa and South-east Asia/Indonesia three convection maxima exist which are teleconnected through the Walker circulation. Warm air that rises in the deep convection areas over land sinks over the ocean stratocumulus regions where it is radiatively cooled.

We analyse global Clouds and the Earth's Radiant Energy System (CERES) from 2000 to 2010 and time resolved Geostationary Earth Radiation Budget (GERB) measurements from 2004 onwards. We find that the main mode of interannual variability of the ERB can be interpreted as an El Nino/La Nina variation with a global pattern of teleconnected variations. The South-east Asia/Indonesia convection maximum is instable because it is only partly centered over land and in its variability it interacts with the two other convection maxima over South/Middle America and Africa. We also detect a systematic change which is consistent with a long term strengthening of La Nina over the analysed time period. In the Arctic we find an Outgoing Longwave radiation (OLR) increase which might be the signature of global warming.