

The Role of Water in Solar-Terrestrial Relationships

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ISCCP data analysis shows that there is a high correlation between galactic cosmic rays (GCR) flux and precipitable water vapour (PWV). This relationship explains a positive correlation flux of GCR with low level cloud amount and a negative correlation with middle and high level cloud amount.

A simple climate model (Budyko, 1968) shows a slight effect of variations in the clouds amount on surface temperature, but also a strong dependence on cloud and surface albedo. It is known that surface albedo depends on precipitation amount and water discharge.

So, we propose a circuit of solar-terrestrial relationships: Sun Activity -> GCR -> Evaporation -> PWV -> Precipitation -> Surface Albedo -> Temperature.

Thus, the most important link in the chain is the evaporation of water from the ocean surface, which depends on the GCR flux.