



Cloud properties in the present-day tropical climate: EC-EARTH model biases

C. Lacagnina and F. Selten

KNMI, Netherlands (lacagnin@knmi.nl)

Observations are compared with the observed SST forced and coupled simulation performed by the EC-EARTH climate model. We use different diagnostic tools to investigate model biases in simulating marine cloud properties at different spatial and time scales in the present-day (1985 to 2001) tropical climate. The model underestimates the thick low-cloud amount and their contribution to the reflection of the solar radiation. In general, most of the simulated cloud types are too bright. As a result, the net cloud cooling effect is often overestimated, except over the subsidence cold pools. Furthermore, our model fails to reproduce the correlations between low-cloud fraction and mid-tropospheric pressure velocity (ω_{500}) and SST changes during El Niño. In addition, some indications lead to infer EC-EARTH does not properly reproduce the impact of the Walker circulation shifts on the CRF fluctuations in the interannual variability.