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Validation of RegCM4 in a tropical channel configuration

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The new version of RegCM4 has been used in a configuration where the model is global in the zonal direction but bounded in the meridional direction over the tropical region: the tropical belt.
A multiple year perfect boundary simulation has been completed and the model climatology has been validated against the CRU temperature observation and TRMM precipitation derived product from satellite. The lateral boundary conditions are taken from the most recent reanalysis product form ECMWF, the ERA-interim dataset and the model resolution is 50 km, 25 km and 10km.
The RegCM4-belt configuration sees a double convection scheme implemented one for the ocean and one over land. In particular the Emanuel convection scheme is adopted over the ocean and the Grell-FC is used over the continental areas.
The model is able to reasonably reproduce the strength and the position of the ITCZ and its seasonal migration. The JJA season shows a cold bias uniformly distributed over the tropical region but limited to few degrees. The precipitation wet or dry bias is more regional dependent and a different behavior is observed in the four monsoon dominated regions of the world. Small differences are notable also when the three resolution simulations are compared.