

Effective resolution in high resolution global atmospheric models for climate studies

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We estimate the extent of spatial scales that the atmospheric components of the HighResMIP models are able to resolve on the basis of kinetic energy (KE) spectra, commonly referred to as the effective resolution. We examine six PRIMAVERA models that have been run with at least two horizontal resolutions. The models generally simulate the atmospheric KE at 500 hPa realistically compared to observations, down to scales of roughly 3.3 times a representative diagonal grid box distance. The highest effective resolution obtained by the models studied here is 153 km. This shows that the newest generation of high resolution climate models starts to resolve synoptic scales relevant for the dynamics of weather events.