



Intercomparison of Gridded Observation Data Sets over Turkey

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The purpose of this study is to analyze all gridded data sets available over Turkey and to reveal differences among them. Temporal and spatial differences of gridded data sets have been analyzed for temperature and precipitation. These data sets based on observations are the most commonly used data for regional climate studies. Climate Research Unit (CRU), University of Delaware (UDEL), ENSEMBLES gridded data (E-OBS) and Global Historical Climatology Network/Climate Anomaly Monitoring System (GHCN/CAMS) data sets are used for temperature comparison. In addition, CRU, UDEL, E-OBS, Global Precipitation Climatology Center (GPCC) and Asian Precipitation Highly Resolved Observational Data Integration Toward Evaluation of Water Resources (APHRODITE) data sets are used for precipitation comparison. The selected reference period (1971-2000) for the gridded data sets has been analyzed and the differences of precipitation and temperature data sets are highlighted over the coastal and the high elevation regions. We have also compared all the data sets by using the 187 meteorological station over Turkey. For this analysis, the station values compared with the corresponding grid points (nearest point) from the each of the data set. It is revealed that the mean temperature for all the gridded data sets are lower than the station observations. Despite the seasonal differences, GHCN/CAMS, CRU and E-OBS indicate generally lower biases than UDEL for the temperature comparison based on the stations. In addition, seasonality is more apparent in precipitation analysis. The comparison based on the stations for GPCC and APHRODITE presents better spatial coverage over Turkey. However CRU and UDEL precipitation data indicate large biases especially for the extreme values. The E-OBS precipitation data set is the most inconsistent data set with the station observations since the number of the station used by E-OBS over Turkey is the lowest compare to the other data sets.