



Comparative Study on Long Term Climate Data Sources over South Korea

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Long term climate data are key in reliably assessing water resources and water related hazards in order to adapt and mitigate climate change. Although there are several datasets available globally, there is a lack of comparative studies about their suitability at different parts of the world. In this study, to find out the reliable climate dataset suitable for South Korea, several precipitation datasets (ERA-20cm, ERA-20c, ERA-40, NOAA 20th century re-analysis(20CR), CRU and GPCC) and temperature datasets (ERA-20cm, ERA-20c, ERA-40, 20CR and CRU) are assessed on a comparative basis. At first, to evaluate the interannual variability of each dataset, the correlation coefficients between the observations from 13 local observation stations and the aforementioned datasets are estimated on both seasonal and annual bases. Secondly, the significance of trends is assessed by applying the Mann-Kendall test to find out the long-term trends from 1961 to 2001 and from 1901 to 2010 separately. Finally, for the evaluation of statistical agreements, the skill score is estimated based on the monthly probability density functions (PDFs). The findings of this study helps to fill in the knowledge gaps about the applicability of these datasets in South Korea, and provides useful information to readers from other countries on the comparative performance of the global datasets in different parts of the world.