



Intercomparison of precipitation data from interpolated, reanalysis and satellite datasets using ground-based gauge observations over Karoon Basin, Southern Iran

Ali Fallah Maraghi (1,2), G. Reza Rakhshandehroo (1), Peter Berg (2), Rene Orth (3), and Maryam Dehghani (1)

(1) Department of Civil and Environmental Engineering, Shiraz University, Shiraz, Iran (ali.fallahmaraghi@smhi.se), (2) Hydrology Research Unit, SMHI, Norrköping, Sweden, (3) Max Planck Institute for Biogeochemistry, Jena, Germany

In many regions of the world, drought and flood cause severe economic effects and human disasters. Furthermore, they jeopardize future water and food security, especially in developing countries with highly agricultural-oriented economies. Nevertheless, lack of reliable precipitation datasets, which are key parameters in modeling and predicting such disasters, are serious barriers for taking proper accommodations in advance. Although different sources of data have been utilized by researchers, they contain uncertainties produced due to systematic biases and assimilation methods employed. To overcome the scarcity of in-situ data and compensate for available uncertainty in datasets, comprehensive evaluation of different global gridded datasets seems crucial. However, such evaluations of gridded observations and re-analysis products are scarce over Iran.

This study focuses on a comprehensive evaluation of the most recent precipitation datasets for interpolated gauges (GPCC, CRU, PREC/L and CPC Unified), reanalyses (ERA5, ERA-Interim, CFSR and JRA55), satellite (PERSIANN-CDR and CHIRPS), and merged products (MSWEP2 and HydroGFD2) over Karoon basin, Southern Iran. Performances of these models are evaluated on a monthly time scale during 2000-2015 period using 155 gauge observations. For this purpose, different statistical metrics including CC, RMSE, and RE are evaluated for the monthly and annual precipitations. In order to detect how spatial rainfall distribution varies with topography, the accuracy of the products is examined over both mountainous and plain regions. Finally, to investigate the reliability of datasets, their spatiotemporal variability and systematic biases are evaluated.