

Assessment of precipitation data obtained from MERRA-2, GPM and TRMM over Europe from 2014 to 2018

*Mohammed Ezzat Magooda¹, Muhammed Eltahan², Karim Moharm³

1. Aerospace Engineering Dept, Cairo Univ., Cairo, Egypt , 2. Institute of Bio-Geosciences (IBG-3, Agrosphere), Forschungszentrum Jülich, Jülich, Germany, 3. Electrical Engineering Dept., Alexandria University, Alexandria, Egypt

Precipitation is a key element in the water cycle and a dominant variable in any research related to the field of climate and atmosphere. Hence comes the importance of accurate precipitation predictions. In this work, Spatial and temporal evaluation of precipitation over Europe from three different sources within the period between 2014 and 2018 are presented in order to show the correlation between them. These three different sources are Modern-Era Retrospective analysis for Research and Applications, Version 2 (MERRA-2), Tropical Rainfall Measuring Mission (TRMM) and Global Precipitation Measurement (GPM).

The analysis showed a strong correlation and low root mean square error when comparing the data from MERRA-2 to the observations of either GPM or TRMM. The correlation coefficient (R) between MERRA-2 and GPM is 0.952 and root mean square error (RMSE) is 0.00536. In the meanwhile, the correlation coefficient both MERRA-2 and TRMM is 0.9625 and RMSE is 0.00232. Which means that data from MERRA-2 is reliable in precipitation predictions over Europe. Future work should concentrate more on sever events over Europe.

Keywords: Precipitation, MERRA-2, GPM, TRMM