Mohammad Saeedi

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Professional Summary

A highly motivated and goal-oriented water engineer with extensive experience in hydrologic modeling, developing algorithms, remote sensing, data analysis, soil moisture, rainfall and initiative classification. Research interests include remote sensing, irrigation, rainfall-runoff modeling, machine learning, climate change, drought, downscaling of satellite remote sensing data and optimal convergence of model predictions with observations through data assimilation. Talents include problem-solving, teamwork, working with big data, conducting complex statistical analysis, developing models, organizing the project, and writing technical reports and journal papers.

Education

M.Sc. in Water Resources Engineering and Management - *Islamic Azad University Science and Research Branch*, Tehran, Iran. Thesis title: Estimation of rainfall based on water balance equations and net water flux in soil using satellite-based soil moisture data. (GPA=3.88) Supervisor: Ahmad Sharafati	2018–2021
B.Sc. in Civil Engineering - *Qazvin Islamic Azad University*, Qazvin, Iran.	2014–2017
A.S. in Civil Engineering - *Qazvin Islamic Azad University*, Qazvin, Iran.	2012–2014

Publications

Published Peer-Reviewed Journal Articles

Saeedi, M., Kim, H., Nabaee, S., Brocca, L., & Lakshmi, V. (2022). A comprehensive assessment of SM2RAIN-NWF using ASCAT and a combination of ASCAT and SMAP soil moisture products for rainfall estimation. *Science of the Total Environment*. https://doi.org/10.1016/j.scitotenv.2022.156416.

Saeedi, M., Sharafati, A., Brocca, L., & Tavakol, A. (2022). Estimating rainfall depth from satellite-based soil moisture data: A new algorithm by integrating SM2RAIN and the analytical net water flux models. *Journal of Hydrology*. https://doi.org/10.1016/j.jhydrol.2022.127868.

Saeedi, M., Sharafati, A., & Tavakol, A. (2021). Evaluation of gridded soil moisture products over varied land covers, climates, and soil textures using in situ measurements: A case study of Lake Urmia Basin. *Theoretical and Applied Climatology*. https://doi.org/10.1007/s00704-021-03678-x.

Submitted Peer-Reviewed Journal Articles

Saeedi, M., Nabaee, S., Kim, H., Tavakol, A., & Lakshmi, V. (2022). Performance assessment of SM2RAIN-NWF using ASCAT soil moisture via supervised land cover-soil-climate classification. Submitted to *Remote Sensing of Environment.* Under review.

Asadollah, SBHS., Sharafati, A., **Saeedi, M.,** & Shahid, S. (2022). A novel strategy for estimating soil moisture from remote sensing products: A case study of Lake Urmia Basin, Iran. Submitted to *Soil & Tillage Research.* Under review.

In preparation Peer-Reviewed Journal Articles

Saeedi, M. (2022). Towards using SM2RAIN-NWF rainfall estimation algorithm to estimate irrigation water use.

Saeedi, M. (2022). Predicting rainfall and runoff through SM2RAIN-NWF algorithm and SWAT modeling in the Lake Urmia basin.

Research Experiences

1. *Satellite soil moisture data analysis*
   - Evaluation of the performance of satellite soil moisture products against in-situ soil moisture measurements over the Lake Urmia basin
   - Working with large NetCDF and Tiff data

2. *Developing new hydrological modeling to estimate rainfall based on soil moisture*
   - Developing the SM2RAIN-NWF algorithm to estimate rainfall based on the knowledge of soil moisture
   - Evaluating the performance of the new developed algorithm in both small and large scale areas
   - Evaluating the performance of satellite soil moisture data to estimate rainfall through the developed SM2RAIN-NWF algorithm

3. *Land cover, soil texture, and climate classifications*
   - Classifying the study area based on common environmental characteristics
   - Analyzing the impact of soil texture, climate, and land cover on the performance of satellite soil moisture data in the Lake Urmia basin
   - Analyzing the potential impact of soil texture, climate, and land cover on the performance of the developed SM2RAIN-NWF algorithm

4. *The SM2RAIN-NWF VS the SM2RAIN*
   - Comparing the performance of the newly developed SM2RAIN-NWF algorithm in estimating cumulative rainfall against the performance of the SM2RAIN algorithm in the basin and national scale
   - Assessment of the gap-filling method using discrete cosine transform method and their effect on the quality of rainfall estimation

5. *International collaboration and networking*
   - Increasing awareness and exchanging ideas with expert professors in my field of studies and preparing various articles with them

Software, Program, and Special Skills

- Programming Languages: MATLAB and Python in every aspect of my research
- Data processing: NetCDF, GeoTIFF and HDF
- ArcGIS: Used in every aspect of my research
- IBM SPSS: SPSS Statistics and SPSS Modeler
- Data Science course (Duration= 300 hours)
  - Statistics and probability in data science
  - Data mining and problem-solving
  - The basics of machine learning

Leadership and Academic Services

- Young Researchers and Elites Club at Islamic Azad University, Tehran, Iran
- Iranian Hydraulic Association, Iran