# Article information:

New gridded rainfall dataset over the Korean peninsula: Gap infilling, reconstruction, and validation - Noh - 2022 - International Journal of Climatology - Wiley Online Library
<https://rmets.onlinelibrary.wiley.com/doi/abs/10.1002/joc.7252>

# Article summary:

1. A high-resolution gridded daily rainfall dataset (K-Hidra version 2020) has been developed from rainfall records of 389 gauge stations across the Korean peninsula.

2. The infilling process is essential due to incomplete time series with numerous missing values, and the elastic net model algorithm is found to be the most effective in dealing with missing values in the study area.

3. K-Hidra reveals significant changes in precipitation-related characteristics over the Korean peninsula, and when officially released, it is expected to be useful for climate impact and rainfall variability analyses.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "New gridded rainfall dataset over the Korean peninsula: Gap infilling, reconstruction, and validation" presents a new high-resolution daily rainfall dataset for the Korean peninsula. The study describes the process of developing this dataset from rainfall records of 389 gauge stations irregularly distributed across the region. The article highlights the importance of infilling missing data in observational datasets to create accurate gridded products.

The article provides a detailed evaluation framework to identify the proper infilling model in the study area. The results suggest that the elastic net model algorithm is the most effective in dealing with missing values in the study area. However, there is no discussion on potential biases or limitations of this model, which could affect its accuracy.

The article also compares K-Hidra with other gridded rainfall estimates including Climate Prediction Center (CPC), Global Precipitation Climatology Project (GPCP), Asian Precipitation Highly-Resolved Observational Data Integration Towards Evaluation (APHRODITE), and Tropical Rainfall Measuring Missing (TRMM) Multi-satellite Precipitation Analysis (TMPA). The results show that CPC has a small bias and high correlations with K-Hidra while precipitation variabilities are acceptably represented by all other gridded estimates. However, there is no discussion on potential biases or limitations of these estimates, which could affect their accuracy.

The article also reveals that the Korean peninsula has experienced significant changes in precipitation-related characteristics such as annual daily maximum precipitation and total annual dry days, likely leading to frequent hydrologic extremes. However, there is no discussion on potential causes or implications of these changes.

Overall, while the article provides valuable insights into creating a new high-resolution daily rainfall dataset for the Korean peninsula, it lacks critical analysis and discussion on potential biases or limitations of models and estimates used. Additionally, there is a lack of exploration into potential causes or implications of observed changes in precipitation-related characteristics.

# Topics for further research:

* Causes of changes in precipitation-related characteristics in the Korean peninsula
* Limitations of the elastic net model algorithm for infilling missing data
* Biases in the Climate Prediction Center (CPC) gridded rainfall estimate
* Implications of frequent hydrologic extremes in the Korean peninsula
* Limitations of the Global Precipitation Climatology Project (GPCP) gridded rainfall estimate
* Comparison of different infilling models for missing data in observational datasets

# Report location:

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