Bias Correction Of Satellite Rainfall Estimation

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Overall, bias-corrected satellite rainfall products are expected to better match station records compared to satellite only products even in complex terrain and as such correction should improve hydrological applications by improved rainfall representation.

Effect of Bias Correction of Satellite-Rainfall Estimates ...

We demonstrate this method using two satellite-based products, CPC Morphing (CMORPH) and Hydro-Estimator (HE), and a radar-gauge rainfall Stage-IV (ST-IV) dataset for several rain events in 2006 over Oklahoma. The method was compared with 3 simpler methods for bias correction: mean ratio, maximum ratio and spatial interpolation without ensembles. Bias ratio, correlation coefficient, root mean square error and mean absolute difference are used to evaluate the performance of the different methods.

"Bias Correction of Satellite Rainfall Estimation Using A ...
134 R. R. E. Vernimmen et al.: Evaluation and bias correction of satellite rainfall data and has full coverage over the country, including the more remote areas. Over the last decade, several remotely sensed rainfall estimate products have been developed that use data from several satellites, with different types of instruments.

Evaluation and bias correction of satellite rainfall data ...
Consequently, the forecasting models driven by t he bias -corrected satellite - based rainfall datasets are expected to be more powerful and reliable. This study aims to compare GSMaP product with the 20 gauge -based precipitation estimates in Karpuz River located in Antalya, Turkey in an effort to devise a cor rection methodology

Bias Correction of Satellite -Based Rainfall Estimates for ...
The systematic differences of these rainfall products from gauge observations can be partially compensated by adopting a bias (error) correction. Many of such methods correct the satellite based rainfall data by comparing their mean value to the mean value of rain gauge data.

Bias correction of satellite-based rainfall data - NASA/ADS

compared to rain gauge measurements, is not impressive. The systematic differences of these rainfall products from gauge observations can be partially compensated by adopting a bias (error) correction. Many of such methods correct the satellite based rainfall data by comparing their mean value to the mean value of rain gauge data.

Bias correction of satellite-based rainfall data
Bias Correction of Satellite Precipitation The scripts in this repository are used to bias-correct satellite-observed precipitation using CHIRPS. These methods are derived from algorithms written in MATLAB, developed by the SWAAT research group at the University of Arizona, lead by Professor Juan Valdes (Roy et al. 2016).

Bias Correction of Satellite Precipitation - GitHub
Bias correction of satellite rainfall via adjustment of stochastic model parameters. Method accounts for confounding local biases in rainfall intensity and frequency. Robustness to gauge location and data inaccuracy tested through Monte Carlo analysis. Method outperforms alternate bias adjustment procedures in a case study in Nepal.

Bias adjustment of satellite rainfall data through ...
The Zambezi Basin is located in the semi-arid region of southern Africa and is one of the largest basins in Africa. The Upper Zambezi River Basin (UZRB) is sparsely gauged (only 1

Abstract and Figures - researchgate.net
archived precipitation data in Switzerland [Sevruk, 1993]. The WMO Solid Precipitation Measurement Intercomparison provided the opportunity to develop and evaluate the improved correction procedures on a daily or 6 hourly time-

scale for a number of precipitation gauges commonly used around the world [Goodison et at., 1998; Goodison and Yang,

Bias correction of daily precipitation measurements for ...
There are numerous bias correction techniques in which a transfer function, derived from the direct comparison between ground-based estimates and satellite-based products, is applied to the satellite data (e.g., Condom et al. 2011; Wanders et al. 2015; Yang et al. 2016). In these techniques, a correction model is developed based upon the historical data for a particular area and is then applied to the satellite data.

Bias Correction of Long-Term Satellite Monthly ...
ABSTRACT. Bias correction in the weather radar and the tropical rainfall measuring mission (TRMM) rainfall estimates are used to improve its accuracy. This correction is usually done separately for both radar and TRMM. Even though the corrections are done separately, the results of these corrections can be further improved using the merging.

Bias correction of radar and satellite rainfall estimates ...
A number of studies report bias correction of satellite data. Satellite rainfall data has been corrected by gamma transformation, but the authors found that the corrected estimates do not capture...

Based Rainfall Data
Bias-Corrected CHIRP Satellite Rainfall for Water Level Simulation, Lake Ziway, Ethiopia. Applicability of satellite rainfall products must be explored since rain gauge networks have limitations to provide adequate spatial coverage. In this study, Climate Hazards InfraRed Precipitation (CHIRP)

satellite-only product was evaluated for rainfall-runoff modeling whereas the simulated runoff served as input to simulate the water levels of Lake Ziway from 1986 to 2014.

Bias-Corrected CHIRP Satellite Rainfall for Water Level ...
It can be observed that the TVSF bias correction scheme improved the linear association of the four SREs with the reference rain gauge data as observed through the increase in the R 2.. For example, the R 2 of the uncorrected four SREs at Ghanzi ranged from 0.18 to 0.19 but after bias-correction improved to 0.20 to 0.81 . The same trend was observed in other, eight rain gauge sites.

Validation of satellite-based rainfall in Kalahari ...
Evaluation and bias correction of satellite rainfall data for drought monitoring in Indonesia . R. R. E. Vernimmen et al. Viewed. Show all Final revised paper only Preprint only Total article views: 5,427 (including HTML, PDF, and XML) ...

Evaluation and bias correction of satellite rainfall data ...
After calculating the daily bias for each pixel, it is then removed from the daily satellite rainfall estimate: where k is an index defined in the CPC gauge product resolution ($0.25°$ $\times$ $0.25°$), k is the coverage of a CPC product grid, and j is an index for CCS grids at resolution $0.04°$ $\times$ $0.04°$ inside each CPC $0.25°$ $\times$ $0.25°$ grid.

Bias Adjustment of Satellite Precipitation Estimation ...
Three global climate models (GCMs), wet, near‐normal and dry in nature to estimate mean rainfall at the country and the basin scales were selected from a set of 13 GCMs. The rainfall bias correction factors for each GCM were generated from the control period 1981–1999 and verified over 2000–2005.

Assessment of rainfall bias correction techniques for ...
the performance and the bias correction of Climate Hazards
Group InfraRed Precipitation (CHIRP) satellite estimate for
rainfall-runo simulation at Meki and Katar catchments using
the Hydrologiska Byråns Vattenbalansavdelning (HBV)
hydrological model. A non-linear power bias correction
method was applied to correct CHIRP bias using rain gauge
data as a reference. Results show that CHIRP has

Evaluation and Bias Correction of CHIRP Rainfall Estimate ...
the bias adjustment procedure to correct the temporal
structure of satellite rainfall observations as well as the
magnitudes. Since the temporal structure of rainfall is an
important driver of hydrological responses in the vadose
zone (14) and in the ow regime (15), incorporating this
information into satellite bias correction is a useful advance.

Radar Hydrology: Principles, Models, and Applications
provides graduate students, operational forecasters, and
researchers with a theoretical framework and practical
knowledge of radar precipitation estimation. The only text on
the market solely devoted to radar hydrology, this
comprehensive reference: Begins with a brief introduction to
radar Focuses on the processing of radar data to arrive at
accurate estimates of rainfall Addresses advanced radar
sensing principles and applications Covers radar
technologies for observing each component of the
hydrologic cycle Examines state-of-the-art hydrologic models
and their inputs, parameters, state variables, calibration
procedures, and outputs Discusses contemporary approaches
in data assimilation Concludes with methods, case studies,

and prediction system design Includes downloadable MATLAB® content Flooding is the #1 weather-related natural disaster worldwide. Radar Hydrology: Principles, Models, and Applications aids in understanding the physical systems and detection tools, as well as designing prediction systems.

"The Tropical Rainfall Measuring Mission (TRMM), a satellite program now being studied jointly by the United States and Japan, would carry out the systematic study of tropical rainfall required for major strides in weather and climate research ... This report presents the scientific justification for TRMM and outlines the implementation process for the scientific community."--Pref.

- Water resources management should be assessed under climate change conditions, as historic data cannot replicate future climatic conditions. - Climate change impacts on water resources are bound to affect all water uses, i.e., irrigated agriculture, domestic and industrial water supply, hydropower generation, and environmental flow (of streams and rivers) and water level (of lakes). - Bottom-up approaches, i.e., the forcing of hydrologic simulation models with climate change models' outputs, are the most common engineering practices and considered as climate-resilient water management approaches. - Hydrologic simulations forced by climate change scenarios derived from regional climate models (RCMs) can provide accurate assessments of the future water regime at basin scales. - Irrigated agriculture requires special attention as it is the principal water consumer and alterations of both precipitation and temperature patterns will directly affect agriculture yields and incomes. - Integrated water resources management (IWRM) requires multidisciplinary and interdisciplinary

approaches, with climate change to be an emerging cornerstone in the IWRM concept.

The Terrestrial Water Cycle: Natural and Human-Induced Changes is a comprehensive volume that investigates the changes in the terrestrial water cycle and the natural and anthropogenic factors that cause these changes. This volume brings together recent progress and achievements in large-scale hydrological observations and numerical simulations, specifically in areas such as in situ measurement network, satellite remote sensing and hydrological modeling. Our goal is to extend and deepen our understanding of the changes in the terrestrial water cycle and to shed light on the mechanisms of the changes and their consequences in water resources and human well-being in the context of global change. Volume highlights include: Overview of the changes in the terrestrial water cycle Human alterations of the terrestrial water cycle Recent advances in hydrological measurement and observation Integrated modeling of the terrestrial water cycle The Terrestrial Water Cycle: Natural and Human-Induced Changes will be a valuable resource for students and professionals in the fields of hydrology, water resources, climate change, ecology, geophysics, and geographic sciences. The book will also be attractive to those who have general interests in the terrestrial water cycle, including how and why the cycle changes.

Extreme weather and climate change aggravate the frequency and magnitude of disasters. Facing atypical and more severe events, existing early warning and response systems become inadequate both in scale and scope. Earth Observation (EO) provides today information at global,

regional and even basin scales related to agrometeorological hazards. This book focuses on drought, flood, frost, landslides, and storms/cyclones and covers different applications of EO data used from prediction to mapping damages as well as recovery for each category. It explains the added value of EO technology in comparison with conventional techniques applied today through many case studies.

Global Flood Hazard Flooding is a costly natural disaster in terms of damage to land, property and infrastructure. This volume describes the latest tools and technologies for modeling, mapping, and predicting large-scale flood risk. It also presents readers with a range of remote sensing data sets successfully used for predicting and mapping floods at different scales. These resources can enable policymakers, public planners, and developers to plan for, and respond to, flooding with greater accuracy and effectiveness. Describes the latest large-scale modeling approaches, including hydrological models, 2-D flood inundation models, and global flood forecasting models Showcases new tools and technologies such as Aqueduct, a new web-based tool used for global assessment and projection of future flood risk under climate change scenarios Features case studies describing best-practice uses of modeling techniques, tools, and technologies Global Flood Hazard is an indispensable resource for researchers, consultants, practitioners, and policy makers dealing with flood risk, flood disaster response, flood management, and flood mitigation.

The question in the title of this book draws attention to the shortcomings of a concept that has become a political tool of

global importance even as the scientific basis for its use grows weaker. The concept of desertification, it can be argued, has ceased to be analytically useful and distorts our understanding of social-environmental systems and their resiliency, particularly in poor countries with variable rainfall and persistent poverty. For better policy and governance, we need to reconsider the scientific justification for international attempts to combat desertification. Our exploration of these issues begins in the Sahel of West Africa, where a series of severe droughts at the end of the 20th century led to the global institutionalization of the idea of desertification. It now seems incontrovertible that these droughts were not caused primarily by local land use mismanagement, effectively terminating a long-standing policy and scientific debate. There is now an opportunity to treat this episode as an object lesson in the relationship between science, the formation of public opinion and international policy-making. Looking beyond the Sahel, the chapters in this book provide case studies from around the world that examine the use and relevance of the desertification concept. Despite an increasingly sophisticated understanding of dryland environments and societies, the uses now being made of the desertification concept in parts of Asia exhibit many of the shortcomings of earlier work done in Africa. It took scientists more than three decades to transform a perceived desertification crisis in the Sahel into a non-event. This book is an effort to critically examine that experience and accelerate the learning process in other parts of the world.

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