Statistical Downscaling And Bias Correction For

Yeah, reviewing a ebook **statistical downscaling and bias correction for** could mount up your near links listings. This is just one of the solutions for you to be successful. As understood, achievement does not recommend that you have astonishing points.

Comprehending as without difficulty as covenant even more than extra will provide each success. bordering to, the message as without difficulty as perception of this statistical downscaling and bias correction for can be taken as skillfully as picked to act.

Statistical Downscaling And Bias Correction
Statistical downscaling and bias correction are becoming standard tools in climate impact studies. This book provides a comprehensive reference to widely-used approaches, and additionally covers the ...

Statistical Downscaling and Bias Correction for Climate Research
See allHide authors and affiliations Confidence in dynamical and statistical hurricane prediction is rooted ... Understanding the influence of mapping algorithms and possible interactions with bias ...

Improved simulation of 19th- and 20th-century North Atlantic hurricane frequency after correcting historical sea surface temperatures
The new version preserves many of the original features of the NCCV (e.g., maps, climatology plots, time series plots, data table, and reports) and adds new measures of statistical significance and a ...

National Climate Change Viewer (NCCV)
Julie studied Environmental Sciences at the University of East Anglia (UEA) in Norwich. She then obtained her PhD from the Climatic Research Unit (CRU) at UEA in 1998. Following a short postdoc in CRU ...

Dr Julie Jones
Statistical downscaling and bias correction are becoming standard tools in climate impact studies. This book provides a comprehensive reference to widely-used approaches, and additionally covers the ...

A comprehensive and practical guide, providing technical background and user context for researchers, graduate students, practitioners and decision makers. This book presents the main approaches and describes their underlying assumptions, skill and limitations. Guidelines for the application of downscaling and the use of downscaled information in practice complete the volume.

Global Climate Models (GCMs) are the typical sources of future climate data required for impact assessments of climate change. However, GCM outputs are related to model-related uncertainties and involve a great deal of biases. Bias correction of model outputs is, therefore, necessary before their use in impact studies. The coarse resolution of GCM simulations is another hindrance to their direct use in fine-scale impact analysis of climate change. Although downscaling of GCM outputs can be performed by dynamical downscaling using Regional Climate Models (RCMs), it requires large computational capacity. When daily climate data from multiple GCMs are required to be downscaled, dynamical downscaling may not be a feasible option. Statistical downscaling, in contrast, can be efficiently used to downscale a large number of GCM outputs at a fine temporal and spatial scale. This study performs the bias correction and statistical downscaling of daily maximum and minimum temperature and daily precipitation data from six GCM and four RCM simulations for the northeast United Stated (US). The spatial resolution of the data set is 1/8Â°x 1/8Â° and it spans from 2046 to 2065. This fine-scale daily climate data set, which has been created using Bias Correction and Spatial Downscaling (BCSD) approach, can be directly used in regional impact studies for the northeast US. Using both raw and bias corrected daily precipitation data from two GCMs and two RCMs, one extreme precipitation index has been analyzed for the observed climate. The comparison between the results demonstrates that bias correction is important not only for GCM outputs, but also for RCM outputs. When the same analysis has been performed for future climate, bias correction has led to a larger level of agreements among the models in predicting the magnitude and capturing the spatial trend for the extreme precipitation index. Moreover, five extreme climate indices have been analyzed at 1/8Â° spatial resolution for future climate using the bias corrected and statically downscaled data from multiple GCMs and RCMs. The incorporation of dynamical downscaling as an intermediate step has not led to any considerable changes from the results of statistical downscaling. Statistical downscaling with bias correction has been sufficient to create a fine-scale daily climate data set to be directly used in impact studies. The future means of five extreme climate indices, which have been calculated from GCM and RCM ensembles, have been compared to their observed means. The decrease in total number of frost days because of the future warming will be similar over the entire northeast region. The earlier arrival of spring will lead to an extended growing season and the magnitude of the changes will be larger in the coastal area. The comparison of precipitation extreme indices indicates an increase in the heavy precipitation events in future climate for most of the region.

Global climate change is typically understood and modeled using global climate models (GCMs), but the outputs of these models in terms of hydrological variables are only available on coarse or large spatial and time scales, while finer spatial and temporal resolutions are needed to reliably assess the hydro-environmental impacts of climate change. To reliably obtain the required resolutions of hydrological variables, statistical downscaling is typically employed. Statistical Downscaling for Hydrological and Environmental Applications presents statistical downscaling techniques in a practical manner so that both students and practitioners can readily utilize them. Numerous methods are presented, and all are illustrated with practical examples. The book is written so that no prior background in statistics is needed, and it will be useful to graduate students, college faculty, and researchers in hydrology, hydroclimatology, agricultural and environmental sciences, and watershed management. It will also be of interest to environmental policymakers at the local, state, and national levels, as well as readers interested in climate change and its related hydrologic impacts. Features: Examines how to model hydrological events such as extreme rainfall, floods, and droughts at the local, watershed level. Explains how to properly correct for significant biases with the observational data normally found in current Global Climate Models (GCMs). Presents temporal downscaling from daily to hourly with a nonparametric approach. Discusses the myriad effects of climate change on hydrological processes.

Empirical-statistical downscaling (ESD) is a method for estimating how local climatic variables are affected by large-scale climatic conditions. ESD has been applied to local climate/weather studies for years, but there are few ? if any ? textbooks on the subject. It is also anticipated that ESD will become more important and commonplace in the future, as anthropogenic global warming proceeds. Thus, a textbook on ESD will be important for next-generation climate scientists.

Statistical downscaling and bias correction are becoming standard tools in climate impact studies. This book provides a comprehensive reference to widely-used approaches, and additionally covers the relevant user context and technical background, as well as a synthesis and guidelines for practitioners. It presents the main approaches including statistical downscaling, bias correction and weather generators, along with their underlying assumptions, skill and limitations. Relevant background information on user needs and observational and climate model uncertainties is complemented by concise introductions to the most important concepts in statistical and dynamical modelling. A substantial part is dedicated to the evaluation of regional climate projections and their value in different user contexts. Detailed guidelines for the application of downscaling and the use of downscaled information in practice complete the volume. Its modular approach makes the book accessible for developers and practitioners, graduate students and experienced researchers, as well as impact modellers and decision makers.

This book presents selected articles from the International Conference on Asian and Pacific Coasts (APAC 2019), an event intended to promote academic and technical exchange on coastal related studies, including coastal engineering and coastal environmental problems, among Asian and Pacific countries/regions. APAC is jointly supported by the Chinese Ocean Engineering Society (COES), the Coastal Engineering Committee of the Japan Society of Civil Engineers (JSCE), and the Korean Society of Coastal and Ocean Engineers (KSCOE). APAC is jointly supported by the Chinese Ocean Engineering Society (COES), the Coastal Engineering Committee of the Japan Society of Civil Engineers (JSCE), and the Korean Society of Coastal and Ocean Engineers (KSCOE).

This book presents innovative work in Climate Informatics, a new field that reflects the application of data mining methods to climate science, and shows where this new and fast growing field is headed. Given its interdisciplinary nature, Climate Informatics offers insights, tools and methods that are increasingly needed in order to understand the climate system, an aspect which in turn has become crucial because of the threat of climate change. There has been a veritable explosion in the amount of data produced by satellites, environmental sensors and climate models that monitor, measure and forecast the earth system. In order to meaningfully pursue knowledge discovery on the basis of such voluminous and diverse datasets, it is necessary to apply machine learning methods, and Climate Informatics lies at the intersection of machine learning and climate science. This book grew out of the fourth workshop on Climate Informatics held in Boulder, Colorado in Sep. 2014.

This report focuses on the risks of climate change to development in Sub-Saharan Africa, South East Asia and South Asia. Building on the 2012 report, Turn Down the Heat: Why a 4°C Warmer World Must be Avoided, this new scientific analysis examines the likely impacts of present day, 2°C and 4°C warming on agricultural production, water resources, and coastal vulnerability. It finds many significant climate and development impacts are already being felt in some regions, and that as warming increases from present day (0.8°C) to 2°C and 4°C, multiple threats of increasing extreme heat waves, sea-level rise, more severe storms, droughts and floods are expected to have further severe negative implications for the poorest and most vulnerable. The report finds that agricultural yields will be affected across the three regions, with repercussions for food security, economic growth, and poverty reduction. In addition, urban areas have been identified as new clusters of vulnerability with urban dwellers, particularly the urban poor, facing significant vulnerability to climate change. In Sub-Saharan Africa, under 3°C global warming, savannas are projected to decrease from their current levels to approximately one-seventh of total land area and threaten pastoral livelihoods. Under 4°C warming, total hyper-arid and arid areas are projected to expand by 10 percent. In South East Asia, under 2°C warming, heat extremes that are virtually absent today would cover nearly 60-70 percent of total land area in northern-hemisphere summer, adversely impacting ecosystems. Under 4°C warming, rural populations would face mounting pressures from sea-level rise, increased tropical cyclone intensity, storm surges, saltwater intrusions, and loss of marine ecosystem services. In South Asia, the potential sudden onset of disturbances to the monsoon system and rising peak temperatures would put water and food resources at severe risk. Well before 2°C warming occurs, substantial reductions in the frequency of low snow years is projected to cause substantial reductions in dry season flow, threatening agriculture. Many of the worst climate impacts could still be avoided by holding warming below 2°C, but the window for action is closing rapidly. Urgent action is also needed to build resilience to a rapidly warming world that will pose significant risks to agriculture, water resources, coastal infrastructure, and human health.