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Benestad, R., I. Hanssen-Bauer, D. Chen: Empirical-Statistical Downscaling. World Scientific Publishing Co., Singapore 2008. 215 pp. H/B US $ 61,00, £ 36,00. ISBN 978-981-281-912-3. www.worldscibooks.com

The technique of downscaling, of exploiting the links between large-scale and regional or even local scale statistics for estimating changing climate impacts, is around since the early 1990s. It began with the empirical variant, later its sibling, the dynamical downscaling joined. As almost all developments in science, also empirical downscaling has its earlier roots, in this case in the practice of regional and local weather forecasting. Now, the first textbook on this issue has been published by a group of three experienced persons with a fine record in the field, Rasmus Benestad, Inger Hanssen-Bauer and Deliang Chen from Norway and Sweden.

The book is a real textbook, which may be used for course-work; examples, pieces of code, tasks, suggestions for further reading, all this is very helpful for the novice. The book is constructed in a logical sequence of issues. An introduction, dealing with concepts and definitions but also a short history, is followed by twenty pages on the strategies, including a balanced discussion of the relative merits of empirical vis-à-vis dynamical downscaling. Technical issues, on the choice of predictors and the preprocessing (for instance with EOFs), on linear (such as regression or CCA) and non-linear (such as analog, classification and neural nets), and diagnostic tools for evaluating the success of the methods, are worked out in chapters 3 to 6. Shortcoming and limitations as well as the reduction of uncertainties is also addressed in some detail. Two chapters deal with downscaling extremes and probability distributions and with weather generators. The book ends with a chapter on how to practically implement empirical downscaling methods.

The book demonstrates that the field really has matured; in the past 18 years a broad range of methods, many applications, instruments for assessment skill and added value – something like a school of thought and methods – has emerged, but also a critical mind on the limitations of the methodology. And this book describes the remarkable state-of-the-art very well and carefully. It seems that the dynamical sibling can still learn something from the empirical sibling.

The 215-page book is type-set very nicely, richly illustrated with many colored diagrams and photos (some of which have only remotely, or spiritually, to do with the issues of the book, but show esthetic landscapes, instruments or details); the formulae are consistently written, the explanations are mostly clear and concise. The list of referenced literature is impressive, even if it is not really complete.

H. VON STORCH, Geesthacht

Stehr, N., H. von Storch: Climate and Society, Climate as Resource, Climate as Risk. World Scientific Publishing, Singapore 2009, 141 pp., 27 Figs. US $ 60.00, £ 45,00. ISBN:978-981-4280-53-2. Also available as e-book: US $ 78.00, ISBN:978-981-4280-54-9, www.worldscibooks.com

With their book "Climate and Society" Nico Stehr, professor for cultural studies, and Hans von Storch, professor for meteorology, have been presenting a historico-cultural approach to climate change. Climate as resource, climate as risk and climate change are captured as a social as well as a natural scientific construct. As climate is of major relevance for everybody, today and tomorrow, the discussion needs a language understandable for everybody and not only for a limited number of scientists. The authors fulfill this challenge in an optimal way.

The book starts with a survey of climate concepts and human thinking about. Very early, mankind started to reflect on climate and its mechanisms, but it was in 19th century when climate turned into the area of statistics, providing tables, maps and atlases of climatic averages to the people. By the mid-20th century scientists have been dealing with the "physics of atmosphere", whereas today climate and its changes additionally have become part of the political sphere.

Living within a given climate means to accept climate as a limiting condition with a certain kind of risk, but also as a natural resource, partly with some "crazy" behavior. The imperative necessity to consider the homogeneity of time series are discussed and a number of impressive examples of falsely interpreted trends are presented, like occurrences of strong winds in Hamburg or tornadoes in the USA or the "urban bias" in long-term series. Another example refers to the damages related to hurricane activity.

Main emphasis is given to climate variability and its impacts on society. It glances at the "ancient" ideas about climate change, those of Eduard Brückner and Julius v. Hann, showing that the intense public discussion on climate variations is not a new thing. However, as soon as other dramatic problems have been emerging, e.g. World War I, economic crises or totalitarian regimes, the interests in climate variability problems fall behind others. Today the public's debate on natural

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climate variability gives way to discussions on anthropogenic climate warming and related climate extremes and how to protect our climate in accordance with our modern lifestyle.

It must be a legitimate part of science to identify widely used nonsense in respect to climate change. Speculations of melting Antarctica and the global water level rise of six meters are exemplarily mentioned. Also some kind of misinterpretation of statistical significance with absurd statements, like "95 % of the warming is of anthropogenic origin". In the public's mind frequently detected climate change is based on the misinterpretation of short duration events. A systematic study carried out in the US provides insight into the sometimes (curios) public's opinion about the causes of climate change. Although this study has been carried out about 15 years ago the authors are convinced that the major conclusions still hold and conclude a number of influences steering the public opinion on climate change. One of them namely is sensationalized reports in media or popular science books. Those grossly generalize factual details, while failing to explain the crucial ones. As a consequence success or failure of science is no more assessed by the original, but what has been publicly reported. If the reality does not fit with what has been reported it is interpreted as a scientific deficiency, again something to report. Not to forget the group of climatologists. Nico Stehr and Hans von Storch review their role in the public opinion making critically. Undoubtedly, climate change impacts are of importance for society as well as the ecosystem, but one must not forget socio-economic factors when drawing future projections. Climate management and climate policy are of highest demand. However, as exemplarily the recent popular Copenhagen event has demonstrated, it is rather difficult to agree upon concrete steps to reduce greenhouse gas emissions. Human economic activity creates both valuable products and, at the same time environmental stresses. Environmental damages however diminish the economic performance. This process is possibly steered by policy to a certain extent. Such a GES (Global Environment Society) model can be formulated mathematically, however is hindered by some untouched problems. Therefore GES could be replaced by PES, a model of "perceived Environment and Society" including experts and social interpretation.

Anthropogenic climate change has to be taken seriously, but must not be abused for commandments to world and mankind improvements. Nico Stehr and Hans von Storch have formulated the "Zeppelin Manifesto on Climate Change protection", ten points facing up to the real demands of climate policy that need to be taken into account when designing global and national climate managements. To know more about one should read "Climate and Society" an exciting reading for everybody interested in climate change and political measures to deal with.

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Straka, J.M.: Cloud and precipitation microphysics – Principles and parameterizations, Cambridge University Press, 2009. Hardcover, 406 pp., £ 70.00, ISBN:978-0-521-88338-2, www.cambridge.org

Looking at the title the book promises much since the author claims to deal with the large field of cloud and precipitation physics with the focus on principles and parameterizations. In this respect one has to take into account two older books: the textbook of ROGERS and YAU (1989) as well as the comprehensive monograph of PRUPPACHER and KLETT (1997). And with regard to the physical description of clouds and precipitation the new book has to compete with these older ones, in particular concerning the principles. In comparing all books one recognizes that very many details of Strakas book are adopted (with citations) from the older ones. This is of course not valid for latest findings having emerged after publication of the cited older books. A rough estimate shows that only about 20 % of the references are newer as of 1997. However, one has to admit that aspects of cloud dynamics as incorporated in Strakas book are addressed relatively short or not at all in the older books.

Let us go into details. The relations presented in Chapter 2 are standard and the derived different mean values and moments are based on employing various distribution functions of hydrometeors as, e.g., the complete and modified Gamma functions as well as lognormal function etc. The readability of these equations is hampered insofar as a multitude of super- and subscripts are used, partly printed with diverse fonts. If such a detailed presentation is necessary remains unclear. For starting from the definitions the mean values and moments can easily be calculated by established software tools as Mathematica or Maple delivering (besides a FORTRAN code) also LaTeX 2ε output. The latter is emphasized here since obviously the book is typeset in LaTeX 2ε such that it is annoying to see some misprints recognized in scrutinizing the respective equations.

The prognostic equations for mixing ratios and number densities of the various types of hydrometeors are displayed without reference to their origin, namely the not-mentioned balance equations for the spectral number and mass density functions. To what extent the austauschcoefficients for heat introduced in these equations are applicable seems questionable in case of condensed hydrometeors. By the way, in eq. 2.196 a term, containing $\nabla \cdot \vec{v}$, appears that is wrong.

The presented relations on heterogeneous nucleation are only useful if one does not want to look into the