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Book review

Soil-Vegetation Atmosphere Transfer Schemes and Large-Scale Hydrological Models, vol. 270
A.J. Dolman, A.J. Hall, M.L. Kavvas, T. Oki, J.W. Pomeroy (Eds.), IAHS Publication, IAHS Press, Centre for Ecology and Hydrology, Wallingford, Oxfordshire OX10 9BB, UK, 2001, 372 pp., ISBN 1-901502-61-9

This book contains the 48 papers presented at Symposium S5 during the Sixth International Association of Hydrological Sciences (IAHS) Scientific Assembly held at Maastricht, The Netherlands in July 2001. The papers are grouped into five sections, dealing with General Soil-Vegetation-Atmosphere Transfer (SVAT) Modelling; SVAT and Precipitation Processes at Large Scales; Parameter Estimation of Large-Scale Hydrological Models; Data Assimilation in Large-Scale Hydrological Models and Snow–Vegetation Interactions. The papers have been peer reviewed, and they cover a wide range of topics. The book is a useful and well-edited summary of the research papers presented at the meeting, many of which are themselves summaries of work in progress. There are no synthesis chapters, and this heterogeneous collection of papers is in no sense a textbook. In fact, since many chapters are admirably brief, in many cases, they are not self-contained. The reader will need to look to the references for many of the details. Some papers however fail to adequately define the concepts and symbolism of the models under discussion.

The first section on General SVAT Modelling has nine papers on the role of soils, different vegetation types, litter moisture, sugar-cane water use and several hydrological models. The section on SVAT and Precipitation Processes at Large Scales (seven papers) covers a different cross-section of hydrological models, applied to different river basins, including the Danube, Mekong and Yellowknife, and basins in Russia, China and the USA. The section on Parameter Estimation of Large-Scale Hydrological Models (12 papers, 1 in French) has generally a focus on larger-scale basins, the global water cycle and two studies addressing the climatic impact in Korea and Japan of the doubling of CO_2. The section on Data Assimilation in Large-Scale Hydrological Models (10 papers, 1 in French) is quite diverse. It includes work on soil moisture assimilation and the remote sensing of LAI and skin temperature, as well as the estimation of incoming long-wave for snowmelt calculations. The last section on Snow-Vegetation Interactions (10 papers) has a strong observational slant, with papers on interaction with shrubs and conifers; drainage on slopes with permafrost, as well as models for sublimation and river-ice processes.

The papers illustrate the great diversity of approaches to a difficult modelling problem, and the fact that we are still far from a satisfactory common framework for many processes. There are only a few discussions of general concepts (such as issues in soil moisture modelling and the relative role of vertical and horizontal water transports), and very little comparison of the many different hydrological models. The book gives however a useful overview of a cross-section of current work in the field.

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