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BOOK REVIEW

WEBB, A.A., BONELL, M., BRE, L., LANE, P.N.J., McGUIRE, D., NEARY, D.G., NETTLES, J., SCOTT, D.F., STEDNICK, J.D. WANG, Y. (Eds.) 2012. Revisiting Experimental Catchment Studies in Forest Hydrology. Proceedings of a workshop held during the XXV IUGG General Assembly in Melbourne, Australia, June-July 2011. IAHS Publication, 353, 235 pp, ISBN: 978-1-907161-31-5.

Forest Hydrology is a consolidated branch of knowledge that brings together Hydrology and Forest Science because of the determinant influence of forests and natural ecosystems on the water cycle. In the recent years, its helpfulness as a science is becoming more important and evident, since it is demonstrating to be useful in studying and addressing some of the current environmental open-questions worldwide. The increasing number of scientific books edited in this topic in the last five years could be a good indicator of it. Researchers from related disciplines have been aware that understanding interrelations among vegetation, climate, water and (forest) management is a powerful integration tool in order to address and to adapt to the predicted future global changes. In this sense, reviewing and updating consolidated knowledge in this science is a profitable effort and should be welcome.

Revisiting Experimental Catchment Studies in Forest Hydrology is a book where the ample range of Forest Hydrology topics covered (water yield, sediments, modeling, water quality, channel network, etc.) own a particular common ground on an experimental approach distinctive from this discipline: the paired catchment experiments (PCE), which were devised and implemented by forest hydrologists since the beginnings of Forest Hydrology as a science. In some cases, PCE studies are running since the first half of century XX (the method being about one hundred years old) and are laid over many countries and regions across the world. Thus, it is an invaluable source of reliable long-term data and information which should be kept in mind for those interested in this and related fields.

The book is a collection of papers most of them focused on Australian and North American forest ecosystems, authored by researchers with a wide range of expertise, some of them having a long and recognized experience in the field. There are both review and case study chapters and in most cases the local or regional-centered papers have a broader meaning. The contents of the book are split into four sections: three of them are related to specific topics of forest and water in which the PCE approach has proven to be useful (fire effects, water quality and ecosystem services). The remaining section (first) comprises more than half of the book and it is a miscellaneous part that covers a wide range of

studies in which the paired catchment approach has been traditionally used, as well as other studies where PCE present an additional utility in studying territory-related questions. Studies on water yield and forest management, impacts of tree-water use vs. grasslands and/or agricultural lands, modeling of catchment hydrology, etc. are either presented or reviewed in this section. Although some chapters have color artwork inside, most do not have it. This is specially missing in maps and some plots, where the greys range do not allow a clear representation of the results.

Compiling or *revisiting* PCE is quite interesting and overall timely. The increasing amount of literature and questions on forests and water being published in the last years needs to be faced to the feedback from these long-term studies. In this sense, this book redeems this knowledge from scattered studies or papers published in the huge field of hydrology-related journals, series or reports. For this reason, one of the most important achievements of this book, as a whole, is bringing together to the reader a good pack of information on PCE studies, updating this information and, overall, opening the reader's mind to the idea that PCE are much more capable of answering questions beyond their original scope, i.e. water yield and forest manipulation experiments. In particular, the long-term data, the global distribution across different ecosystems, and the variety of experimental treatments accomplished, provide a powerful tool to better understand both the importance of the effects of climate change on the forest-water relationships and the management margin that foresters have to manipulate or to mitigate those potential changes. This is in my view one of the main take-home messages that should be taken from the book.

More specifically, some particular topics of current interest in Forest Hydrology are well chosen and covered in the book, thus providing the necessary feedback from PCE studies. Forest plantations are being encouraged worldwide as a carbon sequestration measure in clean development mechanisms schemes. However, it has raised concern about their often-neglected high water consumption and hence on their downstream effect on water resources. Other topic of increasing importance concerns the highly valuable water-related services from forest watersheds and the need to consider them in a marketable context. This issue involves the input from social and economic sciences because of the complex partnerships and different stakeholders in the water and environmental sectors. A third important opened front in Forest Hydrology concerns the intrinsic and multiple influences among global change, forests and water and how forest management can influence them, thus mitigating and/or adapting forests to predicted conditions. In this particular case the contribution of both the whole book and some chapters in particular is excellent, approaching the potential impact of different forest management alternatives in different climate scenarios and in different forest ecosystems, from humid to semi-arid. In general, the book either in specific or more generic chapters, allows the reader to get additional insights into these specific topics of interest. Most chapters are extracted or compiled from previously published works, so the citations section gives a great deal of information and relevant references, thus making each paper to stand alone as a good resource.

However, some aspects of current interest in Forest Hydrology could have been treated more extensively, especially those related with the use of alternative methodologies to complement the results analysis in PCE studies. In this sense, it would have been desirable a higher number of chapters dealing with the capability of new or non-traditional methods and tools to analyze, to model and to test the outputs from these experiments. Applications of LiDAR, satellite imagery or dendrochronology are increasingly recognized as useful tools to further investigate the nature and performance of forest systems in relation to water and in particular, to address the delicate balance between green and blue water in semiarid lands.

Summarizing, the book allows the reader to have a broad and well-founded knowledge on this particular sort of studies, either an expert in forest hydrology or not. The book is predominantly about forest and hydrologic systems interactions, though there are some policy and economy topics included too. Some chapters are written for those with some scientific knowledge on the subject, but it is no necessary to read the whole book. Only a few papers have locally-limited interest, while most of them stand as a highly useful resource on the topics. I highly recommend this book to students, lectures, researchers and policymakers, or just members of the interested public.