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## **Making hydrological estimation tools available to practitioners: Closing the gap between science and practice.**

There have been many developments in hydrological modelling theory during the PUB decade that include the treatment of uncertainty, new modelling approaches and the use of new data sources to condition model outputs. However, relatively few of these have found their way into the water resources estimation tool boxes used by many practitioners. As with many new scientific developments, the problem lies partly with the developers of the science and partly with the practitioners through their reluctance (or lack of capacity) to adopt new approaches. It is incumbent on hydrological scientists to package their developments in a way that can be adopted in practice if they wish to make a contribution to improved water resources assessments. It is also necessary for practitioners to be better aware of scientific developments and be willing to invest resources in learning how to apply them. It is also important that scientific advances are introduced into practice in a way that does not require a complete change to the methods used. This would simply generate even greater resistance to new developments. This paper will summarise some of the suggestions that emanated from the PUB in Practice workshops held in Canmore, Canada during May 2011. The emphasis of the paper will be on regions with poor to sparse data resources and will largely focus on two major issues. The first is the development of guidelines for practitioners including a protocol for catchment function diagnostics and model set-up, while the second deals with issues associated with the practical application of uncertainty analysis in water resources estimation and decision making. The overall conclusion of the paper is that there are many opportunities for applying the principles and developments of PUB in practice and that there are large potential benefits for improved methods of water resources estimation.