



## **Collaborative knowledge in catchment research networks**

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There is a need to improve the production, sharing and use of collaborative knowledge of catchment systems through networks of researchers, policy makers and practitioners. This requires greater levels of systems based integrative research. In parallel to the growing realization that greater levels of collaborative knowledge in scientific research networks are required, a digital revolution has been taking place. This has been driven primarily by the emergence of distributed networks of computers and standards-based interoperability.

The objective of this paper is to present the status and research needs for greater levels of systems based integrative research for the production, sharing and use of collaborative knowledge in catchment research networks. To enable increased levels of integrative research depends on development and application of digital technologies to improve collection, use and sharing of data and devise new knowledge infrastructures. This paper focuses on the requirements for catchment observatories that integrate existing and novel physical, social and digital networks of knowledge infrastructures. To support this focus, I present three leading international examples of collaborative networks of catchment researchers and their development of catchment observatories. In particular, the digital infrastructures they have developed to support collaborative knowledge in catchment research networks. These examples are from North America (NSF funded CUAHSI HIS) and from Europe (UK NERC funded EVOp and the German Helmholtz Association Centers funded TERENO/TEODOOR). These exemplars all supported advancing collaborative knowledge in catchment research networks through the development of catchment observatories. I will conclude by discussing the future research directions required for greater levels of production, sharing and use of collaborative knowledge in catchment research networks based on catchment systems science.