

## **Watersheds, watershed processes, monitoring and research: what, why, where, and so what**

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**Abstract.** “Watersheds” may provide appropriate settings for understanding processes, for testing hypotheses, for evaluating ecosystem characteristics and processes over time, and for developing management practices and strategies for sustainable resource management. Hydrologically defined landscape units are appropriate for sustained baseline monitoring to support change evaluation, process understanding, model development and validation. Watersheds offer a framework for linking atmospheric, terrestrial and aquatic systems in interdisciplinary research and monitoring. Landscape-scale long-term research sites offer opportunities to develop sound, quality-controlled, documented long-term data sets. Confidence in predictions and simulation models increases with more data and with longer-term data sets. Hierarchical stream systems, headwaters to river outlets, offer a continuum of cumulative responses to landscape, climate, management, and disturbance factors. The “watershed” context (catchments, basins) implicitly encourages synergistic, interdisciplinary research. The “watershed” concept provides a rational, logical conceptual and physical framework for developing and implementing sustainable resource management practices and policies. This is illustrated with examples of watershed issues from Central America, Russia, Alaska, and Idaho.