

Fine Resolution Hydrological Variability to Estimate Uncertainty

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Abstract. Variability in hydrological variables can be over space and/or time, and can take many forms and cover a variety of scales. Here, scale is spatial and temporal, and is defined as a combination of support, resolution, and extent. Support is for point measurements, and expresses the area (or time) that a measurement represents. Point measurements are often used to provide ground-truth for remotely sensed measurement, but there can be an incompatibility between the two sets of measurements. We use a series fine resolution point hydro-meteorological data from Colorado U.S. to estimate uncertainty across an area that represents a single remote sensing (or similar) pixel. The datasets include air temperature, precipitation, near surface soil moisture, and snow depth. Several statistically tools are used to assess how much data are necessary to adequately measure a hydrological variable. We present a series of considerations to define sampling strategies *in situ*.