Using $^{87}\text{Sr}/^{86}\text{Sr}$ ratios to investigate changes in stream chemistry during snowmelt in the Provo River, Utah, USA

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Outline

Water Resources & Catchment Basin Paradox

Field Area & Methods

Results: Trace Metals & 87Sr/86Sr

Discussion
Water Scarcity

Hoekstra 2012
Paradox 1: Rapid Mobilization of Old Water

Kirchner 2003
Paradox 2: Variable Chemistry of Old Water

Kirchner 2003
Paradox 2: Variable Chemistry of Old Water

Figure 2. Concentrations of reactive chemical tracers as a function of streamflow for Upper Hore stream at Plynimmon, Wales. Reactive tracer chemistry depends strongly on flow regime, but the concentration–discharge relationship varies among different tracers.
River chemistry does not reflect precipitation/snowmelt chemistry
Methods

River Sampling

Ephemeral Channels

Soil Water

Snow Sampling
Overland Flow Model

Meltwater

Decreasing K

Water Table

Groundwater

Soil Water

Snow

Munroe, 2014
Transmissivity Feedback

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Decreasing $K$

Water Table

Meltwater
Transmissivity Feedback

Decreasing K

Meltwater

Water Table

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Questions?

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