

Environmental Data Management: Synthesis of Hydrologic Data using the California Data Cube

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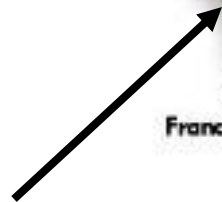
Berkeley Water Center and
Lawrence Berkeley National Laboratory

Catharine van Ingen

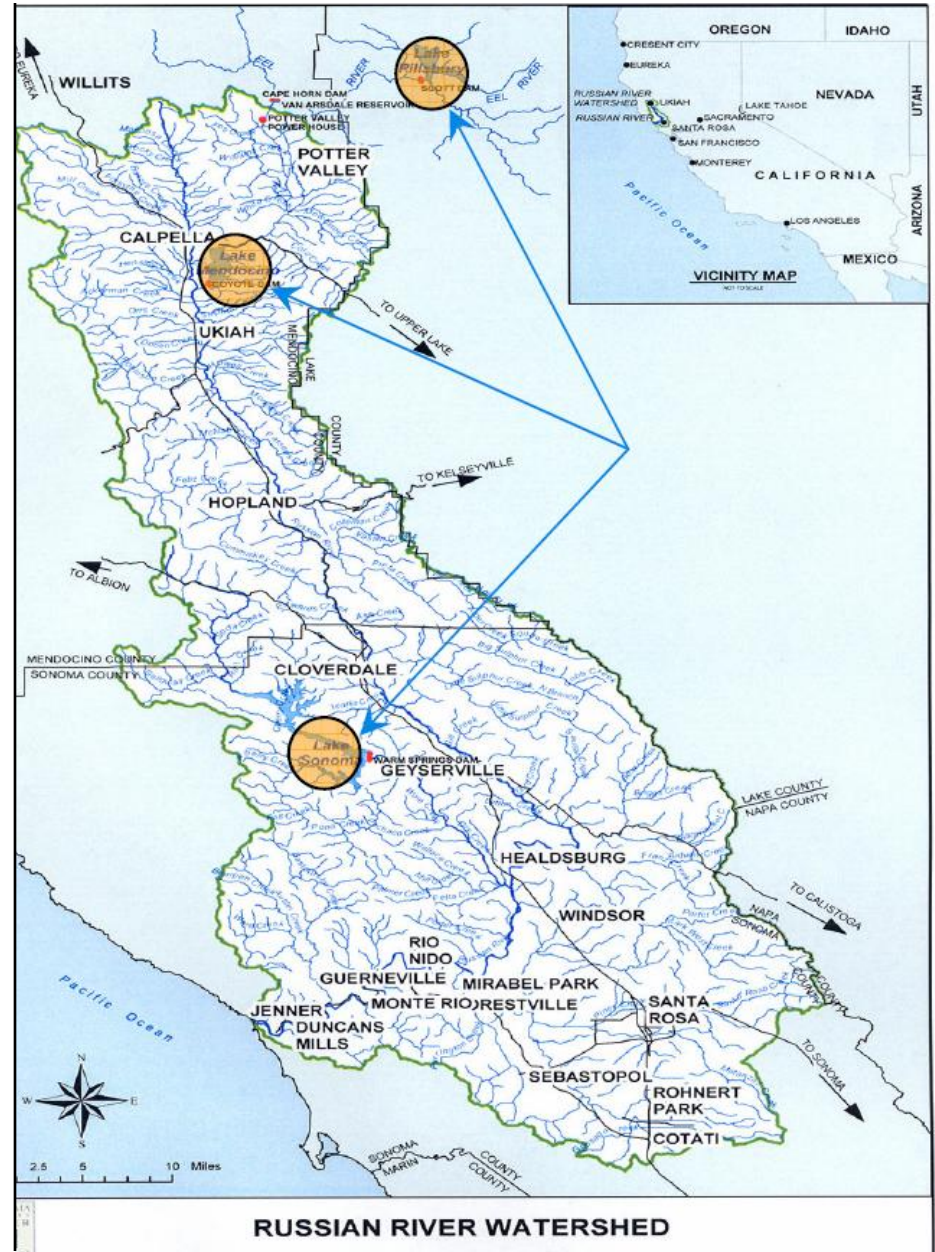
Microsoft Research

California Water Resources Management: largely self-contained but complex

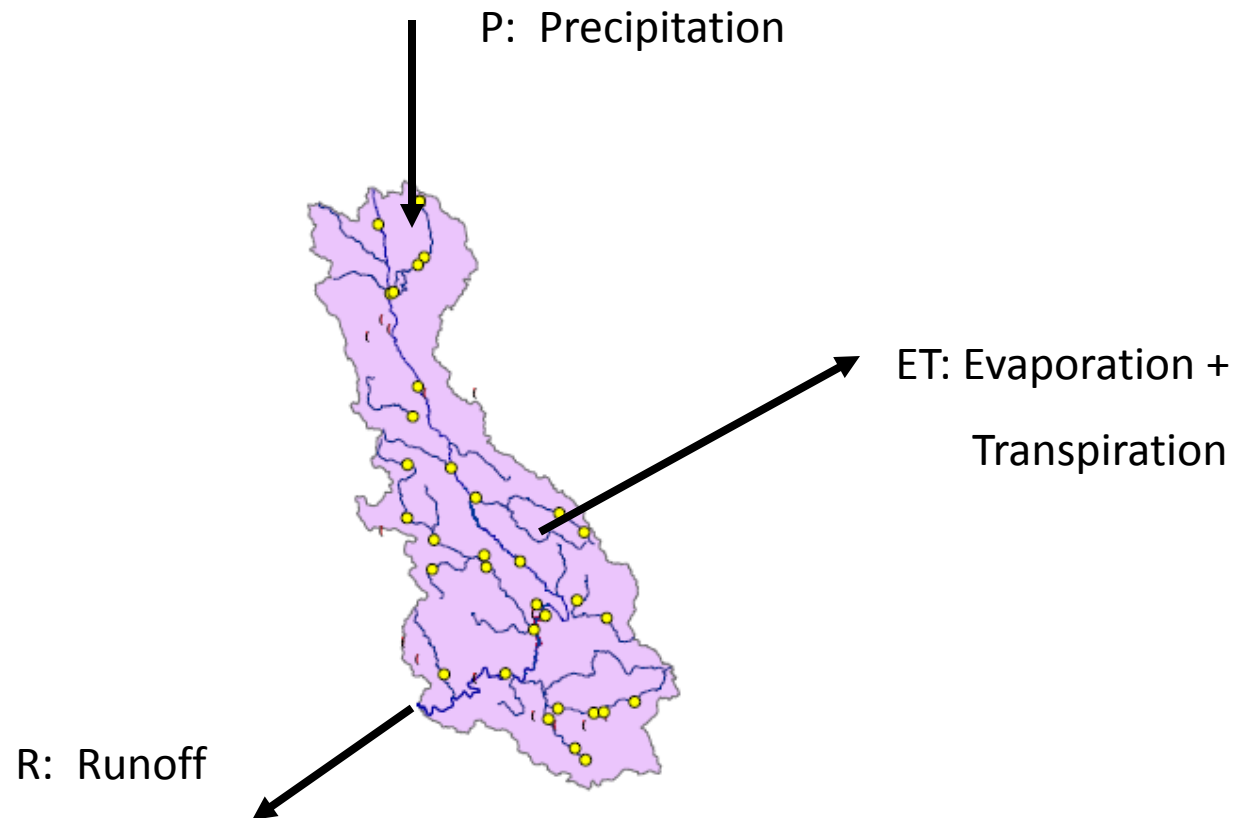
Digital watershed project identified the Russian River watershed as initial focus



Water Resources Management in the Russian River Watershed



Russian River Water Balance Model

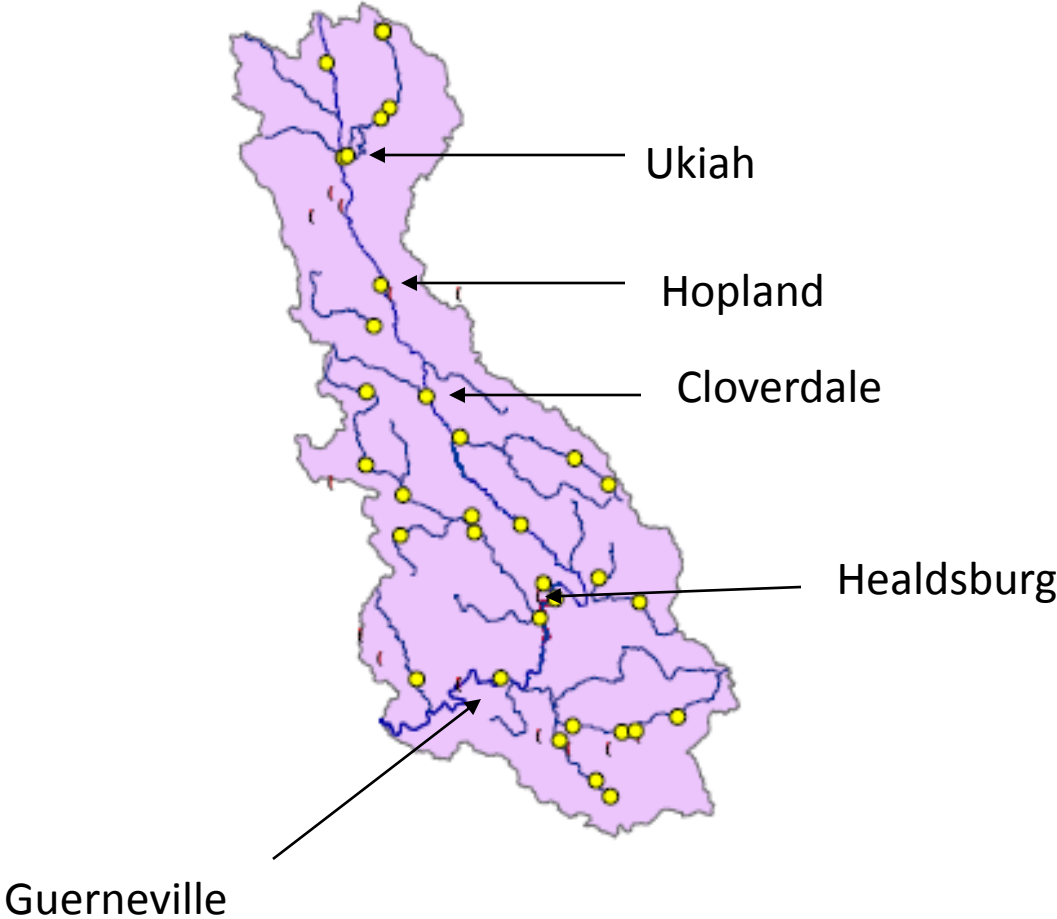


Water Balance: $P = R + ET + \Delta S$

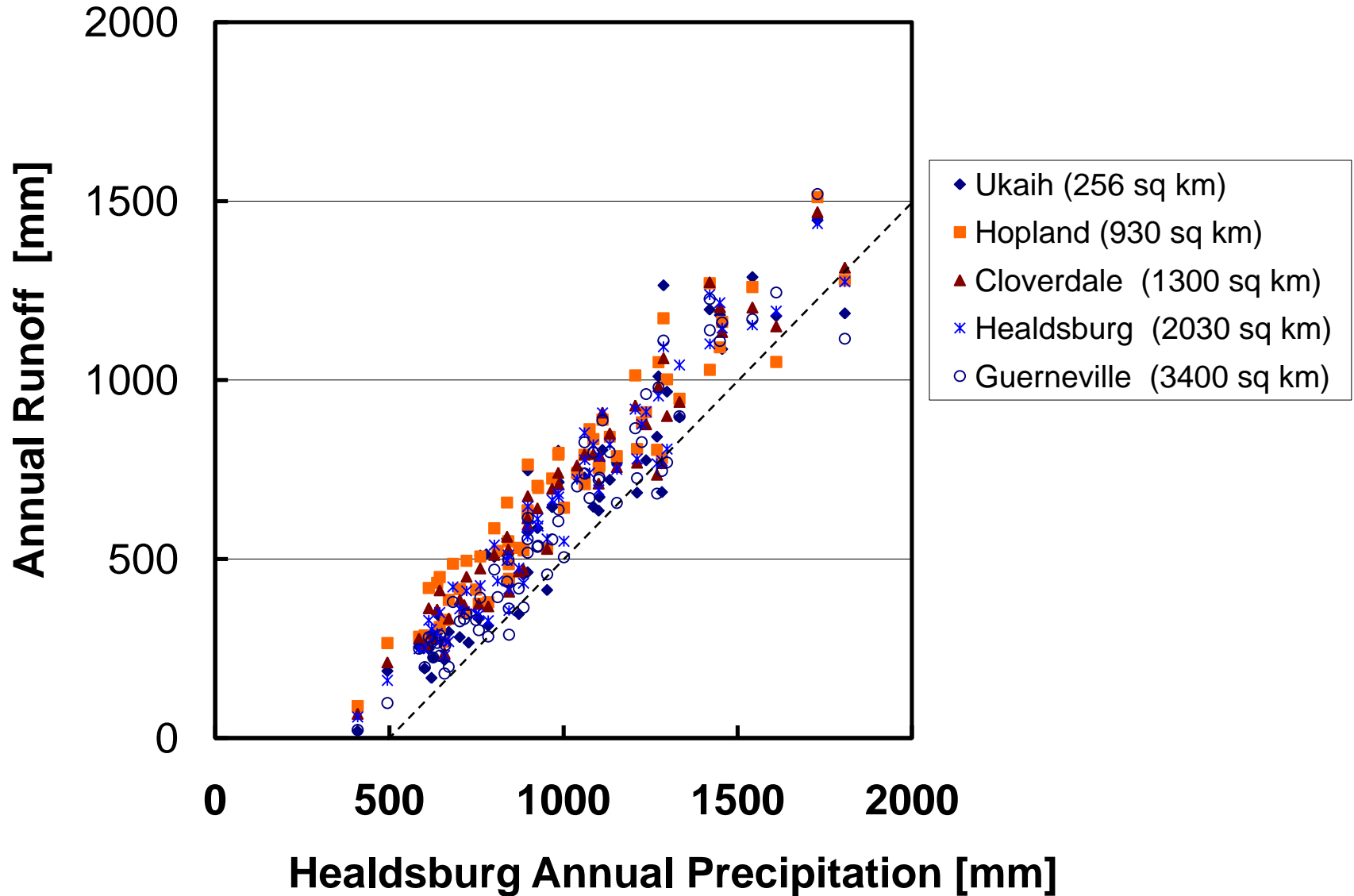
Annual Water Balance: $\Delta S \approx 0$

Main Stem Russian River Gauging Stations

Each Has 60+ Years of Daily Flow Data



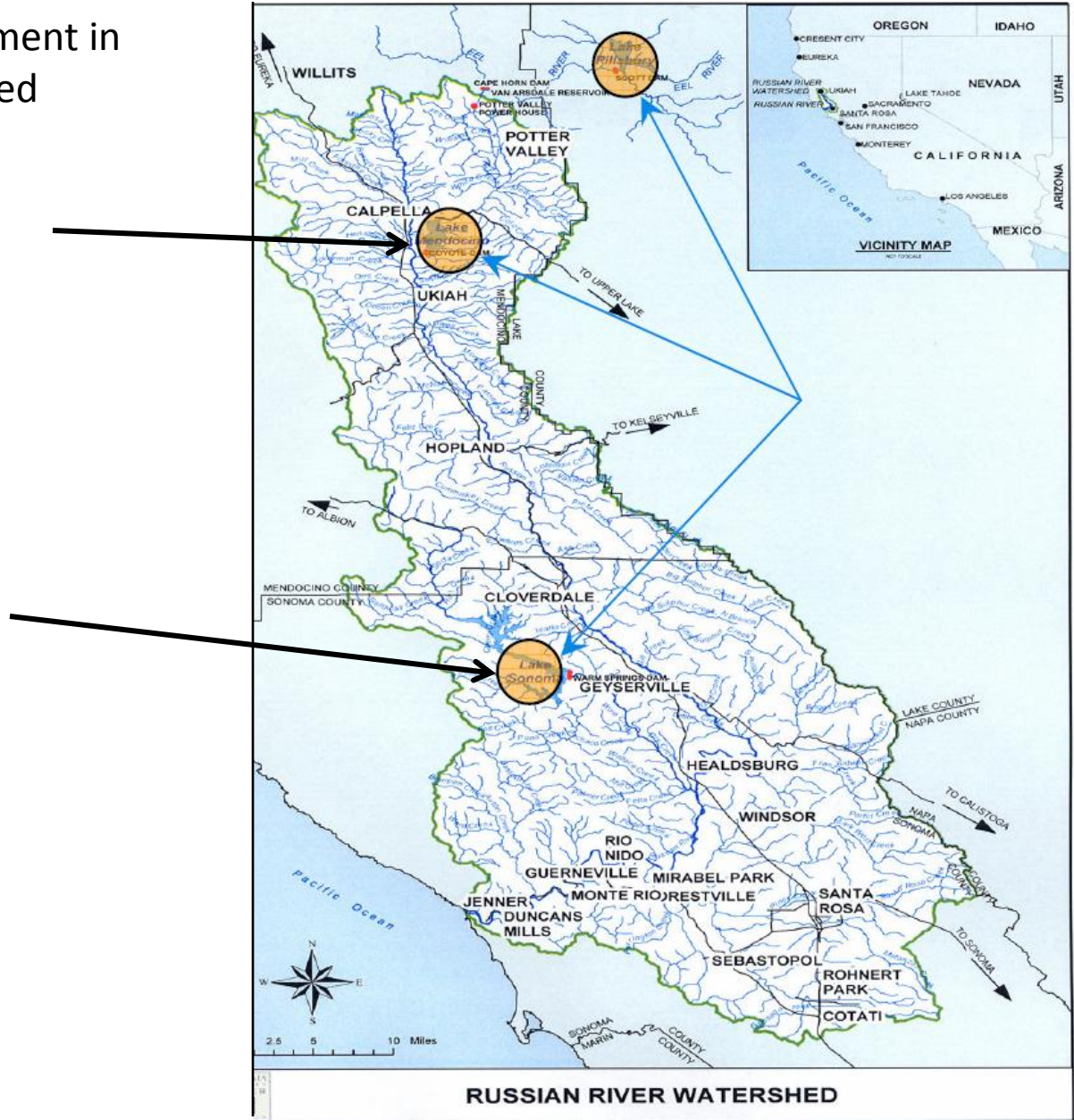
Main Stem Russian River



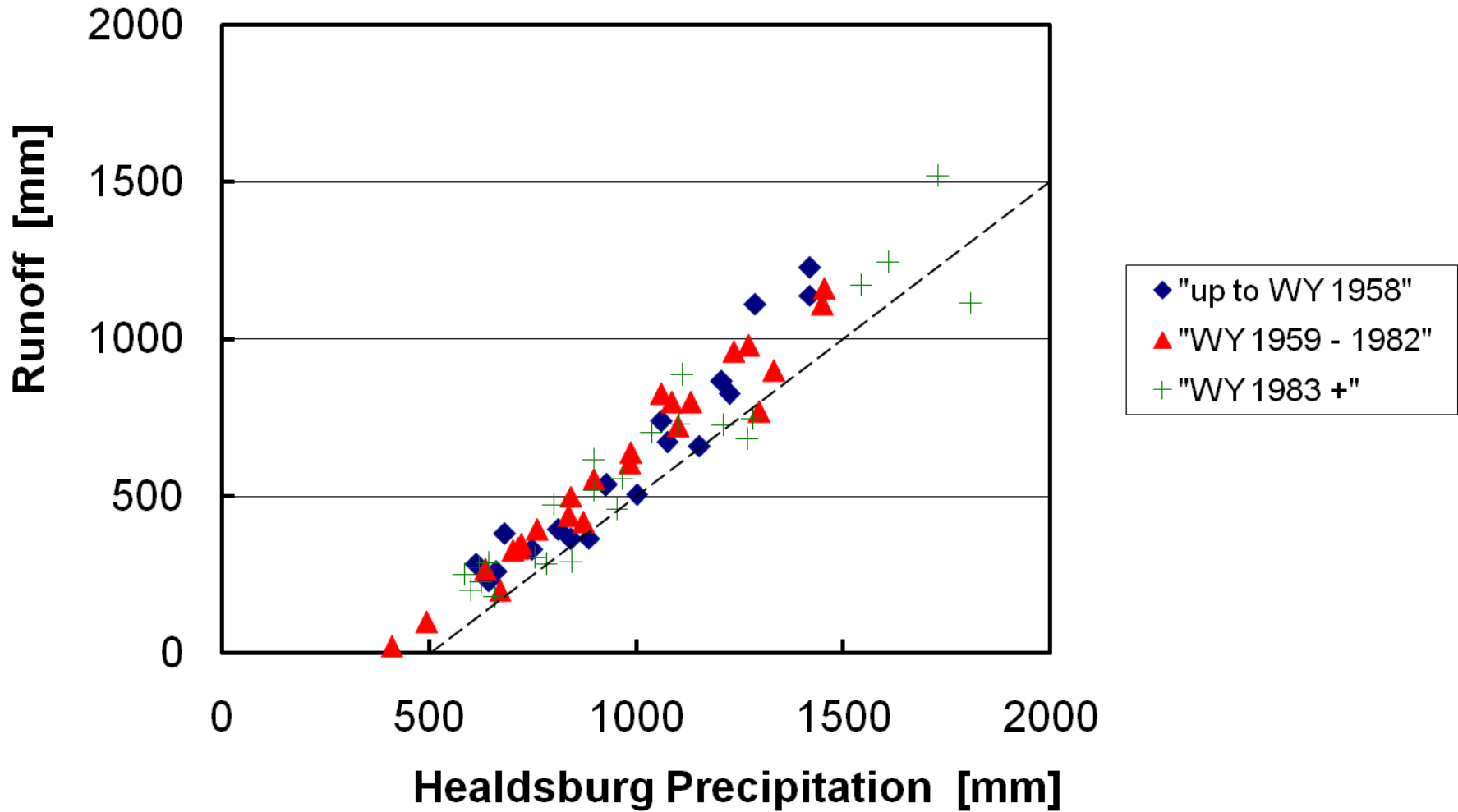
Water Resources Development in the Russian River Watershed

Lake Mendocino, 1958

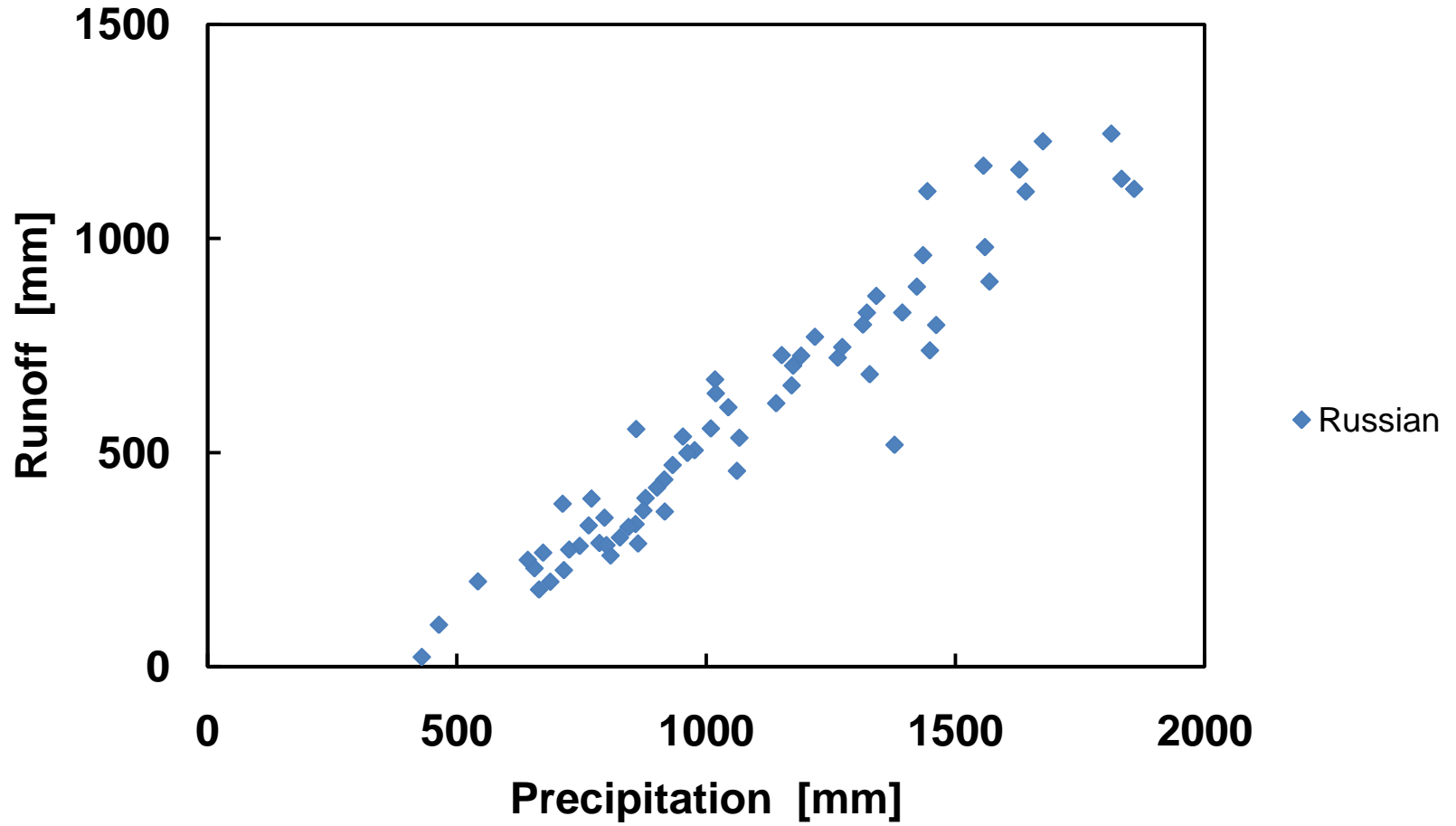
Lake Sonoma, 1983



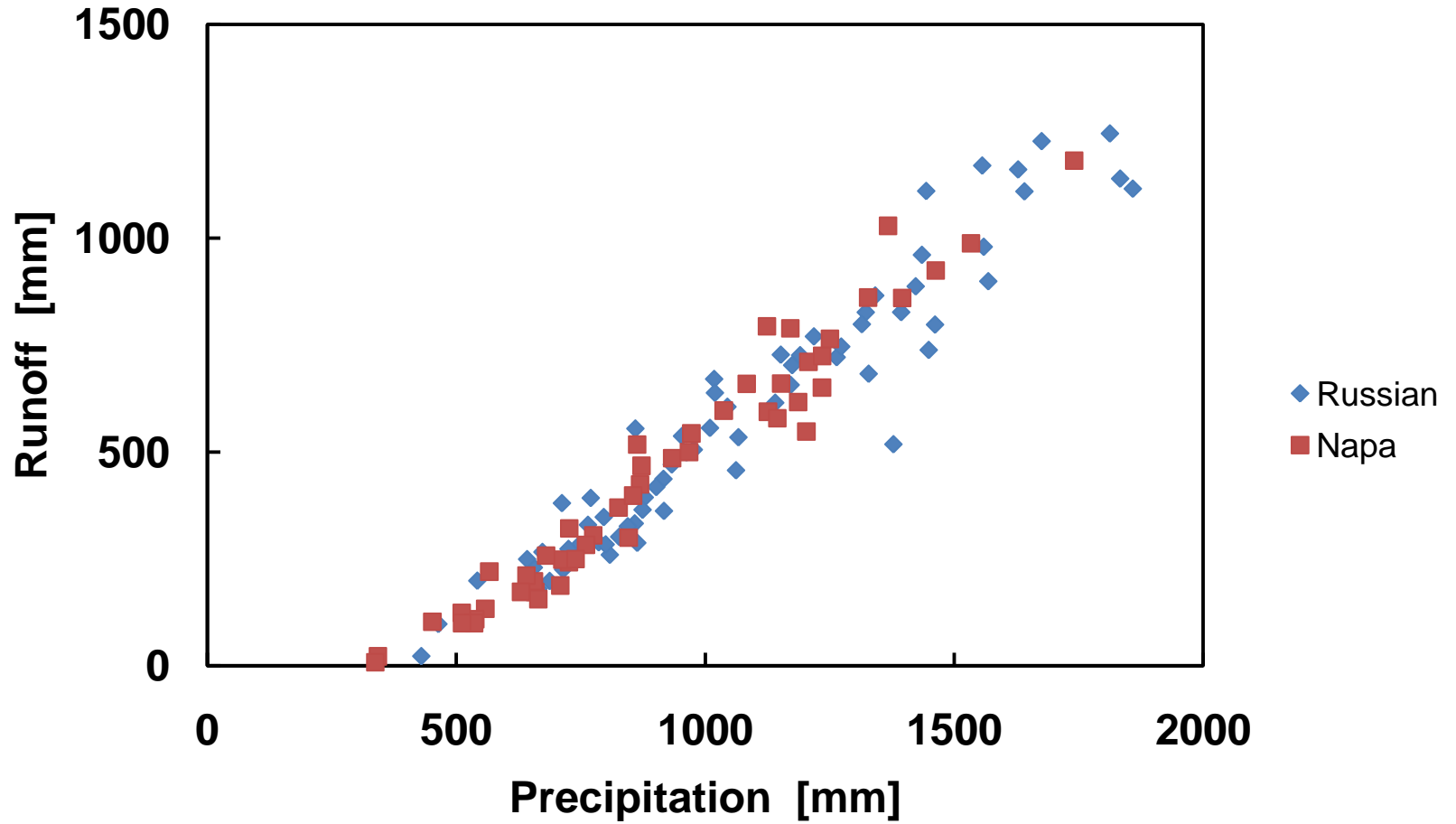
Annual Runoff of Russian River at Guernville Shows no Evidence of Reservoir Construction



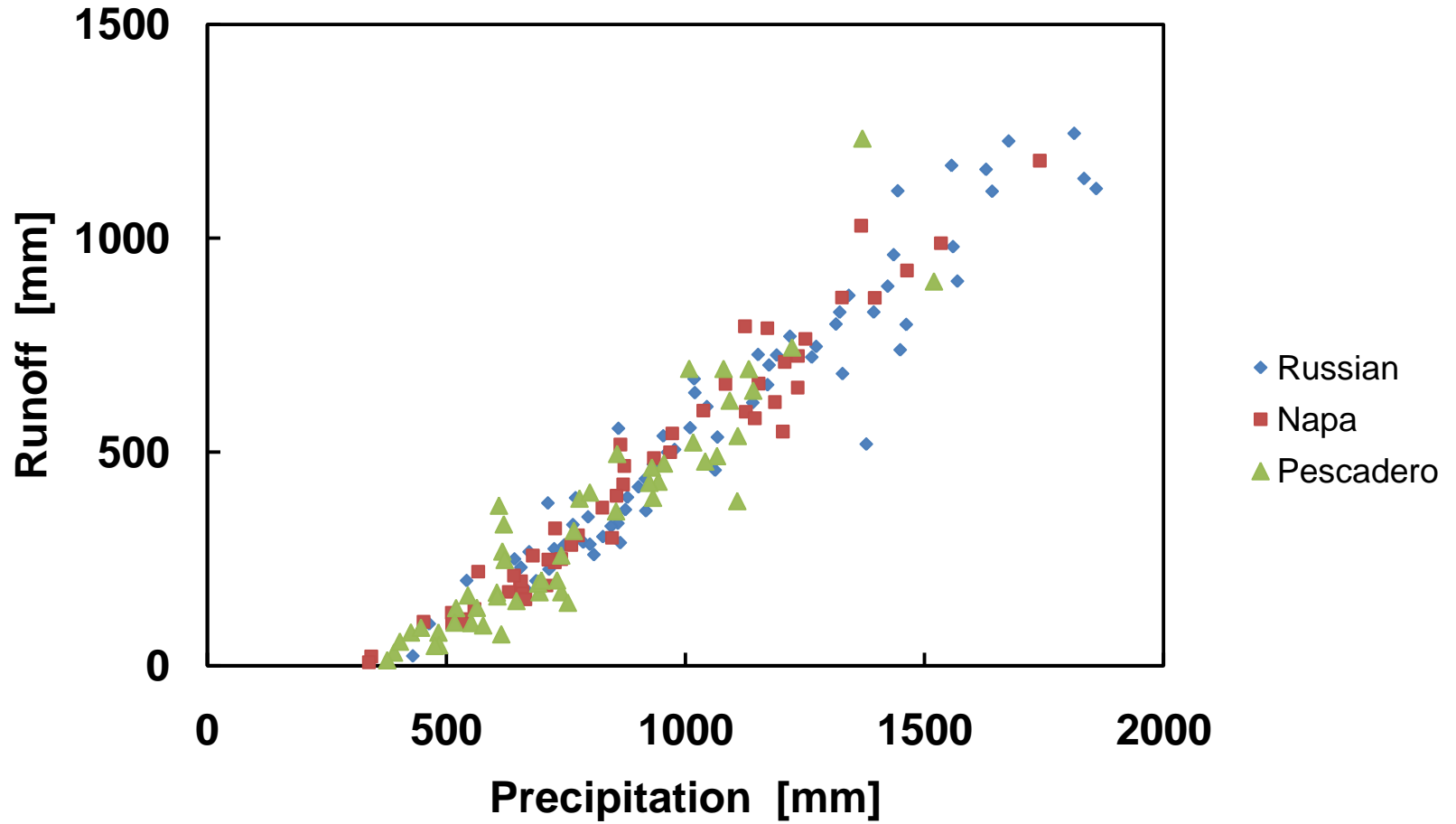
Watershed Comparisons



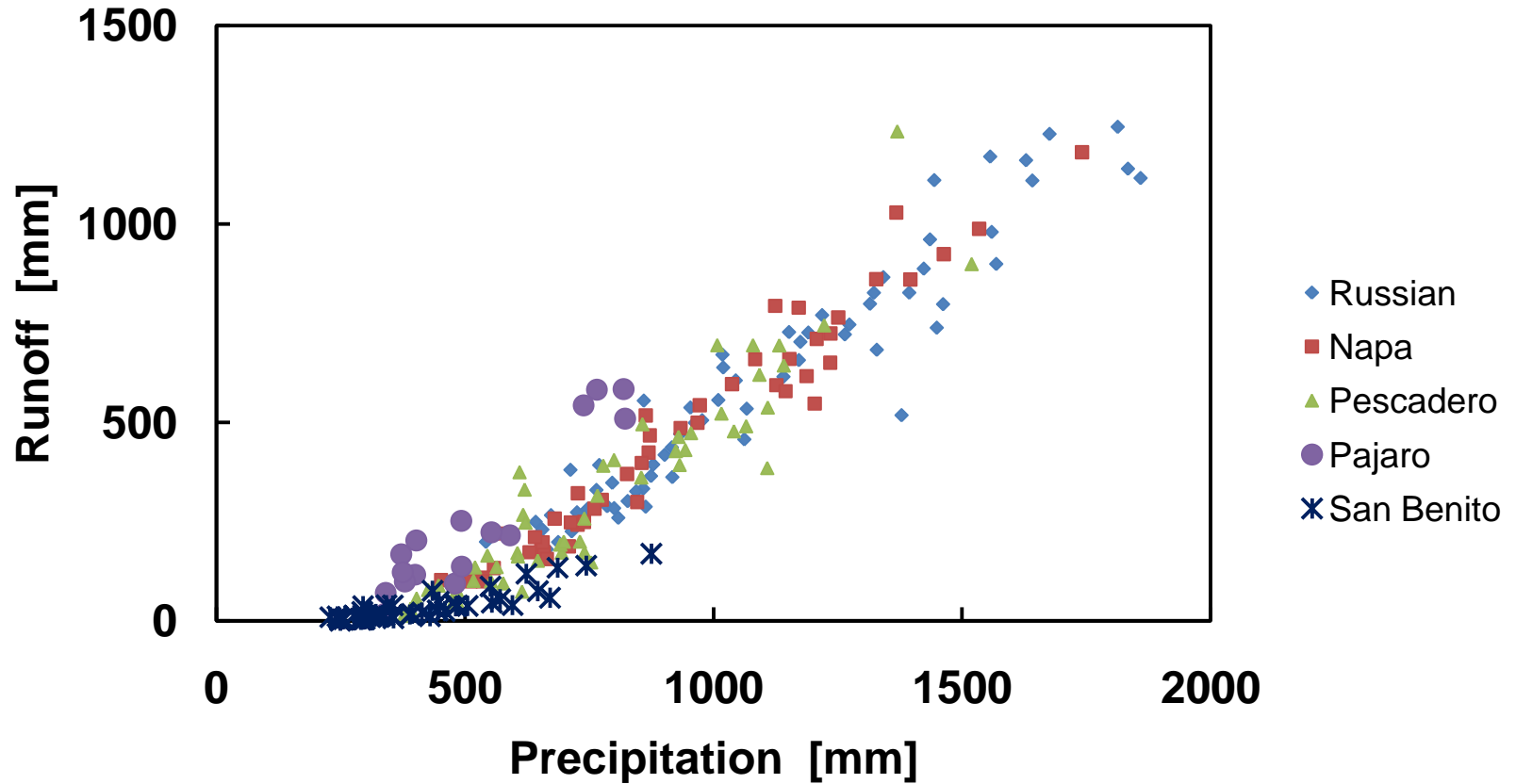
Watershed Comparisons



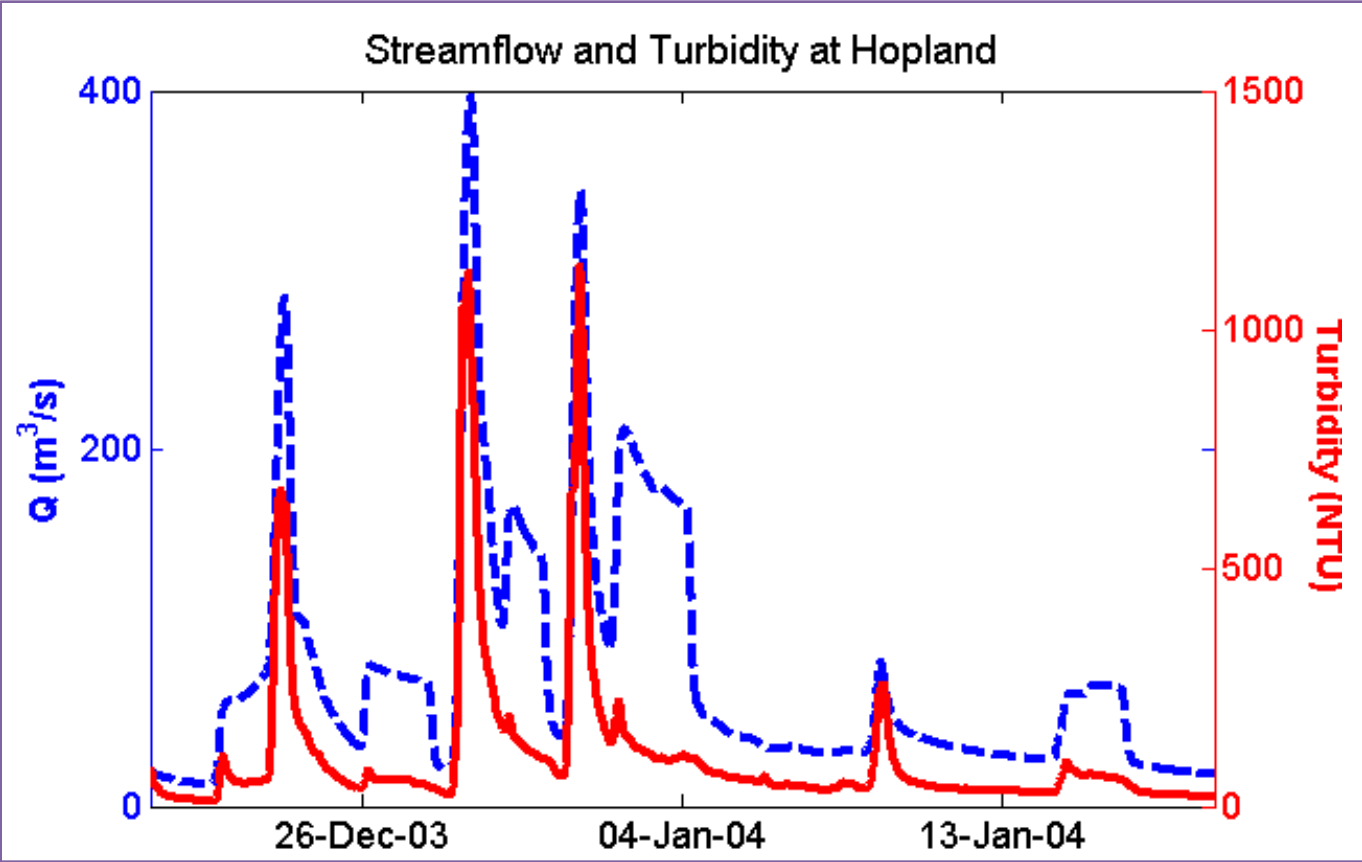
Watershed Comparisons



Watershed Comparisons Demonstrating Generalization



Example of high resolution sediment transport along Russian River during dam releases that quantifies in-stream sediment erosion.



Additional investigations:

- Stream temperature
- Coastal lagoon dynamics

Collaborators and Sponsors:

- Sonoma County Water Agency
- National Marine Fisheries Service
- Sonoma Ecology Center
- US Bureau of Reclamation
- Stockholm Environment Institute