

# USGS Mount Mansfield Stream Gages





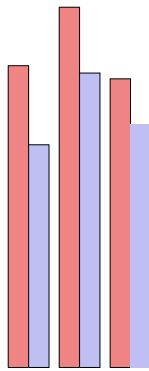


Figure 3. Annual runoff in mm at West Branch (WB) and Ranch Brook (RB) for the duration of study though the present report year. Percentage of greater runoff at WB relative to RB is given over each pair of bars.

The VMC/USGS gages have attracted several student thesis projects during the 12 years. The most recent and ongoing project is led by Alejandro del Peral, a student of Beverley Wemple at U. Vermont. Alejandro is applying the distributed soil-hydrology-vegetation model (DHSVM) (Wigmosta et al., 1994), which tries to capture the important soil and land surface features that drive the hydrologic processes generating streamflow. Alejandro has a working version of DHSVM calibrated to the two stream watersheds, and is now testing how modeled streamflow will respond to perturbations. He modeled flow in West Branch with full forest cover and showed that historical flows (pre-resort) would have been lower than today because evapotranspiration from the full forest would have been higher (Fig. 4). One interesting application Alejandro is testing now is to remove the ski resort from West Branch and adding it to Ranch Brook, to see if the flow discrepancy reverses.

West Branch data are accessible at [http://waterdata.usgs.gov/vt/nwis/uv?site\\_no=04288225](http://waterdata.usgs.gov/vt/nwis/uv?site_no=04288225).

Ranch Brook data are accessible at [http://waterdata.usgs.gov/vt/nwis/uv?site\\_no=04288230](http://waterdata.usgs.gov/vt/nwis/uv?site_no=04288230).

## References

Wemple B, Shanley J, Denner J, Ross D, Mills K., 2007. Hydrology and water quality in two mountain basins of the northeastern US: assessing baseline conditions and effects of ski area development. *Hydrological Processes* 21(12):1639-1650.

Wigmosta M.S., Vail L.W., Lettenmaier D.P., 1994. A distributed hydrology-vegetation model for complex terrain. *Water*