

Kathleen Moore  
GeoDay Abstract

## Long-term Trends in Water Yield from Old Growth Forested Catchments in the Western Cascades

Climate warming in western North America is expected to result in reduced snowpack, increased evapotranspiration, and consequently diminished streamflows. However, few datasets exist of streamflow with associated climate and vegetation records adequate to interpret changes in climate, forest processes, and their consequences for streamflows. This study examines trends in long-term streamflow records from three headwater catchments in old growth forest at the H. J. Andrews Experimental Forest, Oregon, to seek evidence of declining streamflows and investigate possible explanations for these changes. The three small (8.5-60 ha) catchments (WS2, WS8, and WS9) range in elevation from 432-1182 m and have streamflow records dating back to 1953, 1964, and 1969 respectively. Linear regression analysis was used to assess both annual and seasonal trends in streamflow and precipitation. Initial findings indicate that while precipitation has remained unchanged over the period of study, runoff ratios (discharge/precipitation) have declined over time. All three catchments exhibit significant declines in spring (March-May) runoff ratios, ranging from -0.004 to -0.01 per year. This equates to a maximum decline of 0.43 in spring runoff ratio over the period of record. One of the catchments, WS8, also shows a significant decline in annual runoff ratio (-0.003/year). Continued research will investigate changes in snowpack and evapotranspiration as potential causal mechanisms.