

WHERE THE RIVERS MEET: USING STREAM CHEMISTRY AND DISCHARGE TO QUANTIFY CONTRIBUTIONS OF TRIBUTARIES TO THE RIO GUACIMAL, MONTEVERDE, COSTA RICA

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Tropical montane cloud forests (TMCFs) can scavenge moisture from orographic clouds, possibly making cloud water an important hydrologic input during dry seasons. TMCFs also contain an extraordinary biodiversity of plants and animals. In Monteverde, Costa Rica, the TMCF is an important ecotourist destination. Rapid development in recent years has diminished the quality and quantity of stream water in the Rio Gaucimal watershed, the upper elevations of which are occupied by a TMCF.

This project tests the utility of a chemical mixing model to determine the percent flow contribution of different tributaries to the Rio Gaucimal. The ultimate goal is to differentiate the input of streams draining pristine, cloud forest catchments from those draining developed areas. The chemistry data used with the mixing model come from water samples analyzed for acid neutralizing capacity (ANC), dissolved silica content, major anions and cations, and $\delta^{18}\text{O}$ composition. Some of these components predict relative discharge that agrees with actual discharge measurements. The application of this method is limited by the accuracy of the chemical analyses, the tightness of the water budgets, and the degree of variability of the water chemistry of tributaries.