HYDRO-GEOCHEMICAL CHARACTERISTICS OF THE HIMALAYAN STREAMS

*Zabiullah Ansari and Sarfaraz Ahmad
Department of Geology, Aligarh Muslim University, Aligarh
*E-mail: geologyzabi@gmail.com

Abstract
An investigation of the hydro-geochemical processes have been undertaken in the present work using numerous hydro-chemical data of the Himalayan streams. It has revealed that chemistry of glacial streams was influenced by the bedrock composition and reflected in higher \( \text{Ca}^2+ \text{Mg}^2+ \) over \( \text{Na}^+ + \text{K}^+ \) in many glaciers. The middle and lower altitude rivers show a slight decrease in \( \text{Ca}^2+ \text{Mg}^2+ / \text{Na}^+ + \text{K}^+ \) indicating more intense silicate weathering than the higher Himalayan rivers. Piper’s (1944) diagram suggests a distinct pattern of glaciers and other streams. Glacier streams are mainly of \text{Ca-HCO}_3\text{-type} and the streams at middle and lower altitudes show mixed type of waters. A distinct pattern of \( \text{Ca}^2+ \text{Mg}^2+ / \text{SO}_4^{2-} \) ratios was observed in the glaciers and other streams. The possible sources of dissolution could be the sulfate minerals-gypsum and anhydrite whereas the second possible source is the oxidation of sulfides. An inverse relationship with length and a direct relation with snout elevation was observed in Electrical conductivity in glacier stream waters. The lesser length and higher snout elevation enriches the solute in meltwater streams due to shrinking of glacier size.

**Keyword:** Hydro-geochemical, Weathering control, Glacier weathering, Himalayan river, Electrical conductivity