

The hydrochemistry of first and second order streams, sampled at a density of 1 km², has been used to investigate ways of enhancing information obtained during regional geological mapping. The Glen Roy area of Scotland is a pristine area with large variations in bedrock geology, ranging from Dalradian metasediments (including carbonates), to granite, granodiorite and appinite rocks (coarse-grained lamprophyre) but with relatively minor drift. Alkalinity (HCO₃) is used to determine the extent of water-rock interaction with both silicate and carbonate rocks. The ratio Na/Cl is also used to measure the extent of silicate reaction: dolomitic facies are picked out in areas with carbonate by Mg, Mn, Fe and Y are useful indicators of the weathering of biotite and garnet. A strong and well defined hydrogeochemical anomaly of Ba, Sr and K outline the outcrops of the appinites. Together with HCO₃, these three elements define an extended NW–SE lineament (Strath Ossian Lineament) which includes possible concealed areas of appinite, the bicarbonate probably reflecting the presence of a carbonate aureole derived from mantle CO₂. In particular the bedrock characteristics in poorly exposed ground can be inferred and information obtained on the volume of bedrock through which the water has passed.