# HEAVY MINERAL ANALYSIS AND GARNET GEOCHEMISTRY OF MODERN STREAM SEDIMENTS FROM THE WESTERN HOHE TAUERN (AUSTRIA)

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The mineral chemistry of heavy minerals has been widely used to identify and characterise source areas. The heavy mineral garnet is a particular useful mineral in provenance research, because of its wide range of major element composition, its high importance in defining metamorphic conditions and its comparative stability during transport and burial diagenesis. In this study, we test the application of heavy minerals and garnet geochemistry for modern stream sediments collected along three rivers draining the Eclogite Zone and adjacent geological source units of the western Hohe Tauern area in the central Eastern European Alps (Krippner et al., 2015, Sediment. Geol., 321, 25-38). Rock outcrops exposed in this area were also sampled for comparison with the stream sediments. The chosen area is very well investigated and provides an excellent place to constrain the relations between source rocks and sediment in first-order drainages. We also analyse the influence of grain size in detail by considering grain-size fractions ranging from coarse silt to coarse sand (32 to 1000 µm). In all grain-size fractions the heavy mineral assemblages are characterised to a variable extent by epidote, zoisite, garnet, and green calcic amphibole. An increase of apatite in the fine tail of the size distribution and an increase of green calcic amphibole and garnet in the coarse tail of the size distribution can be observed. Electron microprobe analysis of detrital garnet shows the dominance of almandine-rich garnet. Pyrope-rich garnets increase within the eclogite Zone consistent with the geological framework. Interestingly, in all samples, grossular-rich garnets are more frequent in the smaller grain sizes and pyrope-rich garnets are more frequent in the coarser grain sizes. This probably results of the inheritance of grain size from the host rock to sediment rather than being a hydraulic effect. The heavy mineral assemblages and garnet geochemical data reflect the geological setting of the study area, hence confirming the general strength of these methods in sedimentary provenance analysis. However, the data underline strong grain-size control on sediment composition, including single-grain compositional variations.