The central Andean margin is a type locality for studying destruction and construction of continental crust. Processes of destruction include forearc subduction erosion and lithospheric delamination. Forearc subduction erosion is particularly important at times of local plate adjustments and rapid westward drift of South America. Large volumes were eroded in the late Neogene to the north of the Chilean flatslab with estimates of ~124 km$^3$/my/km of eroded crust since 8 Ma east of the sediment starved trench. Geochemical indicators in arc magmas for recycling eroded crust include transient steep REE patterns (adakite-like) that cannot be explained by slab melting or crustal contamination, and temporal isotopic changes in the most mafic magmas. In the backarc, late Neogene lower crustal delamination coincides with steepening of formerly shallow subduction zones, with decompression mantle melts mixing with deep crustal melts producing giant plateau ignimbrites. Sr-based AFC models and δ18O data allow the ignimbrites to be near 50–50 hybrid magmas of enriched mantle melts ($^{87}$Sr/$^{86}$Sr~0.705) produced by continental lithosphere recycling and spatially variable crustal melts. Given a 1:1 mantle to crustal ratio, a 3:1 to 5:1 plutonic/volcanic ratio and an ignimbrite volume of 11,000 km$^3$ for the southern plateau over the last 7 Ma, the average arc mantle magma production rate is < 20 km$^3$/km/Ma. New seismic images of the plateau from 25°S to 28°S coupled with geochemical modelling of Neogene volcanic rocks are helping to elucidate thermal and material fluxes from the mantle through the thick Andean crust.