

## Birth, assembly and decay of a continental arc magmatic system

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The Adamello Intrusive suite in N. Italy is a small continental arc magmatic system exhibiting all stages from onset of magmatism, growth by incremental melt assembly, to thermal maturation and cessation of activity. LA-ICP-MS and SIMS U-Pb data record 10 myr of zircon crystallization from 43.5 to 33.2 Ma, and identify up to 2 myr of age variation within some intrusive units that have been defined from field geology, despite their apparent lithological homogeneity. The onset of magmatism is characterized by small volumes of juvenile melts (gabbros to tonalites of the S. Rò di Castello unit), with  $\epsilon_{\text{Hf}}=+10$ ,  $\delta^{18}\text{O}=7.2$  (all Hf and O isotope data from zircon), while the subsequently accreted melt batches of mostly tonalitic composition record increasing amounts of crustal component (Fig. 1). Highest proportion of crustal material are recorded by tonalites and granodiorites of the Avio and Presanella units ( $\epsilon_{\text{Hf}}=-11$ ,  $\delta^{18}\text{O}=9.8$ ), representing the thermal climax of an accreting and growing mid-crustal melt-enriched reservoir. The magmatic system eventually shut down presumably because its heat content became unsustainable from insufficient magma recharge.

