A genetic classification of the tholeiitic and calc-alkaline magma series

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Supplementary Information

The Supplementary Information includes:
➢ Supplementary Text
➢ Supplementary Information References

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The Rollinson and Pease (2021) dataset includes analyses of tholeiites from Iceland (including Thingmuli), as well as calc-alkaline continental arc rocks of the Cascades, western United States; both locations have long been considered as type examples of these trends (e.g., Irvine and Baragar, 1971). The dataset was downloaded in 2020 from the precompiled files in the GEOROC database (Sarbas, 2008) for single ocean islands/Iceland (>10,000 analyses) and convergent margins/Cascades (>6,000 analyses). The dataset included both glass and whole rock analyses, as well as extrusive and intrusive rocks, although lavas dominate. The dataset was filtered to exclude incomplete analyses (<10 oxides), those analyses which did not report sample coordinates, those with LOIs above 3 wt. % (in order to exclude possibly altered analyses, although it is well known that arc rocks may contain up to 8 wt. % H₂O; see Zimmer et al., 2010), and those with inappropriate Na₂O + K₂O (to exclude alkaline compositions). After all Fe was converted to FeO₆ (where FeO₆ = FeO + 0.8998Fe₂O₃), a subset of the filtered analyses within each compositional group (by SiO₂) were then randomly selected to provide a final representative dataset of manageable size for readable figures that was equally represented by basalts, andesites, dacites, and rhyolites, i.e. ~1000 analyses.
Supplementary Information References


