

LARGE IGNEOUS PROVINCES

Large Igneous Provinces (LIPs) are intraplate magmatic events, involving volumes of mainly mafic magma upwards of 100 000 km³, and often above 1 million km³. Throughout Earth's history, such mega-volcanic events have occurred in both continental and oceanic environments, and are typically characterized by a short duration magmatic pulse or pulses (less than 1–5 million years). LIPs are key processes in shaping our planet over geological time, being linked to continental break-up, global environmental catastrophes including mass extinction events, regional uplift, and a variety of ore deposit types.

In this up-to-date, fascinating book, leading expert Richard Ernst explores all aspects of LIPs, beginning with a helpful introduction to their definition and essential characteristics. Topics covered include continental and oceanic LIPs (both their volcanic components and their plumbing systems); their origins, structures, and geochemistry; geological and environmental effects; association with silicic, carbonate, and kimberlite magmatism; and analogs of LIPs in the Archean, and on other planets. The book concludes with an assessment of the influence of LIPs on natural resources such as mineral deposits, petroleum, and aquifers.

This is a vital, one-stop resource for researchers and graduate students in a wide range of disciplines, including tectonics, igneous petrology, geochemistry, geophysics, Earth history, and planetary geology. It will also be of importance to mining industry professionals.

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Ernst Geosciences*



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To my children, Heather and Justin,
my Angels on Earth and in Heaven

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Acknowledgments

I am pleased to be able to offer this overview of the growing field of Large Igneous Provinces, with the delightful acronym LIP, to the diverse groups in the Earth Sciences community that directly or indirectly intersect with this fascinating class of mega-magmatic events.

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Enjoy your journey through the pages ahead.