Geophysical Research Abstracts
Vol. 17, EGU2015-8592, 2015
EGU General Assembly 2015

Databases related to Large Igneous Provinces

Richard Ernst (1) and Sergei Pisarevsky (2,3,4)

(1) Department of Earth Sciences, Carleton University, Ottawa, Canada (Richard.Ernst@Carleton.ca; Richard.Ernst@ErnstGeosciences.com), (2) School of Earth and Environment, University of Western Australia, Crawley, Australia (Sergei.Pisarevsky@uwa.edu.au), (3) The Institute for Geoscience Research (TIGeR), Department of Applied Geology, Curtin University, Perth, Australia, (4) Australian Research Council Centre of Excellence for Core to Crust Fluid Systems (CCFS)

Large Igneous Provinces (LIPs) represent large volume (>0.1 Mkm3; often above >1 Mkm3), mainly mafic (-ultramafic) magmatic events of intraplate affinity in both continental and oceanic settings, and are typically of short duration (<5 m.y.) or consist of multiple short pulses over a maximum of a few 10s of m.y. Silicic, carbonatite and kimberlite magmatism may be associated. The young LIP record is dominated by continental flood basalts and oceanic plateaus, but Proterozoic LIPs have typically lost their flood basalt component during erosion, thus exposing the plumbing system of mafic (-ultramafic) dykes, sills and layered intrusions. LIPs occur at a rate of about 1 every 20-30 m.y. back through the Proterozoic, and Archean analogues are also recognized. The LIP record is growing as more events are recognized and the size of known LIPs (even those of those of Mesozoic age) is increasing through targeted U-Pb geochronology. We review databases related to this fast moving field. The LIPs Commission (www.largeigneousprovinces.org) of IAVCEI ongoingly highlights new insights and events through the "LIP of the Month" series. A global 1:5M scale global LIPs ArcGIS database is under construction through Industry and government funded projects (e.g. www.supercontinent.org) and will form a framework for additional thematic databases related to LIPs, including geochemistry, geochronology, and paleomagnetism (GPMDB, MAGIC). LIP databases provide useful constraints for global Precambrian paleogeographic reconstructions, a context for understanding some global and regional environmental changes, and a useful framework for resource exploration (mineral and hydrocarbon). One of the most important aspects of this global LIPs ArcGIS database is that it is integrating data on the volcanic component of LIPs (both flood basalts, and associated ultramafic and silicic volcanism) with data on the plumbing system component in order to develop an understanding of LIPs as an integrated system.