



Linking surface and deep processes in the Paleozoic

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Major upwelling patterns, departing from the edges of two antipodal LLSVPs (Large Low Shearwave Velocity Provinces), are associated with hotspot and plume features that leave their signatures as Large Igneous Provinces (LIPs) in the Earth's crust. Torsvik et al. (Nature, v. 466, July 15, 2010) have demonstrated that 80% of all diamondiferous kimberlites with ages of 320 - 0 Ma are also found above the edges of the LLSVPs, with the continental positions being fully constrained in a lower-mantle reference framework by paleomagnetic data, LIPs, True Polar Wander (TPW) episodes, and seismic velocity anomalies from tomography. For the Paleozoic Era before 320 Ma, the continental positions have until now remained unconstrained in longitude, as is well known for paleomagnetic results, whereas LIPS, TPW and tomography are of little or no help. However, using the assumption that kimberlites with ages of 540 – 320 Ma must have originated above the edges of the LLSVPs, one can constrain continental paleolongitudes. In so doing, we obtain global reconstructions that are of great interest for paleogeography, paleoclimate models and tectonic analysis of Paleozoic plate motions.