

Diamond Distribution

Diamond formation occurs in high-pressure conditions more than 150 kilometers deep in the Earth's mantle. The diamonds make it to the surface in vertical pipe-like structures made up of volcanic rocks called kimberlites. Several thousand such kimberlite pipes have been mapped so far, but research has focused on very old cratons, the areas of oldest continental crust, as this is where most economically viable diamonds are found. Trond Torsvik and colleagues use plate-tectonic reconstruction for the past 540 million years to locate the positions of these cratons relative to the deep mantle at times when kimberlites were erupted. The kimberlites are shown to have been associated with the edges of large-scale heterogeneities in the deepest mantle, which the authors infer were zones at the core-mantle boundary where magma upwelling generated the mantle plumes that led to the formation of the kimberlites. These plumes may have controlled the distribution of almost all kimberlites that have erupted in the past 540 million year (*Nature*, v.466, 15th July 2010, p.292-293)