

Abstract

Large igneous provinces (LIPs) are huge accumulations of magmatic rocks originated during unusually short time and characterized by extremely high magma productivity. Among them, namely the continental flood basalts (traps) cover very extensive areas and may or may not be associated to rifting and breakup of continents. However, also highly voluminous oceanic plateaus were recognized and some authors count to LIPs even some other types of huge magmatic complexes.

A large amount of gases is released with escaping magma, usually oxides of carbon, sulfur and nitrogen. These gases more or less have impact on the environment and thus also influence organisms.

The formation of magmatic provinces repeated many times in the past. The best known are continental Deccan Traps in India and the most voluminous Siberian Traps. Oceanic LIPs are represented, e.g., by the Ontong Java Plateau in the west Pacific Ocean.

There is a link in dating the emergence of large igneous provinces and mass extinctions. As an example, the largest known extinction at the end of Permian, which was broadly contemporaneous with the formation of the Siberian traps (approximately 250 Ma ago), or extensive loss of species on the boundary of Cretaceous / Tertiary, which coincides with the formation of the Dekkan in India (before about 65 Ma). Therefore, Large Igneous Provinces are among the most important causes of mass extinction periods. However, some extinctions do not correspond to any contemporaneous LIP and other causes, namely large bolide impacts, should be supposed. Very interesting and peculiar are those cases in which the LIPs and impacts were contemporaneous.