It is a scientific report talking about the large igneous province (Ontong Java Plateau) Describes the LIP; Presents proposed mechanisms for its formation and evolution; The potential effect it had on the biosphere at the time of its emplacement; How prospective it is for economic mineralization.

Large Igneous Provinces (LIPs) represent large volume (>0.1 Mkm3; frequently above >1 Mkm3), mainly mafic (- ultramafic) magmatic events that are not associated with ‘normal’ tectonic processes such as mid-ocean ridge spreading or subduction. LIPs predominantly occur as intraplate phenomena, typically characterized by asymmetric pulses of magmatism that last a maximum of a few tens of millions of years. LIPs often comprise volcanic successions (which may be emplaced both sub aerially and subaqueously), a plumbing system of sheets, sills, and layered intrusions, and a crustal magmatic underplate. In order to be able to generate such quantities of magma over such relatively short periods of geological time, the source region is required to be fundamentally different to the ambient mantle, i.e. it must be either, hotter, more fertile or more volatile-rich.

It is, therefore, the mantle plume paradigm that is currently the preferred genetic mechanism for the majority of LIPs recorded in the geological record. The model predicts that the high volumes of magmatism associated with LIPs and oceanic plateaus occur in response to the melting (via decompression) of a cylindrical zone of anomalously hot mantle material, upwelling from significant depths in the mantle. LIPs are important for several reasons. Most obviously, they allow igneous processes to be studied on continental scales. They are also important due to their association with significant Ni-Cu-PGE mineralization. Thirdly, they provide a verifiable mechanism for understanding environmental perturbations in the geological record.