

Palaeoclimatic Imprints as Revealed from the Studies of Intrabasaltic Bole Beds of the Deccan Traps, Maharashtra, India

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Abstract

Geochemical characteristics of four Deccan intrabasaltic bole bed profiles occurring around Yelapur area of Sangli District (Maharashtra, India) were used in deducing the palaeoclimatic conditions prevailed during their formation. Higher Chemical Index of Weathering (CIW) values for all the four red boles indicate considerable chemical weathering and much leaching of the bases while the values of Parker's Weathering Index (PWI) show slight variations. Almost similar Mean Annual Temperature (MAT) values for all the red boles suggest their formation under moderate temperatures while Mean Annual Precipitation (MAP) values indicate slight variations in rainfall. Although quite variable the Iron Species Ratio values indicate oxidizing conditions while Product Index values suggest somewhat acidic conditions during the formation of red boles. Hydrolysis values in red boles indicate mostly humid conditions while values of Salinization are well below unity indicating that the red boles were formed under fairly leached conditions. A–CN–K plots for all four red bole profiles point their weathering trends towards smectite formation while SiO_2 – Al_2O_3 – Fe_2O_3 plots indicate kaolinization stage for bole beds suggesting their incipient weathering without lateritization. Thus, these four red bole profiles were formed under somewhat humid, fairly leached, relatively well-drained and rather acidic conditions under variable rainfall.

Keywords: Intrabasaltic Bole Beds, Palaeoweathering, Geochemistry, Deccan Traps, India.

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