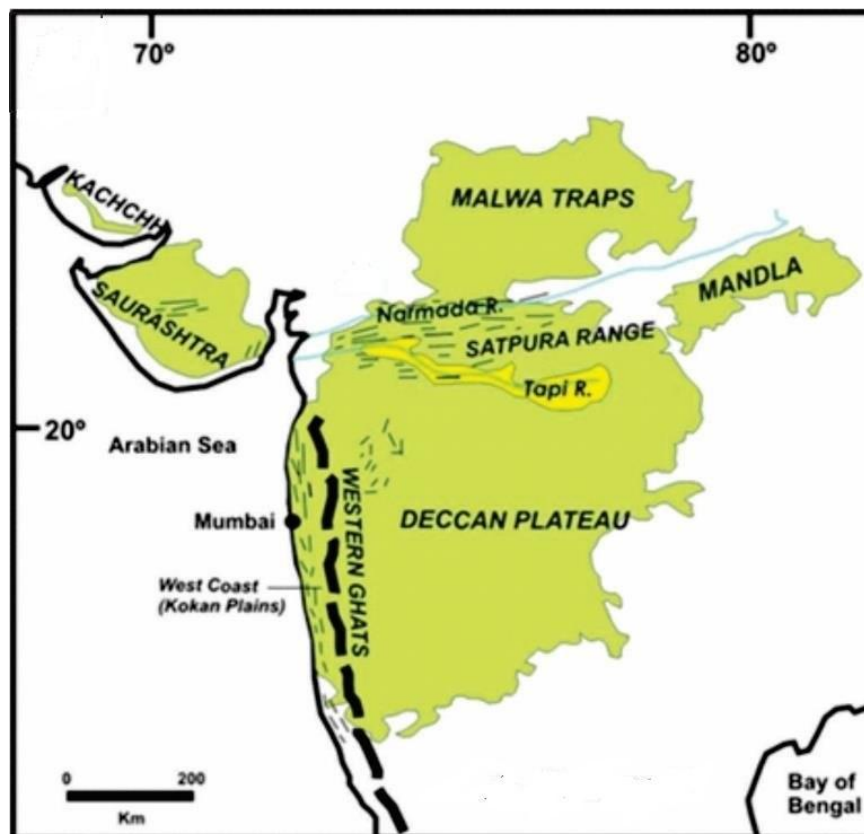


**DECCAN TRAPS**

The term 'Deccan Traps' was first used by W H. Sykes (1833). The term Deccan' is derived from the vernacular "Dakshin' meaning South. Medlicott (1873) applied a short term for basaltic sedimentary rock as 'Trap'.

In India, volcanic rock formation occurred in late Cretaceous or early Eocene period which is known as Deccan Traps. It covers an area of 77,220 sq. kilometers. In the word of Prof. Sahni "An Episode of Tertiary Era" Deccan Trap is the greatest volcanic formation in Indian geology. It is thought that towards the end of Cretaceous period subsequent to the deposition of Bagh and the Lameta beds, a large part of Peninsula was affected by outburst of the volcanic energy, resulting in the eruption of lava in large quantity and associated pyroclastic materials (Pascoe, 1950). This eruption proceeded from fissures and cracks in the surface of earth, from which highly liquid lava come out intermittently, till a thickness of some thousand feet of horizontal sheet of basalt of igneous origin had resulted, obliterating all the previously existing topography of the country and converted into large volcanic plateau. The Deccan Traps of India cover a large area of Kutch, Saurashtra, Gujrat, Maharashtra, Madhya Pradesh and Andhra Pradesh (Figure 1).

While according to Vredenburg (1910) Deccan trap formation is not entirely of basalts. In some parts, the sheets of basaltic lava are interbedded with great mass of tuff. During intervals between the two successive volcanic eruption fresh water lakes were formed in which sedimentation took place. These sedimentary beds are known as Intertrappean beds which preserved fossil flora and fauna.



**Figure-1**

## Thickness of Deccan Traps

Deccan trap is 2000-3000 m thick along the west coast of Bombay, 150 m thick at Amarkantak and Surguja, 90 m thick at Chhindwara, 30-42 m at Mohgaonkalan and Palodon (Sahni and Rode, 1937) and 45 m at Nagpur (Pande, Suryanarayan and Deshpande, 1969). While near Belgaum the southern limit of trap is about 60 m thick. Sind has minimum thickness of 30-60 m. According to Fermor (1926) in Bhusaval region it shows 29 flows. Each flow has 4-30 m thickness.

## Structure

The rocks show well developed columnar jointing caused by tensile stress, the result of contraction due to cooling. The columns are polygonal in shape and the traps show a good deal of amygdoloidal structure.

## Petrology

Deccan Trap in general belongs to the type called 'Plateau basalt' (Washington, 1922). It is commonly seen that the rock is normal augite-basalt. H. S. Washington (1922) gave chemical composition in terms of minerals as follows-

Quartz	2-5 %	Orthoclase	5-7 %
Labradorite	40-50 %	Pyroxene	30-40 %
Iron-oxide	10-12 %		

## Age

The Deccan volcanism produced outpourings of lavas over an extended period of time from c. 68 to 60 Ma (reviews by Pande 2002) possibly in pulses (Chenet et al. 2007). Peak volcanism occurred at c. 65 + 0.5 Ma (Chenet et al. 2007; review by Valdiya 2010). Briefly, one would be correct to say that the "bulk" (95%) of the lava erupted some 65-66 ( $\pm 2$ ) m.y. ago.

## Stratigraphy

The stratigraphic relation of Deccan traps among themselves, with overlying and underlying rocks is given in the Table-1(Wadia, 1966).

Eocene of Kutch -Nummulities of Surat and Broach		
<i>Unconformity</i>		
D E C C A N  T R A P S	Upper Traps (450 m)	Lava flows with numerous ash-beds; sedimentary intertrappean beds of Bombay and Kathiawar with large number of animal fossils i.e. vertebrata and molluscan shells.
	Middle Traps (1200 m)	Lavas and ash-beds forming thickest part of the series of Malwa and Central India. No fossiliferous intertrappean beds.
	Lower Traps (150 m)	Lavas with few ash-beds and numerous Fossiliferous intertrappeans of Madhya Pradesh, Narmada etc.
<i>Unconformity</i>		
Lameta or Infra-trappean series; Bagh beds, Jabalpur beds and older rocks		

**Table-1**