INTACH

GEO HERITAGE SITES OF INDIA:

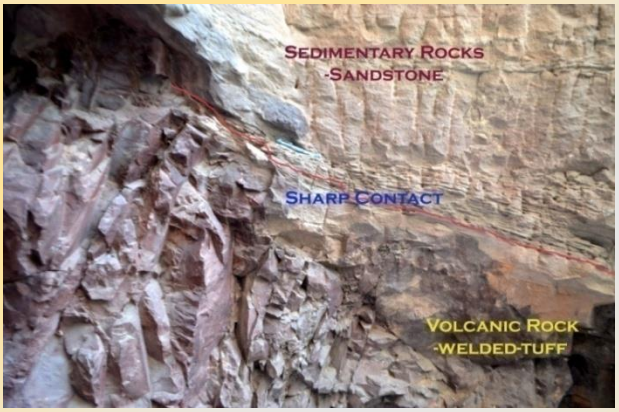
MALANI IGNEOUS SUITE CONTACT AND WELDED TUFF

Aravalis, the oldest mountain range in the world extends from Gujarat to Punjab. It is spread across the entire state of Rajasthan, which is a hotspot of geology. The Malani igneous suite and the Welded Tuff is one of the few such sites present here. Different varieties ofigneous rocks comprising acid, intermediate, basic, ultrabasic and alkalineintrusive and extrusive besides sedimentary are exposed in this region.

History

"Malani" was the term named after Mallinath Rawat, a prominent saint of the region comprising Barmer, Jaisalmer, Nagour and Sindhri in 14th century. Later "Malani" became the largest Paragana of the Jodhpur State in 1891 after it came under British control. The name "Malani" was later associated with the "Volcanic Series" of porphyritic lavas and ash beds that have since been found to be the most widespread rocks ofthis region.

What is Malani Igneous Suite



The Malani igneous suiterepresents the last phase of igneous activity of Precambrian age in the Indian Subcontinent at the foot of the Mehrangarh Fort in Jodhpur city and is a National geological Monument (NGM). The entire area, known as the Malani Igneous Province comprises parts covering parts of Jodhpur, Pali, Sirohi, Jalore, Barmer and Jaisalmer districts.

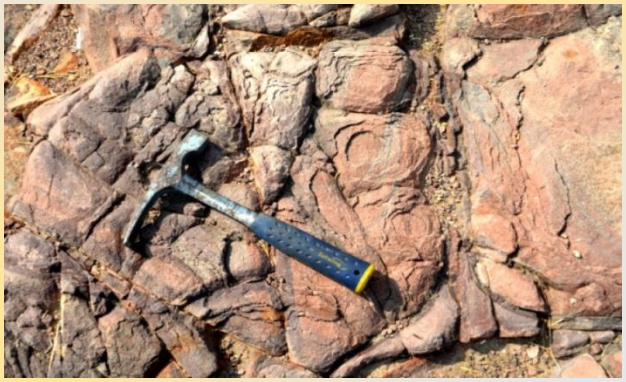
Features

The last phase of igneous activity during Precambrian age of the Indian Subcontinent can be seen here. The rocks arecharacterised by purple to red and ash coloured laminated tuff with chocolate coloured chalcedony, dark red obsidian, purple, reddish, buff, whitish and greyishcoloured rhyolitic tuff related to ignimbrite. The contact is enhanced by the multi-coloured igneous suite in contact with light coloured Jodhpur sandstone.

Welded Tuff, Jodhpur District

In the region around the Mehrangarh Fort, terrace like weathered Malani volcanic rocks can be found. The welded tuff is a product of material that spurted out from volcanic vents and was carried away by air to settle down. They are composed of glass, quartz and feldspar. On cooling they developed joints which give rise to columns and terraces.GSI has declared the site as a National Geological Monument in 1976.

Features



The Malani rhyolites (volcanic rocks) comprise pink, maroon, brown, purple, grey and green rhyolite separated by tuff, welded tuff and pyroclastic rocks (formed by accumulation of material generated by explosive fragmentation of magma). The columnar joints (explained in the worksheet on

Columnar Basalt, Coconut Island) developed are rectangular to hexagonal, attaining a length of 30m or more at places. It is overlain by deep purple colouredrhyolites containing crystalline particles. The pyroclastics can be seen intermixed with lava.

Current Status and Conservation Measures

Both the National Geological Monumentsare not conserved and lie in a neglected state. No proper signages are present. This site should have an Interpretation Centre explaining volcanoes and their functioning followed by sedimentation witnessed by this area, its unique igneous and sedimentary structures in under formed rocks and palaeogeography of the area since Precambrian times.If this is explained in non technical terms then it would generate great interest to visitors.

ACTIVITY

1. Find out the different stages of the formation of our planet. Find out the importance of the Indian subcontinent in its formation.

2. What are some other important geological phenomena which can be seen in the Aravali Region?

3. Draw a sketch of the Mehrangarh Fort laying stress on its surrounding rocky region.

References

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