

**CHAPTER VI**  
**SUMMARY**

**&**

**CONCLUSIONS**

## SUMMARY AND CONCLUSIONS

The present studies include the results of the field and laboratory investigations carried out to analyse the coastal geomorphology of the area between Bhatya creek and Vijaydurg creek, Dist. Ratnagiri, Maharashtra.

The geology of the area investigated is represented by the Deccan Trap basalt, capped by laterites. The basalt flows are overlain by the Quaternary Sediments. These coastal Quaternary Sediments are essentially confined to the coast.

The studies have concluded that there is a close relation between the lineament analysis carried out with the help of the topographic sheets and LANDSAT-1 imageries. The study helps to reveal the structural history of the area. In the area investigated, it has been found that the maxima of the lineaments lies in N 50<sup>o</sup> E direction, submaxima is represented by N 10<sup>o</sup> E direction, whereas, the other prominent direction lies between N 40<sup>o</sup> W on the LANDSAT-1 imagery. It has been found that the maxima of the lineaments closely matches with N 50<sup>o</sup> E direction. It is observed that major rivers of the area under investigation have been controlled by these lineaments. It is interesting to note that most of the streams from the investigated area are characterised by straight segments with sharp angled turns, indicative of structural control.

The geomorphic studies of the area, supplemented with the field checks, have revealed the erosional and depositional landforms of both fluvial and marine origin. The various landforms have been identified and are classified. The detailed morphometric studies have been carried out, the conclusions obtained there from have been described in the following paragraphs.

The presence of five planar surfaces, viz; at 30 m., 90 m., 120 m., 180 m. and above 260 m. which have been confirmed in the field.

The various basin parameters have indicated that the drainage development has been controlled to a certain extent by the lithology and the structural elements present in the area.

It is observed that in general the area reflects two prominent slope directions, i.e. from NE to SW and SE to NW. The valley side slope analysis revealed that the area is characterised by a gentle slope.

The values of the bifurcation ratio obtained for the various basins have indicated that the low values for the higher order streams suggest less branching probability. These streams have strong geological control in the development of the drainage pattern. It has been observed that its value lies between 3 and 5 which is due to the homogeneity in the lithology of the area. Decrease in the

values of the bifurcation ratio for the higher order stream segments appears to be due to development of the drainage on the Quaternary sediments. The lengths of the higher order streams are found to be greater than the normal which could be due to the headward erosion, guided by the structurally weaker zones. The drainage density values for the higher order basins are lower which have been ascribed to the fact that the streams have reached to more or less low elevated areas. From the values of the constant of channel maintenance, it is inferred that for the basins 2 and 8 of fifth order, the geomorphic evolution is more or less identical and therefore degree of the dissection of topography is also same for these two basins. From these values, it has been suggested that there appears to be no strong geologic control in the geomorphic evolution of these basins. The hypsometric integrals, for the higher order streams have shown the monadnock stage of aeration which represents the residual hills. From the relative relief study all the basins of fifth order, in general, indicate the highland topography in the area of investigation. From the average slope study, it is found that these basins fall under gentle and moderate type of slope categories. From the above, it can be concluded that the area consists of hills of skeletal ridges of the Sahyadri ranges which are completely denudational in genesis and are originated due to the neotectonic activity. This was simultaneously followed by the various erosional agents.

The stream gradient values obtained for all the basins of fifth order fall under the zone of low land, up-land and combined type. These are generated due to the influence of the combination of diverse lithological entities and the contrasting geomorphic province.

The high stream gradient index value is due to the presence of the resistant rock and it could be the zone of uplift and erosional disequilibrium between the two drainage systems of the area.

It has been observed from the topographic sections, that the area north of Purangad creek consists mainly of erosional features. It is therefore an area of submergence. The area south of Purangad consists of depositional features and therefore it is regarded as an area of emergence, thereby indicating uplift.

From the various geomorphological studies carried out for the area as stated above reveal that the bed rock, i.e. lithology, the structural elements, i.e. the lineaments, represented at places by the shear zones have played significant role in the evolution of the variety of landforms. The presence of raised marine beaches along the coast has been ascribed to be due to the change in sea-level, which in turn is due to the result of climatic change during the Quaternary. It has also been inferred that climatic factor has also played some role in the evolution of the landforms, from the area investigated.