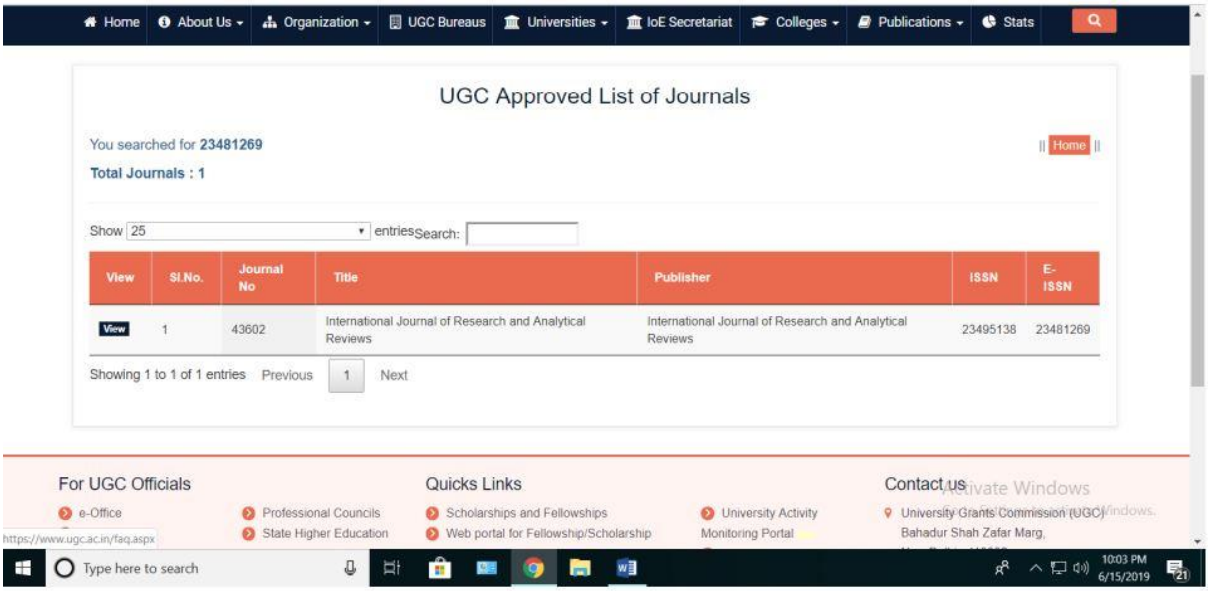


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# Petrographic and depositional characteristics of the EoceneSubathu Formation rocks from the Kalakot area(Jammu Region), western Himalayan Foreland Basin, India.

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**ABSTRACT** *The megascopic and petrographic investigations of the Eocene sediments of the Subathu Formation identified nine facies exhibiting cyclic arrangements in the Subathu Formation in Jammu area, with top of the formation showing tidal cyclicity in the form of alternating thick marl and thin limestone laminae. The abundance of pyrite framboids indicate strongly reducing conditions and their early diagenetic origin in the presence of adequate amounts of iron and sulphur. Small phosphate nodules probably formed just beneath the sediment-water interface.The high ash contents of carbonaceous shales and coals and euxinic conditions probably causing high sulphur content was due to the intermittent sedimentation.The benthic foraminiferal assemblage present in the lime-mudstone indicates a sub tidal bathymetry falling.The lime-mudstone was deposited in low-energy conditions in a turbid lagoon. The presence of mud cracks reveals shallowing of the basin and exposure of the sediments.The coarse-grained limestone with full of oyster shells indicates high-energy conditions. Mixed fresh and brackish water fauna indicate an estuary or outer tidal-flat, suggesting infrequent flooding during high wind-tides under prolonged exposure originated purple shale in supratidal zone.*

***Keywords:***

## 1. Introduction

The Himalayan Foreland Basin (HFB) originated due to the collisional tectonics between the Indian and the Eurasian plates, with the initial phase of collision having taken place c. 50 Ma ago.The collision became more intense during the Eocene, causing the egress and shifting of the deformation front towards the south, leading to the formation of the peripheral foredeep (foreland basin). The peneplanation of the egressed parts supplied the sediments which accumulated in the foreland basin as Subathu Formation. The present investigation comprises detailed field studies as well as megascopic and microscopic analyses of the Eocence sediments of the Subathu Formation to ascertain the depositional environment.

## 2. Regional Geology

The basement of Cenozoic rock in the HFB is of the Sirban Limestone Formation which occurs as inliers unconformably overlain by the Subathu Formation.The Eocene Subathu Formation is in turn followed by the Murree Group and Siwalik Group with no major hiatus.The Stratigraphic sequence of the Paleogene rocks is given in the table 1:

**Table 1. Stratigraphic sequence of Tertiaries**

| Group | Formation | Age |
|---|---|---|
| Siwalik Group | Upper Siwalik Subgroup<br>Middle Siwalik Subgroup<br>Lower Siwalik Subgroup | Middle Miocene to Pleistocene |
| Murree Group | Upper Murree Formation<br>Lower Murree Formation | Middle Eocene to Lower Miocene |
| | Subathu Formation | Late Paleocene to Eocene |