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Reconstruction of Depositional Environment and Geological Development of Harz Mountains

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SUMMARY

The field trip was in the Harz Mountains (Germany). To understand the geological history and to understand the tectonic were created a geological map, a schmidt diagramm and a stratigraphic profile. In the geological map are present 12 layers, which take place from the lower Triassic to lower Cretaceous. In the Schmit diagramm were drawn 5 rock units with the azimuth and plunge. In this way is to recognize that the values are in the southern part of the map higher than in the northern part. The Reason is that are salt diapirs risen up in the south of the Harz Mountains. In the profile shows different thickness for each layer. On the based of the profile are available different deposition areas for the rocks. The investigation shows different rocks formed in variable depositional environments and climates resulting in different bed thickness and fossil-content

I. Introduction

The northern part of the Harz Mountains (Germany) is the research area of the field trip. The purpose of studying this area is to absolve a geological field trip with focus on improvement of mapping-skills and to understand the geological history. The strata consist of the Mesozoic rocks from the geological German Triassic with the geological eras Triassic, Jurassic and Cretaceous. Salt diapir forced tectonics as well as sedimentary processes under marine and terrestrial conditions can be determined by measuring plunge and azimuth of rocks.

II. Methods

For this research were created a geological map, a Schmidt diagram as well as a stratigraphic profile. Rock samples were collected and arranged into the map. The orientation of the rock is displayed in the Schmidt diagram. The profile leads to findings about the layer thickness, reconstructing the geological history and understanding the sedimentology variables.

III. Results and Interpretation

A total of 12 different geological units were mapped, which take place from the lower Triassic to lower Cretaceous (Fig.1).

Figure 1 Geological map of the area around the village Everode containing 12 different geological units.

Figure 2 Azimut and plunge of 5 rock samples collected during the fieldtrip.

Values of azimuth and plunge gathered from collected rock samples are higher in the southern map-area than in the northern part. The reason for this are rising salt diapirs in the south of the Harz Mountains. The thickness of each unit differs, the Buntsandstein units are 700m thick at last and the Zellendolomit measures only 65m (Fig.3).

Figure 3 Sedimentary profile of research-area shows different thickness for each layer.

Different limestones containing fossils may show a deposition in an environment under marina conditions for the most stone units. On the other hand, the Buntsandstein facies were formed and deposited during time of arid climate in the German Triassic, confirmed, by dry cracks on the rock surface. Few fossils inside the Zellendolomit can be interpreted as a time with harsh environment for marine life. In contrast many fossils in the Ceratite-limestone stand for excellent marine living conditions.

IV. Conclusion

The investigation shows different rocks formed in variable depositional environments and climates resulting in different bed thickness and fossil-content. Salt dome-tectonics being stronger in the southern part of the map currently influences surface morphology in the Hart Mountains.

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VI. References

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