



Reefs and Microbialites

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ABSTRACT

Reefs and microbialites are important components of shallow marine systems in places where the sedimentation rate is relatively low, and therefore are components of limestone sequences. Although reefs are rare in clastic sequences, microbialites can be present in clastics, but overall are much less abundant and important than those in carbonates. Reefs and microbialites in carbonates relates to the classification of carbonate rocks, which is an area of complexity and continuing debate.

Microbialites are the oldest fossils, dating from stromatolites at around 3500Ma, and these structures may be considered as reefs in the shallow marine systems of the Precambrian. However, metazoan reefs developed in the late Precambrian, and then took over from microbialites through the Phanerozoic. Nevertheless, microbialites remain an important component in fossil reef construction and must be considered together with metazoan structures as reef-builders. Thus it is true that reefs may contain microbialites, but it is also true that reefs may be constructed entirely from microbialites.

The presentation thus describes types and classifications of reefs and microbialites components and constructions and presents some case studies to show the variability and importance of these structures. The presentation file is available and contains links to references.

The presentation also stresses the importance of understanding rock structures in 3 dimensions and encourages practice in developing 3D reconstructions of outcrops in order to help understand the nature of reefs and microbialite systems.

Finally, it will be clear from the presentation that reefs and microbialites are found at different scales; therefore their study requires knowledge of the large scale (big picture) of these limestone deposits, but also needs focus on small scales of thin sections, noting that big structures may be built by small organisms! All investigations of reefs and microbialites need high quality fieldwork that can be used to support further research into details and such approaches as geochemical analyses.