

Comparison of the Darwin atoll and the Mecsek type reef

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Darwin Atoll is a circularly shaped structure of coral-algal reef surrounding a lagoon in a tropical oceanic environment. The terminology of this special type of reef formulated by DARWIN (1842) contains three stages. The first stage is the *fringing reef*, the second one is the *barrier reef* lying offshore with a lagoon. Around volcano coral reef was formed, especially during the warming up periods when the sea-level increases and the reef construction continues (NEUMANN & MACINTY, 1985). Its most matured stage is the real *Darwin atoll*. Dependent on the global sea-level changes and the local volcanic activity the reef could grow or erode. According to GRIGG (2008) at the Darwin Points the coral can grow, drown and bioerode. The form of the coral reef can vary from the ideal circular, rectangular e.g. Thureia Darwin atoll, to the irregular as the elongated Kwajaline Darwin atoll. Independently from their shape they can be typical atolls, the form of which is probably preserved the original shape of the one-time volcano.

In addition to the tropical environment the most important condition is the hotspot developed in the mantle located below the oceanic crust and can produce giant volcanos. Because of the intensive subduction of the oceanic plate it is continuously moving, while the position of the hotspot stay in its original position. During the study of the Mecsekjános Bazalt (MBFm) in the Mecsek Mts, Hungary there are plenty of pebbles of well-rounded basalt, various coral colonies, and different types of bivalves incl. rudists. On the slope of the volcano basalt pebbles and various fossils slit down into the basin. The MBFm is covered by Hidasivölgy Marl (HMFm) followed by hyaloclastite and then by Magyaregregy Conglomerate (MCFm), occasionally with different fossils: molluscs and corals (CSÁSZÁR & TURNSEK, 1997). There is tectonic contact between the Upper Jurassic limestone and the hyaloclastite, with ammonite-bearing sandstone and marl in the HMFm. The same is with the MCFm. In the Vékény Valley above the MBFm and HMFm as erosional remnant the red, pelagic Vékény Marl Fm (VMFm) is also found together with ammonites and planktonic forams. Based on the poorly developed pillow lavas taken from the base of the volcanic rocks the water depth was approx. 500 m. At first glance the situation resembles that one at the Nicaraguan Rise, where the majority of the volcanos doesn't have the characteristics of the Darwin atoll. As a consequence, instead of Mecsek-type atoll we suggest to use it Mecsek-type reef, where the continental crust is deepening and thinning towards the oceanic crust.

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