Paper Number: 3904

Modern Facies Change: The replacement of Corals by Crustose Coralline Algae and Rhodoids, La Parguera-Isla de Mona, Puerto Rico

Abrahamsson, K.[1] and González, L.A.[1]

[1]Department of Geology, The University of Kansas, 1475 Jayhawk Blvd., Lawrence, KS 66045

This project focuses on the modern replacement of corals and other reef flat and back reef biota by crustose coralline algae and rhodoids in Margarita and Media Luna Reefs in south western Puerto Rico and Isla de Mona (Fig. 1). High resolution analysis, including petrographic, elemental, isotopic, and geomicrobiological methods, is being conducted on crustose coralline algae and rhodoids collected from reefs near La Parguera in southwestern Puerto Rico and Isla de Mona.

In Puerto Rico rhodoids were limited to deep reef communities (>50m), such as the Agelas Reef at Isla de Desecheo [1]. However, rhodoids of Media Luna and Margarita Reefs near La Parguera (Fig. 2) and others found in Isla de Mona in Puerto Rico exemplify changes in crustose coralline algae and rhodoid migration from the mesophotic environment to the photic environments in the reef flat and shallow back reef.

Figure 1: Google Earth image of study area location [3].

This study integrates diverse field and laboratory quantitative data to investigate the controls of oceanographic conditions on the recent genesis and distribution of crustose coralline red algae and rhodoids in shallow environments.

Results will offer an increased understanding of carbonate systems containing crustose coralline algae and rhodoids in the geologic past. In particular, this research will provide insight into why rhodoids are dominant in shallow water systems during certain periods of time, such as the Late Carboniferous and Permian [2].

Figure 2: Transverse section through cylindrical rhodoid with a maximum diameter of 5.4 cm [4].

References:

[1] García-Sais, J. R. et al. (2007) Caribbean Fisheries Management Council: 1-98

[2] Flügel, E. (2004) Springer Science & Business Media: 1-976

[3] Google Earth (2015)

[4] Ballantine, D. L. et al. (2000) Springer-Verlag: 75-81