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# Spatial distribution and dynamics of chemosynthetic communities contributed to characterize fluid flow regimes of a giant pockmark in the deep Congo Basin

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## R esum e

Deep-sea active pockmarks are colonized by benthic ecosystems typically sustained by methane-rich fluid emissions (cold seeps) widely occurring along deep continental margins. Usually high biological production is based on methane and sulfide oxidation by microorganisms, sulfide compounds being produced in the upper sediment layers from sulphate-reduction. The invertebrate biomass is dominated by symbiont-bearing species, frequently siboglinid tubeworms, mytilid and vesicomid bivalves, in aggregations visible on the seafloor. As these symbiont-bearing taxa either depend on methane and/or hydrogen sulfide for their nutrition, they are good indicators of fluid emissions distribution, characteristics and dynamics.

The Regab giant pockmark, located north of the Congo deep-sea channel at 3160 m depth, was investigated by several ROV cruises, first in 2001 (Ondreas et al. 2005). This is an interesting case study, as colonized by diverse symbiotrophic species distributed in several coalescent pockmarks. Ten years later, it was re-visited with the Victor 6000 ROV equipped with a multibeam providing high resolution bathymetry and backscatter, as well as photo- and video-mosaicking from optical surveys.

All these data were combined to give a detailed view of the pockmark, resulting in defining different fluid flow regimes (Marcon et al. 2014a). The comparative distribution of faunal associations 10 years apart also gave insights on the dynamic of fluid emissions in the different zones of the pockmark (Marcon et al. 2014b). These studies deciphering relationships between fauna and geological processes, contribute to assess the role of the benthic biological filter on methane emissions through the seafloor to the water column.

Marcon, Y., Ondr eas, et al. 2014a. Fluid flow regimes and growth of a giant pockmark. *Geology* 42, 63-66.

Marcon, Y., Sahling, H., et al. 2014b. Distribution and temporal variation of mega-fauna at the Regab pockmark (Northern Congo Fan), based on a comparison of videomosaics and geographic information systems analyses. *Mar. Ecol.* 35, 77-95.

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\*Intervenant

Ondréas, H., Olu, K., et al., 2005. ROV study of a giant pockmark on the Gabon continental margin. *Geo-Mar. Lett.* 25, 281.