



## **Distribution of Mud volcanism and control of seafloor seepage related authigenic carbonates in the Gulf of Cadiz**

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Numerous seafloor occurrences of authigenic carbonates have been discovered in the Gulf of Cadiz during the last 5 years. Mineralogic, isotopic and biomarker analyses indicate that those authigenic carbonates (dolomite crusts, dolomite nodules, chimneys or filled burrows and aragonitic slabs or pavements) are methane-seep related. Dating of some of those samples indicate that they were formed during a long span of time (episodically during the last 5ky), representing episodes of intense methane flux to the seafloor. Seep sites and authigenic carbonate deposits were initially assumed as isolated occurrences, with the increase of the surveyed coverage, they now have been encountered along several other places (from 500 and 1200 m water depth), indicating that they can be much common features than it was expected. On this work it is described an quantitative evaluation of the distribution of seafloor fluid seepage indicators observed during underwater video profiles, during samples retrieval by video controlled grab and correlated with sediment samples and acoustic characteristics on the seismic profiles and side-scan sonar backscatter. A relationship between the occurrences of the authigenic carbonates with other fluid escape structures such as mud volcanoes and mud diapirs is seek. The occurrence of the seeping sites are in close relation with mud volcanoes and mud diapirs, indicating those structures as the preferential pathways for fluid escape. The Mediterranean Outflow Water (MOW) seems

to have an effective control on the occurrence of the different types of authigenic carbonates, dolomite crusts, nodules and chimneys occurs in places where the MOW have a strong erosive effect.