THE RAMON MARGALEF SUMMER COLLOQUIA
A view of the ocean from Barcelona

Conference Title:

The benthic boundary layer: feedback between geological and biological processes

Author:

Roger Urgeles
Institut de Ciencies del Mar (CSIC)

Abstract:

The seafloor is regarded by many as the ultimate boundary for marine ecosystems and gives rise to the concept of benthic boundary layer (BBL). The interface between the lithosphere (seafloor) and ocean (seawater) is the location of multiple physical, geochemical and biological processes. The nature and intensity of these processes is governed by the seafloor morphology, seafloor nature and active geological processes at their origin. Geological processes impact the marine environment in the BBL at different temporal and spatial scales. Earthquakes produce short-term effects (landslides and tsunamis) that threaten marine ecosystems, while generating slope changes that favor colonization by one species over another. Emission of methane and other fluids at the seafloor creates pockmarks and mud volcanoes and produce carbonate rock formations, while tectonic and magmatic processes originate hydrothermal vents at active spreading centers. Fluid emissions initially allow for the development of chemosynthetic communities and later installation of cold-water corals. Submarine canyons are the primary pathway for sediment and organic matter from the continental shelf to the deep sea and may therefore become hotspots of benthic biomass. However, high rates of sediment supply can also hinder the establishment of benthic communities. In this lecture we will review the geological processes acting on the seabed that may have an impact on benthic ecosystems and we will learn how geoscientists map the seafloor and subseaflor using geophysical

techniques and determine the processes occurring in the benthic boundary layer using in-situ measurements and by sampling the resulting deposits.

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