

Seasonal assessment of macroalgal communities in CO₂ vents: hypnophycean species enhance differences between low pH and control zones

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Abstract:

Most studies of natural CO₂ vents have focused on examining the response of organisms across a CO₂/pH gradient during a single sampling period. However, the response of a community needs to be studied over a period of at least one year, as some elements of algal communities are ephemeral and only develop for a few months of the year. Here we studied the algal communities at the Punta de Fuencaliente CO₂ vent, an anomaly located in shallow waters SW of La Palma (Canary Islands). Quantitative sampling was carried out in four periods over one year, in two different pH zones (7.6 - 7.8 pH units) and two control zones as a reference. All substrates sampled were boulders or rocky platforms between 0-4 m depth. Species abundance was determined by examining photoquadrats. Some algae were collected to confirm the species in the laboratory. During all seasons, algal communities differed between pH and control zones, mainly based on the abundance of perennial encrusting calcareous algae (*Corallinales* s.l., *Peyssonnelia*) or ephemeral calcareous algae (*Jania*). In spring and summer, however, these differences were enhanced by the contribution of other calcareous algae, hypnophycean species of the Order *Nemaliales*, such as *Ganonema* and *Liagora*, whose gametophytes proliferated and dominated the communities in the control zones during these months, but not in the low pH zones.