The role of environmental filtering on community structure in the vicinity of hydrothermal vents in the Lucky Strike vent field (Mid-Atlantic Ridge)

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Although spatially fragmented, nascent deep-sea hydrothermal vent (HV) are rapidly colonized by a pool of regional species creating endemic communities based on chemosynthetic productivity. Similarly, sunken wood create unique island-like habitats attracting opportunists and specialist fauna that distinctly utilize “wood falls” and even exploit the microbial chemosynthetic productivity produced by wood degradation. Globally, environmental filtering significantly influences community structure and may also distinctly drive it at these cognate habitats. Here, we aim to study the biodiversity of HV and artificial wood substratum in order to shed light on the role of environmental characteristics and substratum nature in driving community structure. We studied colonizing macrofauna of triplicate wood and slate substrata deployed during two years (2013-2015) at sites of varying hydrothermal activity (from high to non-active) in the vicinity and away from the Eiffel Tower edifice on the Lucky Strike vent field (MAR). We hypothesize that environmental characteristics largely drives community structure at sites of hydrothermal vent activity, whereas substratum nature takes over in sites with less hydrothermal influence. Species composition, diversity and abundance of colonizing macrofauna were compared with the results from previous pilot experiments. This experiment will help to understand the role of different factors in structuring benthic communities at different cognate chemosynthetic deep-sea habitats, which nowadays face many anthropogenic threats such as deep-sea mining and climate change.