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Primary report on IODP 329 Expedition on South Pacific Gyre Microbiology

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Integrated Ocean Drilling Program (IODP) riser-less drilling expedition (#329) was conducted in the region of the South Pacific Gyre. Our principal objectives are to: (1) document the habitats, activities, composition and biomass of microbial communities in subseafloor sediments with very low total activity, (2) test how oceanographic factors (such as surface ocean chlorophyll content and organic flux to the seafloor) control variation in sedimentary habitats, activities and communities from gyre center to gyre margin, (3) quantify the extent to which these sedimentary communities may be supplied with electron donors by water radiolysis, a process independent of the surface photosynthetic world, and (4) determine how basement habitats, potential activities and communities vary with crustal age and hydrologic regime in a region of fast seafloor spreading and thin sediment cover. To meet these objectives, the entire sediment columns at seven sites and the upper 100 m of basement at three sites were investigated. The initial outcomes will be presented in addition to the outline of this expedition.

Keywords: Deep biosphere, South Pacific gyre, subseafloor life