

## The low temperature hyperalkaline hydrothermal system of the Prony Bay (New Caledonia)

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The Prony hydrothermal field (PHF) is located at the southern end of New Caledonia mainland on a serpentinized peridotitic substratum. Low temperature (up to 40°C) high pH (up to 11) waters of meteoric origin discharge in the lagoon at springs either underwater, on land (Kaoris) or uncovered at low tide (Bain des Japonais, BdJ). Detailed mapping and extensive sampling (water, gas and concretion) of the PHF have been carried out since 2005 [1], especially during the 2011 HYDROPRONY cruise [2]. Mixing of the hyperalkaline Ca-OH type waters with seawater [3] as well as organomineralization processes [4] lead to the formation of a field of Ca-carbonates and brucite needles among which the famous 38m-high Aiguille de Prony. Gas bubbles sampled at BdJ and Kaoris are dominated by nitrogen and enriched in methane and hydrogen [3]. The archaeal diversity is limited and dominated by few uncultured *Methanosarcinales* [7,8]. Conversely bacterial communities are more diverse, abundant and mainly composed of *Chloroflexi*, *Deinococcus-Thermus*, *Firmicutes* and *Proteobacteria* [7]. New alkaliphilic bacterial species, representing unique anaerobes reported from serpentinite-hosted environments, have been isolated [5,6]. A 6-year investigation revealed the stability of these indigenous communities [8]. The Prony Bay hydrothermal system is a unique, easily accessible, environment at the interface between continental and marine settings that allows studying mineral-biota interactions at hyperalkaline conditions.

[1] Pelletier et al. (2006), IRD Nouméa Report (70) : 44 p., [2] Pelletier et al. (2011), <http://dx.doi.org/10.17600/11100060> ; [3] Monnin et al. (2014), *Biogeosciences*, 11(20): 5687-5706; [4] Pisapia et al. (submitted), *Front. Microbiol.*; [5] Ben Aissa, F. et al., (2015) *Extremophiles*, 19(1), 183-188; [6] Mei et al (2014), *Int. J. Hydrogen Energ.* 39(34): 19465–19473; [7] Quemeneur et al (2014), *Env. Microb. Reports*, 6(6): 665-674; [8] Postec et al. (2015), *Front. Microbiol.*, 6.