



## **Hydroacoustic detection of signals emanating from large icebergs in the Southern Indian and Pacific Oceans**

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We report on the detection, by the French Polynesian seismic network, of hydroacoustic signals generated inside large icebergs, either "parked" along the Wilkes coast of Antarctica in the Indian Ocean, or drifting in the Southern Pacific Ocean between latitudes of 55 and 65 deg. S, during the years 2002-2004. The signals can be classified into two very broad families, based on the nature of their spectra. A first group features prominently monochromatic signals, whose frequency can however fluctuate with time during a single sequence of emission (typically lasting a few to a few tens of minutes). Such signals are generally reminiscent of those detected in 2000 in the Ross Sea (Talandier et al., 2002), and are almost exclusively generated in the Indian Ocean "iceberg parking lot", between longitudes 144 and 156 deg. E. A new family of signals features a much broader spectrum, superimposed on a number of preferential frequencies suggesting the background activation of a number of resonators; these signals occur both in the parking lot and in the Southern Pacific. Further variations in spectra are documented inside each family. On the basis of similar in situ observations on Ross Sea icebergs under project SOUTHERBERG, the first family is generally interpreted as expressing a stick-and-slip process during collisions between large iceberg masses. The second family of signals are observed during exceptional episodes of the otherwise silent drift of the icebergs in the deep Pacific Basin, some of which correlate with their passage over the various fronts defining the oceanographic Southern convergence zone. Finally, a most recent episode of activity, generally similar to the above first family, was detected on 03-04 December 2004, at the ocean entry of the Dibble Ice Tongue, 600 km west of the parking lot along the coast of Antarctica.