

Polarization pattern of low and mid-frequency magnetic pulsations in the polar cap: a comprehensive analysis at Terra Nova Bay (Antarctica).

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A comparison of the results obtained in previous investigations allows to focus common elements and major differences in the polarization aspects of ULF pulsations in different frequency ranges at Terra Nova Bay (Antarctica, CGM $\lambda \approx 80^\circ$). It allows to identify the global characteristics of the polarization pattern of polar cap pulsations in a wide frequency range ($f \approx 1$ -100 mHz). Basically, between $f \approx 1.5$ -4.5 mHz, the day can be divided into four sectors with alternate polarizations. The local time dependence of the observed pattern can be tentatively interpreted in terms of a resonance region with a lower latitude boundary located somewhat below $\lambda \approx 80^\circ$ in the noon sector, and an higher latitude boundary in the deep polar cap. Moreover, in the morning sector, the resonance region would extend to lower latitudes than in the evening sector. The proposed profile of the resonant region can interpret also the results obtained at cusp/auroral stations. Some evidence for field line resonance effects can be detected at Terra Nova Bay up to $f \approx 16$ mHz, at least in the morning/prenoon sector. Above $f \approx 20$ mHz, the experimental observations might be considered consistent with an additional propagation path of mid-frequency pulsations via the magnetotail lobe.