The effects of ionospheric 'phase mixing' on a distributed driven shear Alfvén ulf pulsation'

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Abstract. A numerical simulation study of the ultra-low frequency (ULF) H-component magnetic field at the Earth's surface arising from a perturbation ionospheric Hall current has been developed. The Hall current system is driven by field-aligned currents (FACs) associated with shear Alfvén field line resonances (FLRs) driven by fast mode global cavity oscillations. The ionospheric phase mixing of the Hall current manifests itself in a number of ways in the ground field, these are: (i) Smoothing the spectral maxima of the ground signal; (ii) Loss in clarity of the harmonic structure of the spectra; (iii) A small increase in the damping rate of the ULF wave at the resonance latitude and (iv) small localised minimum in the spectra at the resonance latitude.

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