



## **Plasmaspheric hiss as an external excitation source of the Earth-ionosphere cavity**

Tamas Bozoki (1,2), Gabriella Satori (1), and Peter Steinbach (2)

(1) Geodetic and Geophysical Institute, RCAES, HAS, Sopron, Hungary (bozoki.tamas@csfk.mta.hu), (2) Space Research Laboratory, Eotvos Lorand University, Budapest, Hungary

Plasmaspheric hiss waves, which are known to have important role in radiation belt dynamics, were regularly observed on satellites and on ground stations above 100 Hz. Recently Van Allen Probe satellites detected low frequency plasmaspheric hiss waves extending down to few tens of Hz covering the Schumann-resonance (SR) frequency range, which is the electromagnetic resonance of the Earth-ionosphere cavity with characteristic peaks at  $\sim 8$  Hz,  $\sim 14$  Hz,  $\sim 20$  Hz, etc. excited by the global lightning activity. We show that the newly discovered extremely low frequency hiss (below 100 Hz) can also penetrate into the Earth-ionosphere cavity and can appear as an external source of SR. We present a case study based on SR measurements at distant stations using perpendicular induction coils. Highly anisotropic intensification of SR were observed mainly in the north-south propagation direction simultaneously with plasmaspheric hiss detection onboard Van Allen Probes.