



## **Tidal signatures in sporadic E occurrence rates at low latitudes**

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GPS radio occultation (RO) measurements performed by the FORMOSAT-3/COSMIC satellites are used to analyse tidal signatures in global sporadic E (Es) occurrence rates. Our RO data set comprises more than four millions of profiles collected between 2006 and 2012. The GPS RO data are used to obtain a global picture of sporadic E occurrence and its spatial and temporal variability. In this study we focus on the equatorial region ( $20^{\circ}\text{N} - 20^{\circ}\text{S}$ ) where a four-peaked longitudinal structure of sporadic E occurrence was detected.

According to theory, Es layers form when the vertical shear of the thermospheric zonal wind is negative. Strongest wind shears are mainly produced by solar tides which have periods that equal or are multiples of a solar day. Since ionised constituents of the E region interact with the lower thermospheric neutral wind field, we expect that the identified longitudinal wave-4 structure in equatorial sporadic E occurrence can be attributed to tidal activity, in particular to the nonmigrating tides. To investigate the correlation between Es occurrence and tidal activity, we compare Es rates with tidal information received from the lower thermospheric temperature field that was measured by the SABER instrument on the TIMED satellite. Initial investigations reveal a good correlation between both parameters.