



## **The global map of the intensity of ionospheric sporadic E layer**

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The global map of the intensity of ionospheric sporadic E (Es) layer is retrieved from the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) GPS radio occultation (RO). The map of Es value is less affected by the ceiling geographic distribution of the COSMIC RO profiles as in the global map of Es layer occurrence relative to the path number. It is found that the distribution of Es value is clearly geomagnetically controlled. And the variation of the Es layer also shows a seasonal dependence with a summer hemisphere maximum. The seasonal dependence of Es is known since the early years and it cannot be completely explained by a wind shear theory. In this study, the physics mechanism is investigated to try to explain the long-going mystery of Es seasonal dependence.