



## **Correlation between third layer formation in the Martian ionosphere and meteor streams at Mars**

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Usually, the ionosphere of Mars consists of two layers, a main layer M2 at ca. 135 km altitude and the second layer M1 at ca. 110 km altitude, both formed by solar radiation in the EUV and X-ray, respectively. The Mars Express radio science experiment MaRS discovered a sporadic third layer below the second layer at an altitude between 70 km and 100 km and at an average electron density of 1/20 of the usual daytime main peak electron density. The third layer was predicted to be permanent and consisting of metal ions formed by the infall of meteorites in the atmosphere. The occurrence of the third layer in the MaRS data implies that the third layer is not permanent but when created has a long lifetime of at least 24 hours over a locally limited area of 30° longitude. Further observations from the fourth occultation season of Mars Express show cases of very pronounced third layers, formations in the local polar night and for the first time the correlation of third layer formation with the occurrence of a meteor stream at Mars. A search in the data base of Mars Global Surveyor electron density profiles over several years revealed that strong third layers occur at the same solar longitudes and may last for a week. Also in these cases the occurrence of these layers could be correlated with potential meteor streams.