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# The detection of inner layering in the upper cloud layer of Venus northern polar atmosphere observed from radio occultation data.

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The scintillations observed in radio waves propagating through the atmosphere of Venus represent an important tool for measuring small-scale irregularities in the atmosphere of this planet. The outstanding feature is the upper region of enhanced scintillations located in the vicinity of 60 km. This upper region was present in the Mariner 5 and 10, Venera 9 and Pioneer Venus occultations. Therefore, it appears to be planetwide. It is assumed now, that the enhanced scintillations are due to the random turbulence in the upper region which is caused by trapped small-scale gravity waves. If the scintillations observed in the different occultations are correlated, then these scintillations may be attributed to the “permanent” layers.

The results of cross-correlation analysis of the amplitude fluctuations of radio waves of 32 cm band in seven sessions of radio occultation measurements of the northern polar atmosphere of planet using Venera 15 and 16 are presented. The existence of the cross-correlation of fluctuations ($b_\chi \cong 0.6$-$0.7$) is established in the altitude realizations in the interval 61.5-65.0 km for 4 different sessions of radio occultation. Inner layering is revealed in the upper layer of the clouds of the planet at altitudes of 61.5-65.0 km, which is specified by an enhanced turbulence of the atmosphere. It is found that the “lifetime” of the small-scale layered irregularities is no less than 2 days and that their horizontal extension in the meridional direction can exceed $\sim$130 km. A possible cause of the emergence of the layered structures inside the upper layer of the polar clouds of Venus is discussed.