**Abstract**

A morphological analysis of the results of sounding the lower equatorial ionosphere (the *D* region) in the region of action of strong tropospheric vortex disturbances (tropical cyclones, TC) is presented in this work. Based on the rocket sounding of the lower ionosphere at Thumba rocket site (8° N, 77° E) in May–June 1985 and on the satellite monitoring of TC in the northern Indian Ocean, it is demonstrated that a sharp depletion (by a factor of 2–4) of the electron concentration at altitudes of 60–80 km could be a response of the ionosphere during the TC active phase. In this case the lower boundary of the *D* region rose by several kilometers (not more than 5 km), and the temperature in the region of the stratopause slightly (by 2°–3°) increases. It is assumed that internal gravity waves (IGWs) generated by TC cause the effect on the lower ion-osphere.

Original Russian Text © L.B. Vanina-Dart, I.V. Pokrovskaya, E.A. Sharkov, 2008, published in Geomagnetizm i Aeronomiya, 2008, Vol. 48, No. 2, pp. 255–260.

**Abstract**

Tomography sounding data for the first half of November 2007 are presented. The sounding was conducted over three points located at the same meridian—Yuzhno-Sakhalinsk (47° N, 143° E), Poronaisk (49° N, 143° E), and Nogliki (51° N, 143° E)—in order to find the possible influence of a tropical cyclone on the upper ionosphere. A change in the *foF*2 parameter by on average no more than 10–20% is a possible response of the upper ionosphere localized over the tropical cyclone (TC) zone (in the given case, 25°–30° northward and 5°–20° eastward) at a distance of approximately 3800–5500 km from it. A decrease or, vice versa, an increase in *foF*2 is related to the delay of the measurement moment relative to the beginning of the TC action. The complexity of a morphological analysis of the given event is that a tropical cyclone is a “wideband” (in the longitudinal and, to a lesser degree, in the latitudinal directions) and lasting disturbance source.

Influence of a tropical cyclone on the upper ionosphere according to tomography sounding data over Sakhalin Island in November 2007Original Russian Text © L.B. Vanina-Dart, A.A. Romanov, E.A. Sharkov, 2011, published in Geomagnetizm i Aeronomiya, 2011, Vol. 51, No. 6, pp. 790–798.

**Abstract**

A morphological analysis of the results of sounding the lower equatorial ionosphere (the *D* region) in the region of action of strong tropospheric vortex disturbances (tropical cyclones, TC) is presented in this work. Based on the rocket sounding of the lower ionosphere at Thumba rocket site (8° N, 77° E) in May–June 1985 and on the satellite monitoring of TC in the northern Indian Ocean, it is demonstrated that a sharp depletion (by a factor of 2–4) of the electron concentration at altitudes of 60–80 km could be a response of the ionosphere during the TC active phase. In this case the lower boundary of the *D* region rose by several kilometers (not more than 5 km), and the temperature in the region of the stratopause slightly (by 2°–3°) increases. It is assumed that internal gravity waves (IGWs) generated by TC cause the effect on the lower ionosphere.

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Response of the lower equatorial ionosphere to strong tropospheric disturbances Original Russian Text © L.B. Vanina-Dart, I.V. Pokrovskaya, E.A. Sharkov, 2008, published in Geomagnetizm i Aeronomiya, 2008, Vol. 48, No. 2, pp. 255–260.

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Long-term trends in the ratio of the daytime and nighttime values of foF2

A. D. Danilov,

L. B. Vanina-Dart

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Abstract

The consideration of the relation between the daytime and nighttime values of the critical frequency F2, foF2 of the ionospheric F2 layer, started in the previous publication of the authors, is continued. The main regularities in variations in the correlation coefficient R(foF2) characterizing this relation are confirmed using larger statistical material (more ionospheric stations and longer observational series). Long-term trends in the R(foF2) value are found: at all stations the negative value of R(foF2) increases with time after 1980.

Original Russian Text © A.D. Danilov, L.B. Vanina-Dart, 2007, published in Geomagnetizm i Aeronomiya, 2007, Vol. 47, No. 2, pp. 236–241.

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**Relation between daytime and nighttime values of the critical frequency *foF*2**

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**Abstract**

The relation between the daytime in the nighttime values of the critical frequencies (*foF*2) of the ionospheric *F* 2 layer is considered. The correlation coefficient of *foF*2 measured at 1400 and 0200 LT of the same day is considered in various seasons of years with different solar activity (during the complete cycle of solar activity in 1979–1989). Special accent is made on the dependencies of the above mentioned correlation on a choice of magnetically quiet days with various limitations on maximal values of geomagnetic index *Ap*. It has been obtained that a statistically significant negative correlation between the *foF*2(1400) and *foF*2(0200) is more pronounced in the periods of high solar activity. The effect increases with increasing limitation of the considered days on value of *Ap*: the largest values of the correlation coefficient are observed if only very quiet days are considered (*Ap* < 6). There are preliminary indications that the considered relation between daytime and nighttime *foF*2 values depends on latitude.

Original Russian Text © L.B. Vanina-Dart, A.D. Danilov, 2006, published in Geomagnetizm i Aeronomiya, 2006, Vol. 46, No. 2, pp. 219–224.

[**Lightning Related Transient Luminous Events at High Altitude in the Earth’s Atmosphere: Phenomenology, Mechanisms and Effects**](http://oarelogin.research4life.org/uniquesiglink.springer.com/uniquesig0/article/10.1007/s11214-011-9813-9)

This paper presents a literature survey on the recent developments related to experimental and modeling studies of transient luminous events (TLEs) in the middle atmosphere termed elves, sprites and jets that ...

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