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POSSIBLE CAUSES OF FIRES IN THE FOREST

Sokurov V. F.

Academician of the International Academy of Sciences of Ecology and the Struggle for livelihoods, doctor of science International Academy of natural Sciences, Professor of RAE, the candidate of physical and mathematical Sciences, associate Professor, Taganrog Institute. AP Chekhov (Branch) of Rostov state economic University (RINH), Russia (347900), Taganrog, St. Initiative 48, E-mail: v-sokur@mail.ru.

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Considered one of the possible reasons of emergence of fires in the taiga. It is shown that the cause of the fire may be the release of energy in the interaction of primary particles with the Earth's atmosphere.

Consider the impact of the flow of protons with energy $E = 10^{20}$ eV the atmosphere. The number of substances covered by the proton can be found from the following considerations.

$t = 1000$ g/cm^2.

The path length of the proton, relatively strong nuclear interaction [4]:

$\lambda = 70$ g/cm^2 ,

The coefficient of inelasticity [2,3]:

$K = 0,5$,

that is, the proton is experiencing about 15 interactions.

Therefore, energy released from a single particle is:

$\Delta W = 10$ J.

With the passage of primary cosmic particles in the environment as a result of strong, weak nuclear and electromagnetic interactions in the atmosphere generated by the electromagnetic avalanche [4].

The number of secondary particles (N_s) in the atmosphere at sea level, the development of the cascading process is determined from the experimental dependence [3]:

$lgN\_s=lg\rho_{\_600}+4,44-lg(b-2)+b\ 0,98$

where $b=\varphi(\theta,\rho_{600})$ —dependence, determined from the measurement data with a value p_{6oo} = (2,0-20,0) cm^{-2} in the range of Zenith angles

$\theta = 0° — 45°$:

$b=3,54-of\ 2.16(1-cos)+0,15lg\rho_{600}$.

Values p_{6oo} given the mileage of the absorption is known from measurements, find the average function of the spatial distribution (lateral distribution) of charged particles [4]:

f(r)= (N_0 (b-2))/(2πr_0^2)(〖r/r_0)〗^(-1) 〖(1+ r/r_0)〗^(-(b-1)) m^(-2) ,

where go — malerovsky radius, an average of $t_h \approx 70$ m; Ns is the average number of charged particles that characterize the ensemble of showers with p_{6oo} [3].

The main contribution of secondary particles in extensive air shower at the boundary air - to-ground, NAAA a distance of 0.5 m from the shower axis. One proton can create up to 10^{11} secondary particles [3].

The flux density of secondary particles is $\approx 10^5$ m^{-2} .

The result is a cascade development of electromagnetic avalanches from each particle is formed of ≈108 secondary nucleons and mesons. Thus, the released energy is $\approx 10^{27}$ eV.

Given the flow of secondary particles created in the atmosphere, the total energy released would amount to 10^{32} eV.

Each proton produces an energy of ≈10 MeV.

The Coulomb barrier for protons is E = K*q2/r (2 MeV).

Consequently, the protons closer to the distance less 1ферми that creates a condition for a thermonuclear fusion reaction:

$H_1^2 + H_1^2 \rightarrow He_2^3 + n_0^1 + E$

The speed of the particle v_0 = ßc, where the relative speed β = 1, the speed of propagation of electromagnetic signal in the medium v = C/n, where n > 1.

That is, $v_0 > v$.

As a result, the processes of thermonuclear fusion are coherent, with a volume of ≈ 0.5 m^3 instantly energy ≈ 10^{13} joules.

That is microthermometry an explosion inside the considered volume. Medium temperature will be ≈ 10^5 K.

For dry wood creates the fire.

Consider the number of fires over the summer period.

The intensity of the flux of primary particles with enegia 10^{20} eV is

10^{-16} s^{-1} $cm^{-2.}$

The taiga area of about 10^7 m^2. Therefore, in the year of 10^2 possible cases. Within six months, – 50 cases.

Conclusion.

The conclusion is that one of the possible causes of fires in the taiga is a super dynamic effects of the particles on the environment.

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