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Regularity of distribution of precipitations on the airports of Azerbaijan Republic

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Research study of precipitation distribution on airports of Azerbaijan Republic is carried out with a view to compose aeronautical-climatic description and to characterize the activities goes within civil aviation depending on various climatic factors.

With the purposes of study of the regularity of precipitation distribution on the airports of Azerbaijan Republic the monthly and annual amount data of precipitation for the period of 1955-1999 has been investigated.

Long-term observations results analyses shows less amount of precipitations for the airports "Heydar Aliyev"/Baku (277 mm) and "Nakchivan" (271 mm) while the maximum mean value (1402 mm) has been calculated for "Lenkoran" airport located at the south part of Azerbaijan Republic. Less amount of precipitation in "Nakchivan" airport is conditioned with South Caucasus Mountain ridge that obstacle invasion of moist air masses from Mediterranean. In this work annual precipitation for the period of 1961-1990 that recommended by WMO has also been taken into account.

Two trend indices of annual precipitation has been realized, average quadratic deviation (σ) and variation coefficient (C_v):

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \overline{x})^2}{n}} \qquad (1)$$

$$C_v = \sqrt{\frac{\sum_{i=1}^{n} (k_i - 1)^2}{n}} \tag{2}$$

The results of the calculation, for the period of 1955-1999: σ=76.5 mm, C_v=0.28, for the period of 1961-1990: σ=82.4 mm, C_v=0.30.

The linear trend method has been implemented for calculation of long-term tends of precipitations:

$$X = 0,2433 \cdot N + 277 \quad , \tag{3}$$

This equation resulted with negative long-term tends of precipitations. But this reduction of the amount of precipitations is not considerable, since $R^2 = 0.0017$. Intraannual distribution of precipitation is considered in two directions: on calendar months and on seasons of year.

As a result of research it has been revealed, that during one month amount of precipitations in 2-3 times and sometimes more exceeds monthly long-term mean norm. Mean values of precipitations for each month have also been investigated for the period of 1961-1990 and 1995-1999.

Within long-term section only 7% firm precipitations as a snow and snow pellets, 12% mixed (sleet, a snow with a rain), and 81% liquid precipitations consist total amount of precipitations for one year. Maximal amount of firm precipitations are observed in February, which consist 26% of total of precipitations for a month, in March 39% of total precipitations are consisted of mixed precipitations. Rarely the snow with a rain can also be observed in first half of April. From May till October precipitations drops only as a rain. During November and December 80% of all precipitations consisted of rain.

In this work the value of maximal mean of daily precipitation and their variation coefficient and coefficient of skewness have been calculated.

The duration of the precipitation was also analyzed and it was discovered that for every calendar month the value of maximal duration of precipitation exceeds appropriate mean value in 2-3 times.

The maximal duration of the precipitation is observed in “Nakchivan” and “Ganja” in a spring-and-winter period (51-56 hours), in “Lenkoran” in a spring-and-summer period. As a whole an annual variation of duration of the precipitation correlates well with the annual variation of their amount.