

CIRRUS PRAEDICANDI TEMPESTAS

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The article describes a new kind of cirrus clouds, which has a synoptic value for a short-term thunderstorm forecast with a very high probability.

THE RESULTS OF OBSERVATIONS.

Cirrus clouds are petrels (let's call them Lat. Cirrus praedicendi tempestas, hereinafter referred to as Cr PT) refer to clouds of the upper tier, or rather, cirrus clouds (cirrus). Clouds are more often observed during the warm period of the year from April to September. The Cr PT cloud has two types depending on the observed height above the horizon, being two projections relative to the observer. The upper part of the cloud is elongated horizontally and is the densest in structure, at a high location it has an oval shape with a large axis horizontally, in rare cases, fibers spirally radiating from the center are distinguishable, at a low location above the horizon it has a lenticular shape with sharp ends along the horizon. The lower part of the cloud is a vertical fibrous structure coming from the center of the upper part, pointed and bending once to the lower end, sometimes one longitudinal darkening band is defined in the center. The height of the lower part of the cloud is proportional to or less than the height and diameter of the upper part. Close to the horizon, the cloud has the appearance of a bundle. Images of the same group of clouds from different distances allowed us to associate both types of clouds as projections of the same shape, probably the cloud has the shape of a vertical funnel with a sharply expanded upper part. The structure of the cloud is quite stable, with observations of at least 1.5 hours, the cloud has not lost its morphology.

Cr. PT clouds are more often observed in clear skies or in the presence of other cirrus clouds of no more than 2 points. Clouds are always observed in groups of 2 to 7-10 clouds. With a close location to the horizon, most clouds are morphologically similar to the typical one, with a high location above the horizon, the group consists of clouds located along the same line at equal distances, but, as a rule, only 1-2 clouds are morphologically typical, the rest may even be shapeless, and clouds can often merge with the tops while preserving the lower parts of the "tails". Observation of cloud groups contributes to their more accurate identification.

In the Atlas of Clouds there is no separately distinguished form of clouds that can be associated with Cr PT, the polymorphic group of Cirrus spissatus clouds is closest to them. Cr PT should be distinguished from clouds with precipitation bands (for example, Altocumulus virga). The fallout bands, unlike the lower part of Cr PT, are wider or more elongated than in the proportions of Cr PT, consist of more than two longitudinal white stripes, consist of stripes of different thickness and intensity, may be vertical or have more than one bend. The upper part of clouds with

precipitation bands do not have the characteristic Cr PT shape and fibrous structure. Cr PT should be distinguished from the feathery claw-like Cirrus uncinus. Such clouds may be similar to Cr PT, but differ in that the upper part consists of fibers without characteristic zigzags and twisting – they diverge in parallel according to the type of flower petals, and the lower fibrous part differs from the lower part of Cr PT as well as the fallout bands. The number of clouds and the presence of other clouds in the immediate vicinity should also be used as signs of difference – Cr PT are observed in groups against a clear or low-cloud sky.

According to observations, it was found that the observation of the Cr. PT cloud precedes the appearance of a thunderstorm in the vicinity of the observation in 24-96 hours with a probability of at least 95%. As a rule, if Cr. PT clouds were observed before a thunderstorm, then Cr. PT clouds will be observed after a thunderstorm within 24-96 hours (trace clouds). Field meteorological observations were carried out in Orenburg in the period from 2008 to 2015, in the seasons from April to September. In total, the dates of six observations were recorded for the entire time, respectively, according to two observations of clouds, a thunderstorm was observed 31 and 70 hours after the detection of Cr PT clouds, according to three observations, respectively, approximate values were 72, 96, 48 hours, one observation – trace clouds that do not have a synoptic value. The average thunderstorm forecast time for clouds is 63.4 hours, more precisely, in the period from 24 to 96 hours from the moment of observation of the Cr PT cloud, the probability of a thunderstorm is close to 1.00.

OBSERVATION STATISTICS

Date of cloud observation, (UTC+5)	Date of thunderstorm registration before observation, (UTC+5)	Date of thunderstorm registration after observation, (UTC+5)	Difference, (hour)	Comments
30.07.2008, 12:00-18:00	28.07.2008	02.08.2008, 22:00	3 days (about 72 hours)	
01.09.2011, 15:56, 17:28	25.08.2011	05.09.2011	4 days (about 96 hours)	Thunderstorm in the vicinity of the city
16.08.2013, 12:00-18:00	05.08.2013	18.08.2013, 8:00	2 days (about 48 hours)	
05.06.2014, 11:00	27.05.2014	06.06.2014, 18:00	31 hours	
08.06.2014, 17:00	06.06.2014	11.06.2014,	-	Trace clouds, have no synoptic value
30.07.2015, 16:30	17.07.2015	02.08.2015, 14:00	70 hours	

GRAPHICAL APPLICATIONS:

IMAGE 1. Photo of a group of CrPT clouds (30.07.2008) located close to the horizon.



IMAGE 2. Photo of a group of CrPT clouds (01.09.2011) located high above the horizon.



IMAGE 3. Photo of a group of clouds Cr PT (01.09.2011) located low above the horizon (the same group as image 2, but taken 1.5 hours later from a distance of 7 km from the previous image).

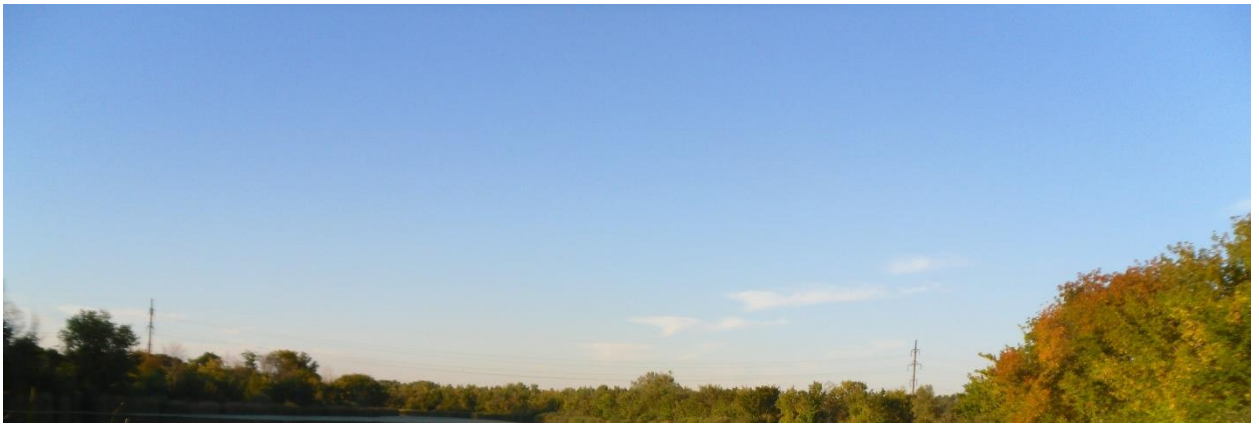


IMAGE 4. Photo of a group of "trace" clouds Cr PT (08.06.2014) located close to the horizon.



CONCLUSION.

As a result of meteorological observations, a feathery cloud with a characteristic funnel-shaped shape was found, having two different types depending on the location in relation to the observer, according to whose observation it is possible to make a short-term forecast of a thunderstorm for a period of 24-96 hours with a very high probability.

Literature.

International Atlas of Clouds, 2011.