

Hail Producing Synoptic Processes and Active Impact on Clouds (Kakheti Region)

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Due to the peculiarities of the geographical location and complex relief of the territory of Georgia, there is often an exacerbation of the general circulation processes of the atmosphere, and the formation of various types of natural hydrometeorological processes.

Of the hydrometeorological processes, hail and its active impact are particularly noteworthy, which is very important from a practical point of view. The Kakheti region stands out in this regard, since hail often damages the Kakheti region.

The paper discusses the mechanism of formation of various types of clouds, presents an analysis of research on their formation, development and classification, and most importantly, discusses the methods of influencing clouds. Clouds determine weather conditions and the nature of their changes, which is why they are one of the most important climate-forming factors on the Earth's surface.

To influence hail-forming clouds, it is necessary to develop methods of influence. Therefore, radar research of cloud parameters is important.

The management and operation of anti-hail systems is based on the methodology, which is based on the “methods developed by the High-Mountain Geophysical Institute” and private research. The Military-Scientific Technical Center “Delta” has a fully computerized missile system, which has no analogues in the world. Meteorological information is obtained using a modern German-made hightech meteorological radar (METEOR 735 CDP 10-Doppler WeatherRadar), which provides comprehensive and detailed information about changes in cloud parameters and their development.

The paper establishes a specific aerosynoptic situation in the Kakheti region that caused hail and discusses the active impact on clouds (June 22, 2024, which began at 19:29 and ended at 23:43).

In a specific case, during the active impact on the cloud, 5 foci were treated, the total area of the treated foci was 1090 km². As a result of the impact on the hail-producing cloud, the hail was completely eliminated.