

Synoptic processes causing hail in the Kakheti region

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Since the middle of the 20th century, there has been a tendency to increase the intensity of various natural processes on Earth. Climate change is considered its main provoking factor.

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

Of the hydrometeorological processes, hail and its active influence are particularly noteworthy, which are very important from a practical point of view. In this regard, Kakheti stands out, where hail often damages the region. Damage caused by hail amounted to tens of millions of GEL every year.

Impact methods need to be developed to impact the hail cloud. That is why the radar research of cloud parameters is important.

The management and operation of anti-hail systems is based on a methodology based on "methods developed by the Highland Geophysical Institute" and private research. In the military-scientific technical center "Delta" there is a completely computerized missile system, which has no analogues in the world. We receive meteorological information through a modern German-made high-tech meteorological radar (METEOR 735 CDP 10-Doppler WeatherRadar), which provides comprehensive and detailed information about cloud parameters.

The paper discusses and determines the specific aerosynoptic situation of hail in the Kakheti region (on June 22, the active impact began at 19:29 and ended at 23:43).

Cumulus rain clouds are being observed, which are formed in the last stage of cumulus cloud development. Rain falls from these clouds, and it is quite heavy, torrential, which is why it is accompanied by thunder and hail. These clouds often occupy all three layers. The upper part is rich in ice crystals, and the lower part is mixed. They are characterized by large and well-defined ridges that resemble mountains and towers.

During the active impact, 5 foci were treated, the total area of treated foci was 1090 km². As a result of the impact on the hail cloud, the hail was completely eliminated.

Physical characteristics of hailstones (size, structure, etc.), radiolocation parameters of convective cell are determined by radiolocation studies. As a result, it is possible to determine the radar criteria for cloud hail and lightning hazards, which gives the possibility of active influence on the cloud.