DOPPLER METEOROLOGICAL RADAR "DMRL-10"

"DMRL-10" Doppler Meteorological Radar of S-band is intended for:

- Displaying of distribution of various meteorological data (reflectivity, velocity, spectrum width) on different levels of height as per pseudo-CAPPI type;
- Calculation and displaying of vertical profile of velocity, wind direction up to the height of upper boundary of detection of meteorological objects and other Doppler products;
- Calculation and displaying of precipitation intensity within any time-interval;
- Detection and classification of clouds and precipitation and dangerous weather phenomena related thereto (hail, storm, shower rain, waterspouts, squalls etc.);
- Output of data for active influence of hail and other cloudy processes for the purpose to prevent hail and accompanying dangerous phenomena (storm, squall, waterspout, shower rains), artificial control of precipitation;
- Displaying of velocity and movement direction of cloud systems;
- Output of radar data in codograms required.

In "DMRL-10" fully solid-state transistor-type transmitter with soft-failure function is applied. Therefore, reliability of transmitting device is raised multiply in comparison to transmitters with vacuum-tube devices (magnetrons, klystrons etc.). This technology is based on latest achievements of digital technique, which allow using complex signals for meteo-radars of new generation. Usage of complex signals has resulted to decreasing more than by an order the radiated pulse power. This gives possibility to exclude from the design the waveguide pressurization system and high-voltage units with a voltage higher than of 380V, and such a way radar operational characteristics are enhanced significantly.

The set of "DMRL-10" includes subscriber terminals for local users, equipment required for data transfer, operational documentation, self-contained power supply source (as per a separate order), UPS-source and SPTA set. Possibility is available of integration with active influence systems.

Modular design of "DMRL-10" Meteorological Radar allows using the equipment capabilities in maximal volume , also in the course of modernization of old-fleet radars of ten-centimeter-band.

Cabinet of Transistor-type Transmitter of "DMRL-10"

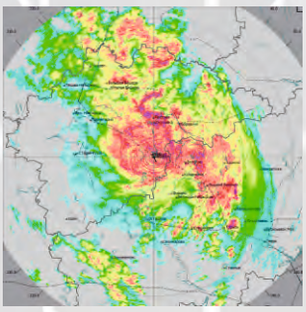
Amplifying Module

"DMRL-10" Antenna System with Gearless Synchronous Engines

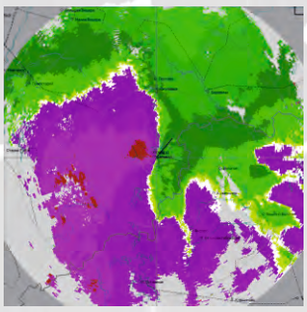
Basic Technical Specifications of “DMRL-10” Radar

Operating frequency band, MHz	2700 – 3100
Antenna antenna gain factor, dB level of side-lobes, dB	reflector-type, parabolic not less than 39 not worse than minus 29
Transmitter pulse power, kW, not less than pulse width, μs effective pulse power at compression of 100:1, kW sounding frequency, Hz	transistor-type 5 1.0-100.0 500 300-3000
Receiver noise factor, dB, not more than dynamic range of receiver, dB	2 channels (horizontal polarization) 3 not less than 105
Spatial resolution, m	150
Static clutter suppression factor, dB	not less than 50
Power consumption with life-support system, kW, not more than	10

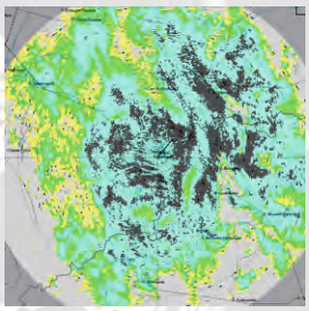
Primary Radar Data



Refelectivity

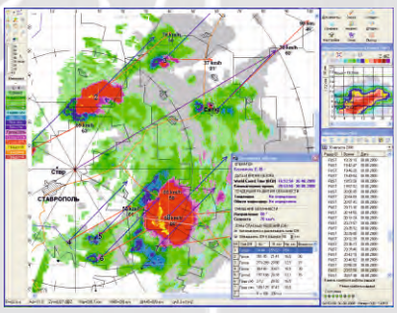


Radial velocity

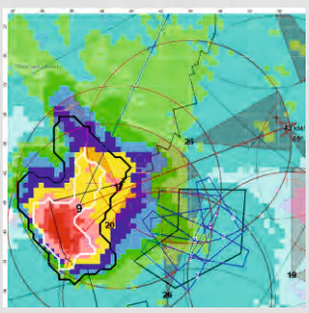


Spectrum width

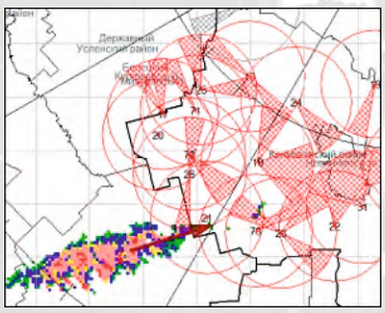
Meteorological products



Weather phenomena



Prcecipitation intensity



Motional energy of hail

RADAR EQUIPMENT

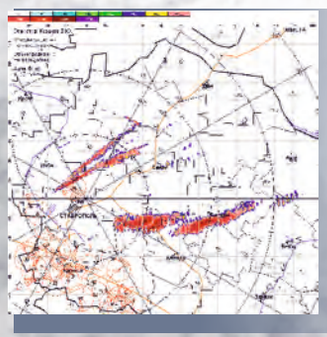
Transmitter Cabinet

Signal Receiving and Processing Cabinet

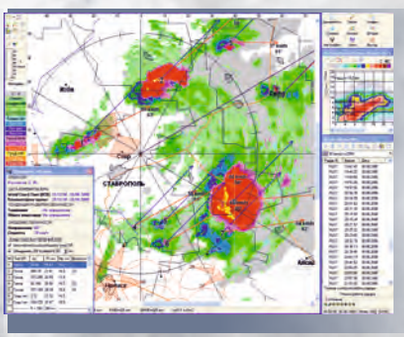
- Pulse power – 0.4kW (0.8 kW optional)
- Pulse-period-to-pulse duration ratio - 10 %
- Pulse width – 0.2:100 μs
- Air cooling

Antenna Design

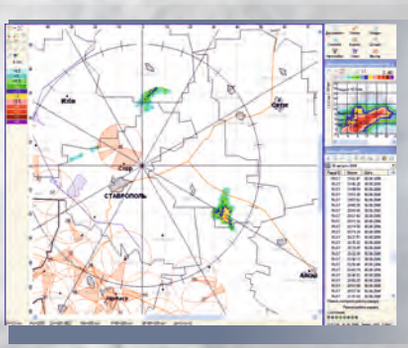
Special Software of “DMRL-10” Radar for Hail Suppression Services



Map of
hail motional energy

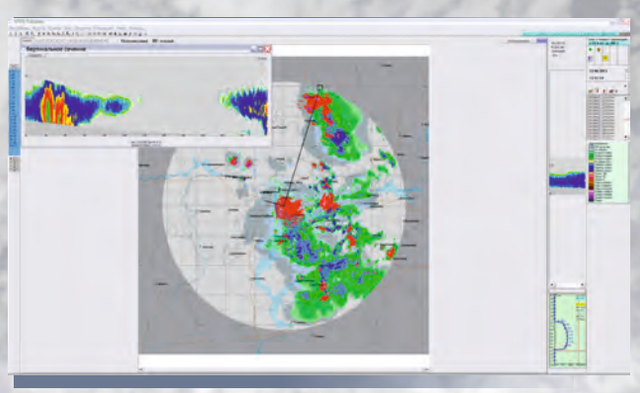


Map of weather phenomena with
direction translation vectors

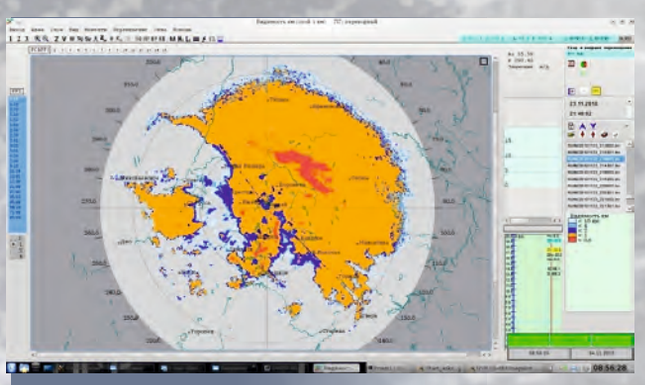


Hail size map

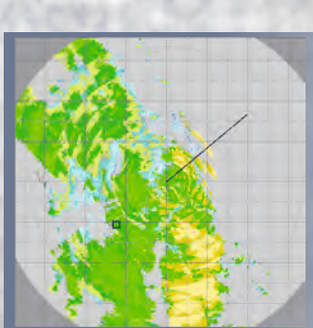
Secondary Processing of Data GIMET-2010



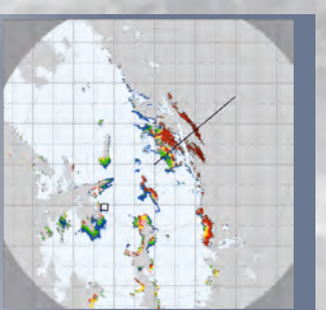
Weather phenomena including dangerous ones



Visibility in precipitation



Upper and lower boundaries of cloudness



110, Dmitrovskoe shosse, Moscow, 127411, Russian Federation
Tel.: (+7 495) 485-15-88; 485-15-22 Fax: (+7 495) 485-03-88; 485-15-63
E-mail: lemz@tsr.ru http://www.lemz.ru