Nowcasting and very short range Weather Forecast for Georgia

Nato Kutaladze (1), George Mikuchadze (1), Giorgi Sokhadze (2), and Nino Shareidze (3)

(1) Natonal Environmental Agency, Hydrometeorology, Tbilisi, Georgia (cwlam08@gmail.com), (2) Geosciences and Technology Development Institute, (3) San Diego State University Georgia, 0108, Georgia

Georgia's orography and it's interaction with airflow is the basic spotting factors of synoptic processes spread in the country. Peculiarities of locally developed weather phenomena at any time a year are often characterized with diversity and extremity. Convective storms, with attendant phenomena; fog and low clouds; locally forced precipitation events; wintertime weather (snow, ice, glazed frost, avalanches) this is a short list of synoptic processes nowcasting (NWC) and very short range forecast (VSRF) of which has a great importance for Georgia. In spite of remarkable improvement in the quality of numerical weather prediction (NWP) model output, recent developments based on variational analysis and latent heat nudging NWP models' skill within the NWC range (0–6 h) is still comparatively low.

In recent years, NWC and VSRF rely more and more on "blending" techniques combining several data sources (both in situ and remote sensing observation, NWP, high resolution topography, heuristic rules) in a seamless way using lead-time-dependent weights.

Currently, two nowcasting systems are in testing mode in Georgia's NHMS. SWIRLS - incorporating two radars data, located in Eastern part on country, GTS, local AWS, rain gauges and ground GNSS derived atmosphere parameters and satellite data. As main part of this system is information from radar echoes the main output from the SWIRLS is not available for the entire territory. We run nwcsaf – GEO software analyzing satellite data only since 2017, where we mostly interested in precipitation and convention products. Products validation and intercomparison is continuing. We started use SWIRLS from 2019 to produce quantitative precipitation forecast (QPF) products up to a lead time of 6 hours. Products generated from this two systems gives possibility to estimate and fill each other. We are looking to further development of local nowcasting system by blending opportunities from different software and and NWP fields.