MetGIS (Meteorological and Geographic Information System) is an advanced international meteorological forecasting tool with a specific emphasis on snow and mountain weather. It has been developed with research contributions from Europe, USA, Japan, Peru, Chile and Argentina and is now also ready for use over Australia and New Zealand. A principal focus of the system is the automated real-time production of high-resolution, down-scaled area and point forecasts of meteorological parameters such as fresh snow depth, snow limit, precipitation, temperature and wind. Prediction time range is up to 7 days, and visualization is via an easy-to-use multilingual web interface.

Recently the horizontal resolution of the topographic database used in MetGIS has been increased to 30m, using ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) data. This topography serves as a foundation for the application of constantly upgraded innovative downscaling techniques, using the concept of “fingerprints” as defined in the Vienna Enhanced Resolution Analysis (VERA). Detailed terrain features and properties like the shape of valleys are used to refine the output of coarse-mesh numerical meteorological forecast models such as GFS (Global Forecast System) and WRF (Weather Research and Forecasting Model).

Performance studies of MetGIS from the Chilean Andes show quite encouraging results: The mean absolute error of 36-hour temperature forecasts is around 1.5 centigrade, hit rates of 24-hour precipitation forecasts exceed 90% and the consistency of consecutive model runs is high. Application of the system can highly be recommended especially to traffic and avalanche control centers and to snow-prone open-pit mines.