



**BeRTISS PROJECT - BALKAN-MEDITERRANEAN REAL TIME SEVERE
WEATHER SERVICE**

Haris Haralambous* ^(1,2), Christina Oikonomou⁽²⁾, Tsvetelina Dimitrova⁽³⁾, Guergana Guerova⁽⁴⁾, Christos Pikridas⁽⁵⁾, Filippos Tymvios⁽⁶⁾, Vasiliki Kotroni⁽⁷⁾, and Konstantinos Lagouvardos⁽⁷⁾

(1) Frederick University, Cyprus; e-mail: eng.hh@frederick.ac.cy

(2) Frederick Research Center, Cyprus; e-mail: res.ec@frederick.ac.cy

(3) Hail Suppression Agency, Bulgaria; e-mail: dimitrova_tsvetelina@abv.bg

(4) Sofia University “St. Kliment Ohridski”, Physics Faculty, Bulgaria; e-mail: guerova@phys.uni-sofia.bg

(5) Aristotle University of Thessaloniki, Department of Geodesy and Surveying, Greece; e-mail: cpik@topo.auth.gr

(6) Cyprus Department of Meteorology, Cyprus; e-mail: f.tymvios@cyi.ac.cy

(7) National Observatory of Athens, Greece; e-mail: lagouvar@noa.gr, kotroni@meteo.noa.gr

Remote sensing of the atmosphere with Global Navigation Satellite Systems (GNSS) is crucial for the accurate forecasting and early warning of abrupt and heavy precipitation events and is nowadays an established technique in GNSS-Meteorology. GNSS signal propagation delay in the troposphere provides information of Water Vapour (PWV), which is the most abundant greenhouse gas, accounting for ~70% of global warming. GNSS derived PWV has been proved to be a valuable data source for high resolution limited area Numerical Weather Prediction (NWP) models, however, is not well-estimated by the present meteorological models. Though currently in Europe, the operational service E-GVAP (<http://egvap.dmi.dk>) provides GNSS tropospheric products over the European region, a scarcity of such products exists in the southeastern part of Europe, one of the Europe’s most remote region and highly sensitive to climate change. A requirement for addressing these challenges is the real-time generation and provision of GNSS tropospheric products for monitoring of severe weather events in the Balkan - Mediterranean area. In this respect, BeRTISS project targets to establish the first transnational operational service for monitoring severe weather events in the Balkan - Mediterranean area by exploiting GNSS tropospheric products, which will comprise the extension of the existing European GNSS network of tropospheric products, with an ultimate aim to develop an improved, dense and complete network of GNSS tropospheric and meteorological products in one of the Europe’s most remote region and highly sensitive to climate change. The main activities pursued within BeRTISS are: 1) establishment of a new GNSS data Analysis Center at Frederick Research Center in Cyprus for the calculation of GNSS tropospheric and meteorological products, 2) installation of 15 new GNSS stations and 25 new accurate meteo-sensors in Bulgaria, Cyprus and Greece, 4) development of a user-friendly web-platform for monitoring weather conditions that will serve as an early warning information system. BeRTISS output is expected to improve the quality and augmentation of cross-border GNSS tropospheric data related to severe weather and climate variations, as well as the accuracy and predictability of severe weather events by the forecasters. It will also contribute to the expansion of the existing European GNSS network of tropospheric products to the southeastern part of Europe and to the enhancement of the knowledge/expertise transfer in the fields of GNSS data processing, numerical model application, meteorology and climate monitoring. The present work presents the research project BeRTISS (Balkan-Mediterranean Real Time Severe weather Service) funded by the European Territorial Cooperation Programme “Interreg V-B Balkan-Mediterranean 2014-2020” as well as some preliminary results of the project.