Geophysical Research Abstracts
Vol. 20, EGU2018-4527, 2018
EGU General Assembly 2018

Near Real-Time GPS-Meteorology Services

Anton Leontiev (1), Yuval Reuveni (1,2,3), and Dorita Rostkier-Edelstein (4)

(1) Ariel University, Ariel, Israel (leont.anton@gmail.com), (2) Eastern R&D Center, Ariel, Israel, (3) School of Sustainability, Interdisciplinary Center (IDC) Herzliya, Israel, (4) Israel Institute for Biological Researches

Modern climate research is very important for understanding the threats, which may be caused by climate change. Because of it is a slow process, its investigation requires observations for a long period of time, lasting for years and even centuries. A unified and continuously updated archives consisted of observation, measurements real and modeled data are playing a key role in climate change investigations.

The climate research, which is conducted at the Ariel University aims to study phenomena and processes related to Israel and the Middle East climate change. In order to enhance, augment and automate our current research, we are developing an online web service, which will provide the latest meteorological information, obtained from several different sources, such as multispectral remote sensing images, GPS-Integrated Water Vapor estimations meteorology and modeled data (e.g. WRF model).

This service is mainly written using Python programming language using Pytroll library, which is used for processing remote sensing data from different European meteorological satellites, such as Meteosat second generation family. We also use NASA-JPL GIPSY-OASIS software for processing the GPS raw data, radiosonde data, as well as Weather Research and Forecasting models. Using the combination of different data sets, we will gain the ability to estimate a large number of different useful meteorological parameters, in near-real time mode, such as: mean surface temperature, cloud coverage, spatial distribution of integrated water vapor and wind. We will also develop the ability to provide processed Meteosat data augmented by GPS-IWV [Leontiev, Reuveni, 2017], along with modeled data every 15 minutes, and in order to create a scientific toolbox of archived data for conducting atmospheric research and studying different parameters trends.

References:
Leontiev, A. and Reuveni, Y.: Combining Meteosat-10 satellite image data with GPS tropospheric path delays to estimate regional integrated water vapor (IWV) distribution, Atmos. Meas. Tech., 10, 537-548, doi:10.5194/amt-10-537-2017, 2017.