



Determination of the ionosphere parameters on the Sulp-station

Liubov Yankiv-Vitkovska

National University "Lviv Polytechnic", Ukraine

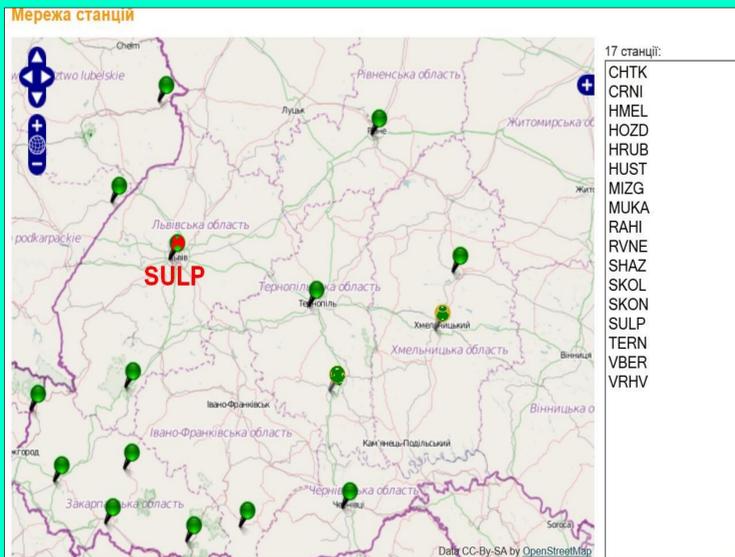
luba_y@ukr.net

Introduction

The GNSS system are helping determine the parameters of the ionosphere by analyzing the properties of the received signals from satellites. The appearance of GNSS system that operate in two or more of coherent signals opens new opportunities for remote sensing of the ionosphere of the Earth. The implementation these possibilities is of practical interest when we can get the original measurement information without more material and time costs and for the develop appropriate methodologies and programs calculation parameters ionosphere.

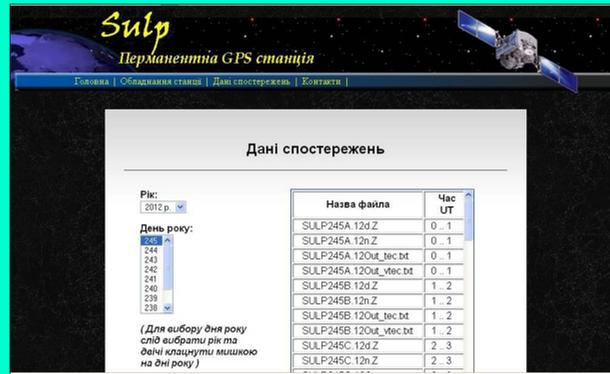
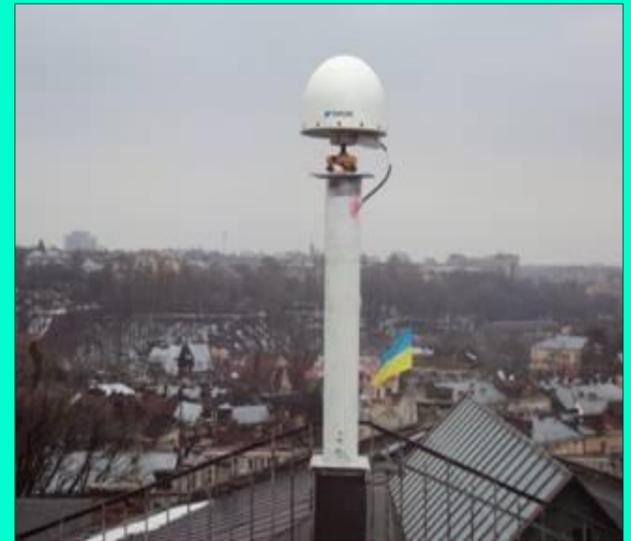
Objective

We used of GNSS satellite measurements at permanent stations for monitoring the ionosphere. As a result of research was improved algorithm for determining the parameters of the ionosphere, developed and realized in practice software for regular computing the parameters of the ionosphere – slant (*STEC*) and vertical (*VTEC*) values of total electron content and proved in practical use on Sulp-station.



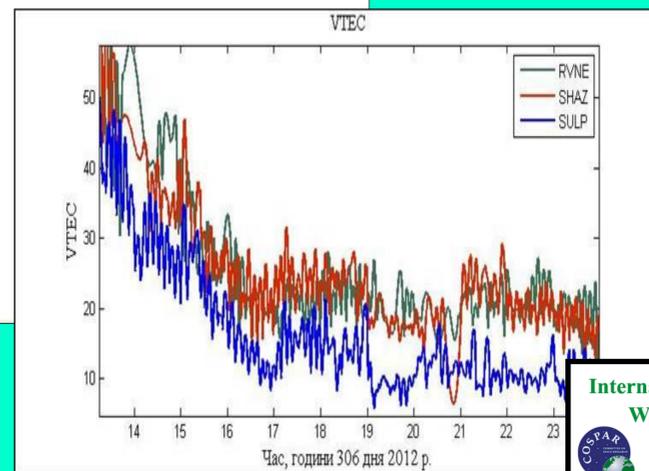
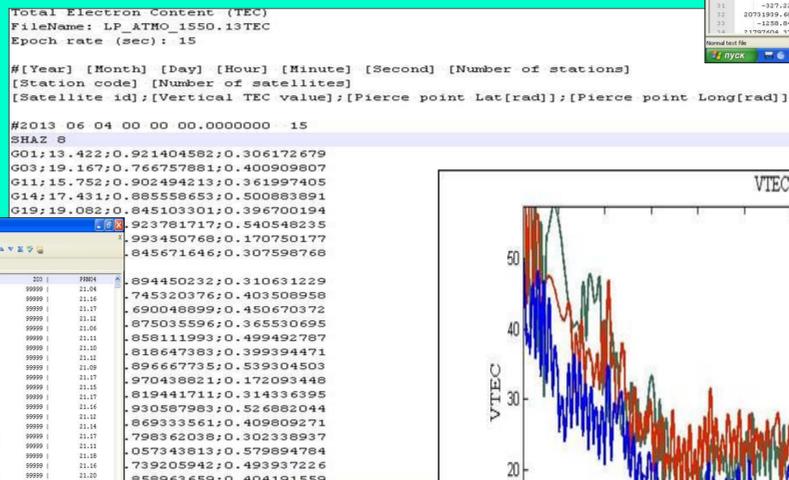
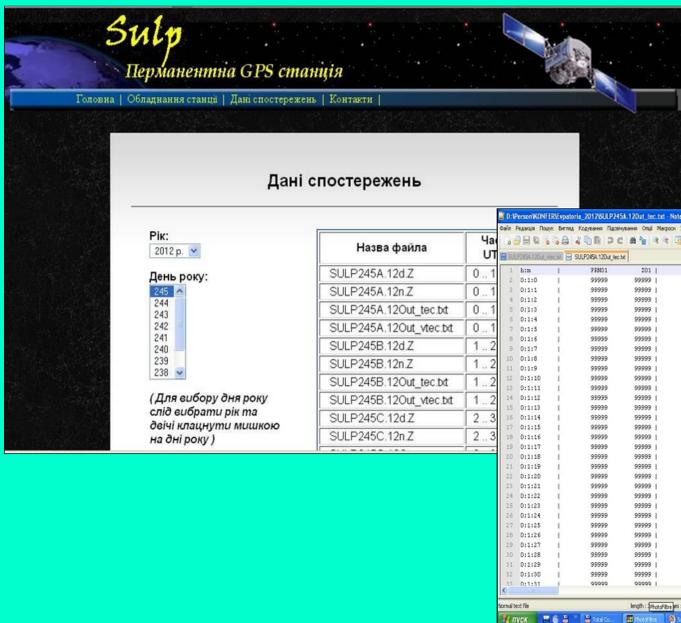
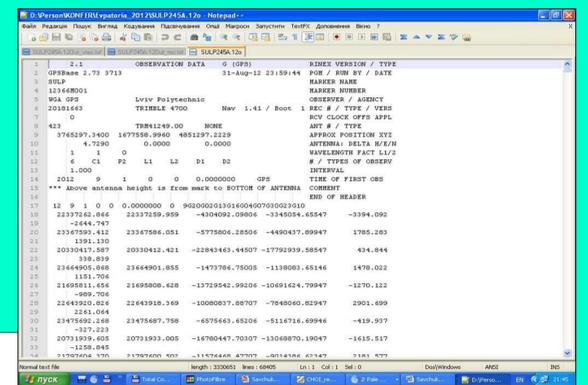
Sulp-station

1. The Sulp is a permanent GPS-station National University Lviv Polytechnic), part of the network ZAKPOS / UA-EUPOS, where are conducting experimental GNSS observations with use of multiple-receiver for a long time.
2. The observations are made for receivers simultaneously from the navigation system GPS and GPS + GLONASS using a single antenna.
3. Observations were carried out in real time.



The basic algorithm consists of the following main steps

- Retrieves files observations on a separate station. The result is code and phase pseudorange at two frequencies L1 and L2.
- Introduction of additional parameters Station: its coordinates corner cutoff satellites, the value of the differential signal delay to the receiver station.
- Getting from FTP-server CODE the differential code delay for all available satellites at the time of calculation.
- Analysis of observational data (presence of code and phase measurements, detection and elimination of slips phase smoothing of code phase measurements).
- Calculate the values of slant total electron content (*STEC*) on the fixed points of observation for each GNSS-satellite.
- Determination of vertical values of total electron content (*VTEC*) on the fixed points of observation with regard to the data from all available GNSS-satellites.
- Formation file with the results of calculations.



International Reference Ionosphere (IRI) Workshop 2013 "IRI and GNSS"



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