

Ozone layer study over Kyiv by Dobson spectrophotometer

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For the first time in Ukraine the Dobson spectrophotometer observations of total ozone content (TOC) in Kyiv have been started in May, 2010. Joint team of scientists from the Kyiv National Taras Shevchenko University (KNU) and from Main Astronomical Observatory is provided TOC measurements in new site registered in WOUDC as Kyiv-Goloseyev STN498 and with GAW ID 'KGV' in the GAWSIS.

Finally at the end of 2010 the station has been included in Global Atmosphere Watch Program of the WMO as Regional GAW Station. The Dobson ozone spectrophotometer D040 has been received by KNU from the Royal Meteorological Institute of Belgium. Dobson 040 has been calibrated against the secondary European reference D074 at the Solar and Ozone Observatory (SOO) in Hradec Kralove by KNU and SOO scientists. To continuously verify the operation of the D040, it is to be used as normal operational instrument at the Kyiv-Goloseyev site.

The results for the first eleven month observations at Kyiv-Goloseyev including comparison with satellite data are given. The measurements show standard season variations except result that all data are below of the mean values for 1972-2008 on about 20DU.

Introduction

Ozone layer observations in Ukraine in the past have been provided by filter ozonometers M-83/M-124 on stations Feodocia, Odessa, Lvov, Kyiv in 1973–98 (data WOUDC). According Osadchiy (Osadchiy et al., Ukraine Climate, 2010) ozone measurements in Ukraine were provided till 2008, however data in WOUDC were not submitted. In April 2010 after negotiations between Royal Meteorological Institute of Belgium, WMO and Kyiv National Taras Shevchenko University it was decided to loan the Dobson spectrophotometer 040 to KNU for organizing the regular TOC observations in Ukraine.



Figure 1. Solar and Ozone observatory, Hradec Kralove, Czech Republic: intercalibration D040 by D074 and training.



Figure 2. Kyiv-Goloseyev D040 observations started in May 13, 2010.

Kyiv-Goloseyev site data in 2010 and 2011

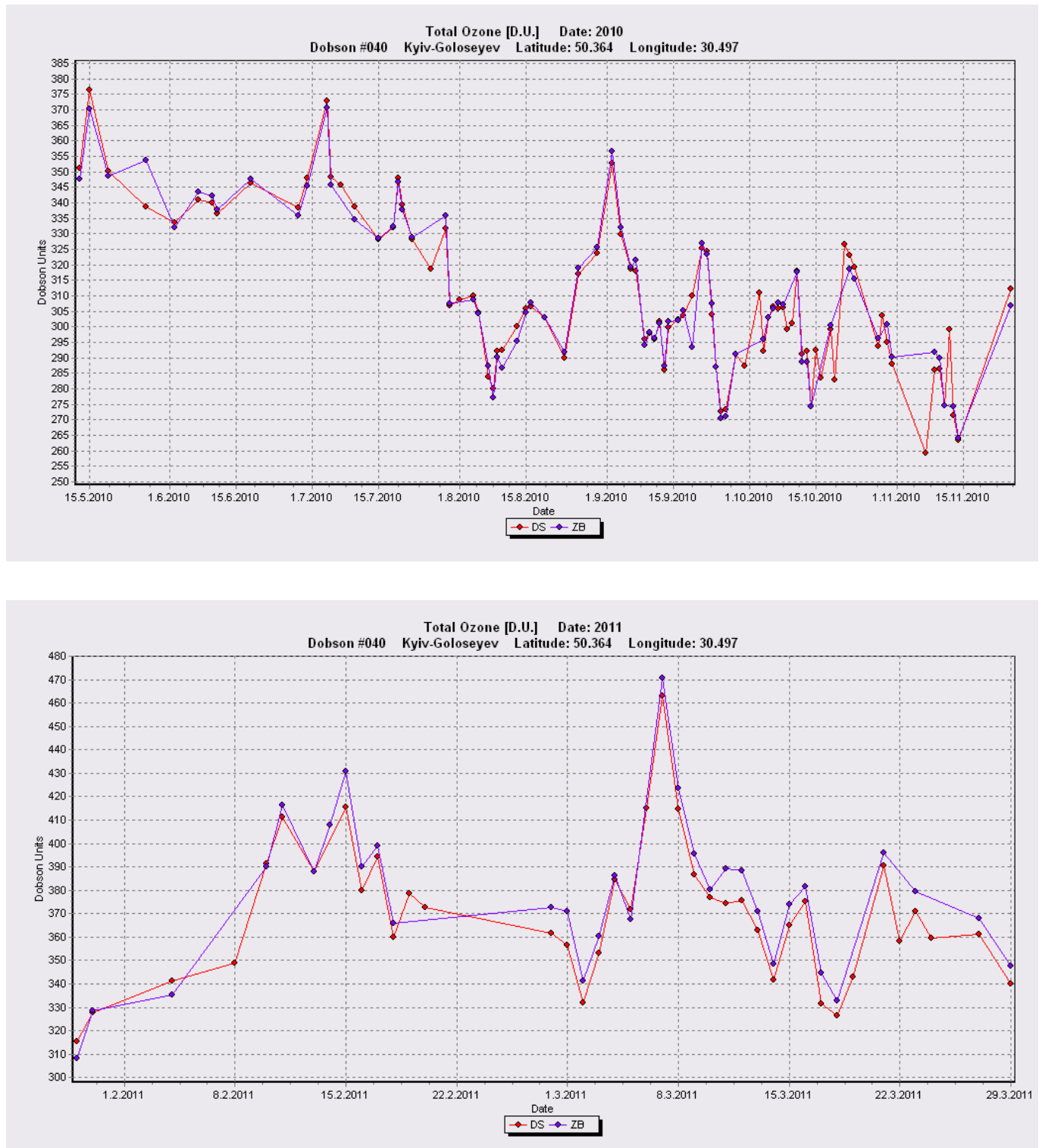


Figure 3. Total ozone content in May-December 2010 (top) and in January - March 2011 Kyiv-Goloseyev site observations.



Total ozone / Ozone total, 2010

498, KYIV-GOLOSEYEV, UKR (50N, 30E, 206m), Dobson #40

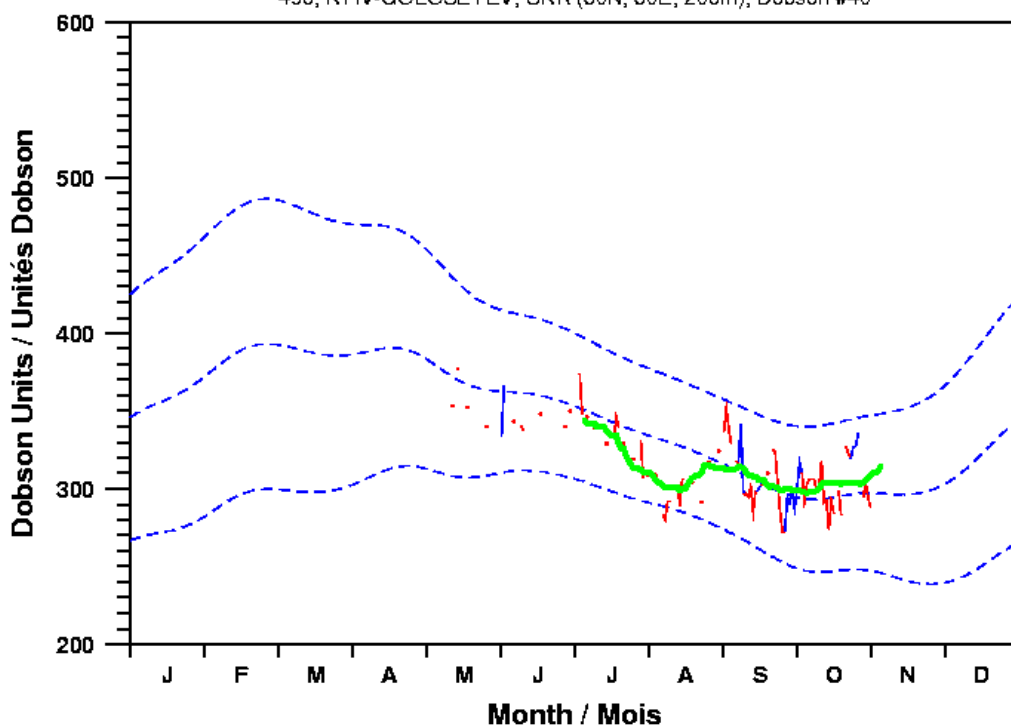


Figure 4. Ozone 2010 data Kyiv-Goloseyev and long-term variations according WOUDC.

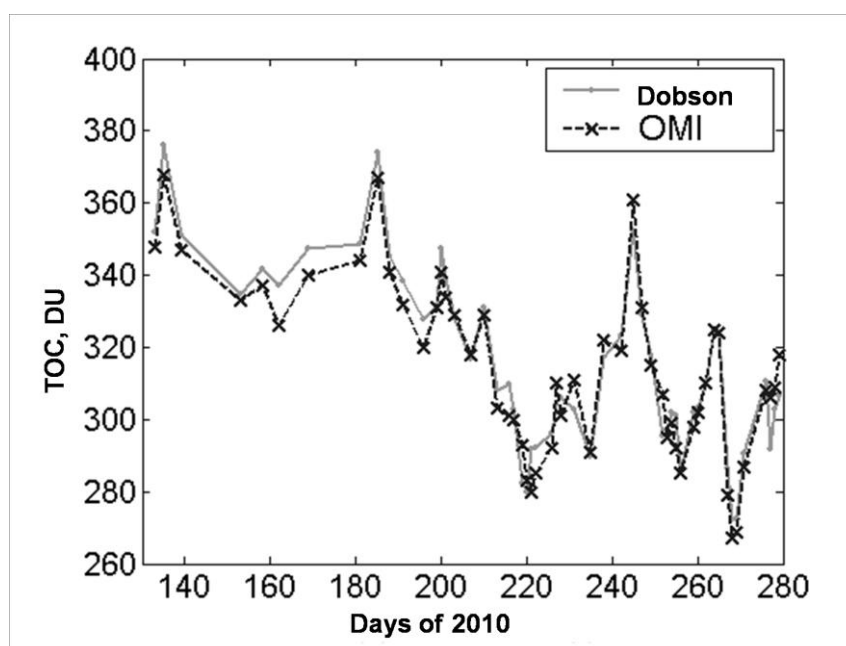


Figure 5. Ozone measurements D040 in 2010 - comparison with OMI.

Conclusions

- Dobson total ozone measurements have been started in Ukraine first time -13 May 2010.
- Ukraine became Dobson ozone data contributor country: GAW regional station.
- Continuous observations.
- Where are data:

<http://www.woudc.org/data/> Agency ID: KNU

<http://gaw.empa.ch/gawsis/reports.asp?StationID=2076202961>
and



Figure 6. Web page for Kyiv-Goloseyev site:
<http://antarctica.org.ua/ozone.html>

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Atmosphere research and monitoring site development Kyiv-Goloseyev

