

# LITHUANIA

## Network

Lithuanian Hydrometeorological Service under the Ministry of Environment (LHMS) follows the standard programme of observations of the World Meteorological Organization recommendable for hydrometeorological services. The state of ozone layer is monitored at the Kaunas meteorological station (WMO Index 312). Total ozone measurements have been carried out with the M -124 filter ozonometer since 1 January 1993. The Kaunas station is located close to the centre of Lithuania.

Ultraviolet solar radiation measurements have been carried out at Kaunas and Palanga (by the Baltic Sea) since 2000. Mean and maximum daily radiation is monitored using the UV-Biometers type 501 A, version 3 (in Kaunas – UV-A and UV-B, in Palanga – UV-B).

## Instrument calibration

The M -124 filter ozonometer is calibrated every two years at the Remote Sensing Scientific Research Centre of the Main Geophysical Observatory in St Petersburg, Russia. The last calibration was carried out in 2004.

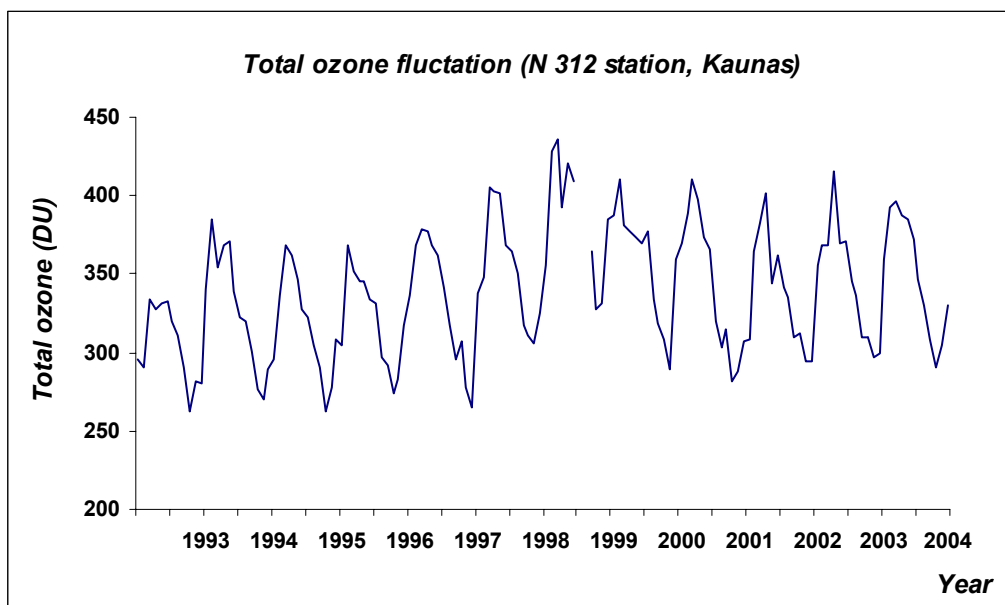
The UV-Biometers have been calibrated by the LHMS Metrological Laboratory in 2005. Local standard meters were re-calibrated with a higher-class standard instrument in 2002 and should be re-calibrated again in 2006.

## Results from observations and data analysis

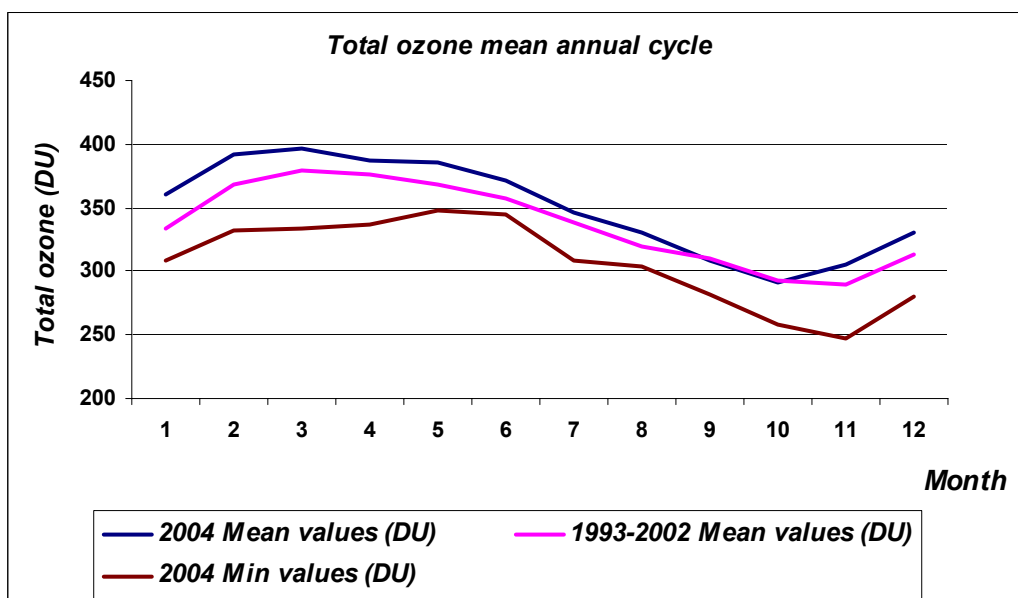
All observational data are stored and processed on a regular basis. Due to comparatively short series of observations, they are considered insufficient for a comprehensive study. In 2001, the LHMS Climatology and Methodology Division (lead researcher – Dr Audronė Galvonaitė) completed a study titled “Ozone In the World and In Lithuania”. In 2003, the LHMS Meteorology Division carried out the ozone data analysis resulting in establishment of the mean total ozone values for the period of 1993 – 2002 that have since been used to assess the ozone layer depletion over Lithuania. It is also used in monitoring the ozone column and assessment of its quantitative changes. In case of significant ozone layer depletion, the LHMS Meteorology Division originates warnings disseminated through the mass media and over the Internet.

Since 2001, the LHMS Meteorology Division has been originating the UV index forecasts (UVI) for annual periods of May – August. These forecasts are disseminated through the mass media and Internet. In case of significant ozone layer depletion, the Division originates warnings communicated through the mass media and Internet.

Since 2002, the total ozone values and their change as well as the ultraviolet solar radiation intensity figures are published in the State of the Environment annual reports issued by the Ministry of Environment of the Republic of Lithuania.



In 2004, the total amount of atmospheric ozone fluctuated quite significantly. As in previous years, its minimum value (about 300 DU) was observed in autumn, and the maximum (about 400 DU) – by the end of winter and in spring. In 2004, the absolute minimum amount of atmospheric ozone (247 DU) was measured in November, while its absolute maximum (497 DU) – in March. Mean annual amount of the total ozone was 351 DU. Comparing with 2003 measurements; the total amount of atmospheric ozone remained practically the same.



### International cooperation

The ozone measurement data are sent on a regular basis to the World Ozone and Ultraviolet Data Centre (WOUDC) in Toronto, Canada. Since 2004, also the UVB measurement data from the Kaunas station have been sent to WOUDC.

Establishment of the UV monitoring network in Lithuania was supported by the Italian – Lithuanian Counterpart Fund. The Polish Institute of Meteorology and Water Management assisted LHMS in application of the UV Index forecasting model.

## **Future**

Observations of the ozone layer and the UV radiation will be continued. Though our current ozone meters are of good quality, however, we would like to increase the precision of measurements provided we could obtain a Brewer Spectrophotometer. It is a modern and highly precise instrument used worldwide since 1980-ties. Besides the direct measurements, it can be used as a standard meter for calibration of the UV-Biometers. Its purchase and installation will form a good basis for the further acquisition of the ozone and ultraviolet information and its scientific and practical applications.

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