



## **MAX-DOAS aerosol and NO<sub>2</sub> profile retrieval analysis data over Minsk**

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For NO<sub>2</sub> monitoring by MAX-DOAS method, the automated instrument based on the spectrograph ORIEL MS257 with a Peltier-cooled CCD-array detector Andor Technology DV-420 OE (number of active pixels is 1024×256, working temperature is -40 °C) has been constructed. The MARS-B instrument records the spectra of scattered sunlight in the range of elevation angles 0 ° – 90 ° within vertical angle aperture of 1.3° in UV spectral range (340-400 nm) with FWHM = 0.32 and is operating without mechanical shutter. Radiation input system is working without optical fiber and spectrograph unit has open-air design. Herewith spectrograph unit is temperature-stabilized at level 40±0.5 °C. The MARS-B instrument successfully took part in MAD-CAT (2013) and CINDI-2 (2016) international inter-comparison campaigns.

The instrument is in operation in National Ozone Monitoring Research and Education Centre (Minsk, Belarus) since 2017. From 3500 to 7000 spectra per day were registered and processed by DOAS technique aiming to retrieve differential slant columns of ozone, nitrogen dioxide and oxygen dimer. Further, total nitrogen dioxide column values have been retrieved employing the PriAM algorithm which is based on optimal estimation method.

First time continuous MAX-DOAS measurements (one-year series for NO<sub>2</sub> vertical column, near-surface concentrations of NO<sub>2</sub> and aerosol optical depth) in Minsk during the 2017 will be presented, compared with data of Belarusian Hydro-meteorological Centre and satellite data, analyzed and discussed. Also, method for reducing the error of differential slant column densities retrieval by applying a digital low-pass filter in the preliminary processing of the spectra will be presented. Application of the method based on the CINDI-2 HONO dataset will be presented.