



SPATRAM - A new spectrometer for the monitoring of atmospheric trace gases and aerosol detection

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The SPATRAM (Spectrometer for Atmospheric TRAcers Monitoring) is an instrument for the measurements of solar radiation scattered along the vertical direction in the UV-Visible spectral regions. By means of DOAS methodology application, the vertical contents and the vertical profiles of atmospheric compounds as NO₂ and ozone, are calculated. The SPATRAM is installed at the Observatory of the Geophysics Centre of the University of Evora (Portugal), since April 2004 (38.56°N, 7.92°W) with the aim to monitor the physical and the chemical processes of air masses exchange between continental and oceanic regions. The heart of the spectrometer is the monochromator, where the luminous bundle is decomposed in its wavelengths thanks to a holographic spherical diffraction grating of 1200 grooves/mm (with optical resolution of 0.5 nm). This last is moved by a stepper motor allowing inquiring the spectral range from 250 to 1060 nm, in successive windows of 60 nm each. The Optical Mechanic Unit (OMU) comprises, beyond to the monochromator, the incoming radiation input. This can be positioned for external radiation or internal calibration lamps measurements by means of another stepper motor. Furthermore, a series of mechanical and electrical device as the filter wheel, 2 calibration lamps (HG and QJ), optical diodes and temperature sensors are utilized to optimize the performance of the instrument and to ensure the goodness of the measurements. The Electronic Control Unit (ECU) is located under the OMU and is composed by a monoboard computer, steppers and CCD driver devices. Its main tasks are the measurements and the storage of the collected data with the DAS (Data Acquisition Software) program, that was also developed and implemented by the authors. The first results for the identification of the known spectral lines in the solar spectrum and for the NO₂ vertical column obtained during the SPATRAM testing phase are presented. ACKNOWLEDGMENTS: DB was finan-

cially supported by the Subprograma Ciência e Tecnologia do 3º Quadro Comunitário de Apoio. Special thanks to Francesco Monteleone (ENEA), Manuele Turini (DTA) and Adriano Gabellini (COM).