



NO₂ MAXDOAS observations at an airport environment

Olga Puentedura (1), Mónica Navarro-Comas (1), Laura Gómez-Martín (1,2), Cristina Prados-Román (1), Javier Iglesias (1), Margarita Yela (1), and Carmen Córdoba-Jabonero (1)

(1) INTA (National Institute for Aerospace Technique), Earth Observation. Atmospheric Research and Instrumentation Branch, Madrid, 28850, Spain, (2) Groupe de Spectrométrie Moléculaire et Atmosphérique, URM CNRS 7331, UFR Sciences Exactes et Naturelles, Moulin de la Housse, BP 1039, 51687 Reims Cedex 2, France.

A multi-instrumental campaign has been carried out in the framework of AVATAR project, at an airport environment close to the city of Madrid (Spain, 41°N). The main purpose of the campaign is, as far as possible, to determine the distribution of NO₂ and particles during the nominal operations of aircrafts as taking off, taxi and landing. The instrumentation was deployed at the premises of INTA limiting to the tracks of the Military Torrejon Airport.

The campaign was held from December 15th 2016 to March 1st 2017. For this work, clear sky days characterized by a high pressure system located over Madrid have been selected.

In this study, NO₂ Multi-Axis (MAXDOAS) and in situ NO_x measurements have been included. MAXDOAS instrument was measuring in the spectral interval between 315 and 420 nm and the telescope pointed towards the sector of the tracks where landings and taking-offs usually take place.

NO_x measurements were collected through an inlet located in the same building that the MAXDOAS instrument, 50 m away for the tracks of the airport and at 10 m above ground level.

Preliminary trace gases results of the campaign show that, comparing periods with no aircraft operation with moments with aircraft operations, an increase of up to seven times the NO₂ DSCD in the optical path of the MAXDOAS instrument was detected in the later. These remote sensing observations are in agreement with the in situ measurements of NO_x.