

## **One year of MAX-DOAS measurements in Taiwan**

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Wind and weather in Taiwan are strongly influenced by the monsoons. Taiwan is on the lee side of the Asian winter monsoon, originating on the Asian continent. It receives continental air masses transported by the monsoon, thus air pollutants originating in the eastern and northern parts of China. While polluted air reaches Taiwan during winter monsoon, clean air masses from the remote western North Pacific are predominant in summer, making Taiwan an ideal location to investigate variations in atmospheric composition due to the monsoons. In addition to that, the monsoons themselves are also subject to regional climate changes in the future.

Since June 2023, a Multi-AXis-DOAS (MAX-DOAS) instrument has been installed at the Cape Fuguei Research Station (CAFE) at the northernmost point of Taiwan, measuring vertical distributions of trace gases, including NO<sub>2</sub>, SO<sub>2</sub>, HCHO, and aerosols. The measurements aim to investigate local air pollution and study the impact of pollution export from mainland China on tropospheric composition and local air quality.

The measurements are part of the project “Investigation of Pollution Transport to Taiwan” (IPToT), which has been established as a cooperation between the Institute of Environmental Physics (IUP) of the University of Bremen (Germany) and the Research Center for Environmental Changes of the Academia Sinica (Taiwan), funded by the DFG (Deutsche Forschungsgemeinschaft).

Here, we present one year of MAX-DOAS observations of NO<sub>2</sub>, SO<sub>2</sub>, HCHO and HONO at this new station as well as retrieved profiles of NO<sub>2</sub> and aerosols and compare them to collocated in-situ and LIDAR measurements. The data are evaluated for diurnal and weekly pollution signals and the dependency on the prevailing wind direction and the monsoon seasons. A first comparison to satellite measurements from the GEMS instrument is also shown.