



Satellite tropospheric NO₂ retrieval under cirrus cloud conditions: an error analysis based on cirrus in situ aircraft measurements (CIRCLE-2).

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In the gaseous retrieval from space measurements, one of the main problems comes from the contamination of the signal by clouds. The presence of thick clouds is easy to mask but the case of thin clouds like cirrus, is a bit more difficult to deal with. A detailed description of the optical and microphysical properties of cirrus is needed in order to correct the gaseous signal from cirrus contamination. We used in situ aircraft measurements of cirrus optical properties to evaluate the contamination of the NO₂ retrieval by cirrus clouds. The aircraft measurements come from the CIRCLE-2 experiment that combined different in situ instrument to obtain precise information on cirrus properties. The distinctive feature of the experiment is that we have access not only on the optical properties of cirrus clouds but also on their microphysical properties as well as their geometrical properties. The other advantage of the experiment is that it has been realized within the overpass of the A-Train. The spectral information on NO₂ from the OMI sensor has been used. An error analysis on NO₂ retrieval due to cirrus contamination is proposed here.