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## Retrieval of Ice Cloud Properties from Sentinel-5 Precursor and Sentinel-4 Measurements

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The study of ice clouds properties is of central importance to further understand the role of ice clouds in climate system processes. Therefore, it is crucial to perform accurate ice cloud retrievals in satellite-based systems in order to provide reliable information about the cloud microphysical, macrophysical and optical properties. Current and future satellite missions like Sentinel-5 Precursor (S5P), Sentinel-4 (S4), and Sentinel-5 (S5) are designed to monitor the air quality and greenhouse gases. The cloud retrieval algorithm used operationally for these missions is ROCINN (Retrieval Of Cloud Information using Neural Networks) which retrieves the cloud top height (CTH), cloud optical depth (COD) and cloud albedo (CA) from measurements in the NIR in the O<sub>2</sub> A-band (755-771 nm). ROCINN considers two cloud models: Clouds as Reflecting Boundaries (CRB) and Clouds As scattering Layers (CAL). In this work we will present the latest developments including the ice cloud retrieval performed using the VLIDORT radiative transfer (RT) model containing ice cloud parametrization. This study investigates the performance of ROCINN for ice cloud retrieval for several test scenarios adapted from Level 2 operational data. The selected datasets contain partially and fully cloudy scenarios for ice clouds placed at different CTH and for different COD. The retrieved CTH and COD for ice clouds are evaluated for the TROPOMI/S5P and S4 satellites.