

## Impacts of ice clouds in POLARBEAR

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Atmospheric fluctuation is one of the sources of low-frequency noise in ground-based CMB experiments. Since atmospheric emissions are almost unpolarized, they do not directly increase the noise of polarization measurements as far as instruments are well-calibrated. Tropospheric ice clouds, however, scatter upwelling thermal radiations and produce polarized signals. In practice, most of the polarized bursts in the POLARBEAR data occur during cloudy observations. Cloud polarization is a critical noise since it is correlated among detectors and cannot be suppressed by the polarization modulation technique. In POLARBEAR, we apply data selection associated with polarized bursts and cut several percent of the data. We demonstrate example data and discuss impacts on the CMB measurements.

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