

Advanced retrievals of cryospheric parameters from the PACE mission

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We present updates on the development of a new suite of products for the cryosphere, which leverage the superior capabilities of multi-angle polarimetric measurements of the PACE mission. Focusing on snow-covered areas in Greenland, we deliver vertically-resolved snow crystal size, shape, and microscale roughness. The precursor studies also indicate the effectiveness of polarimetry in resolving light-absorbing impurities embedded in the snowpack from aerosols aloft, a task of paramount climatological importance. The optical properties of aerosols layers are simultaneously retrieved. New topics of investigation also concern the treatment of meltponds on the snow surface. The retrieval scheme is tailored to the combination of the Ocean Color Instrument and the HyperAngular Rainbow Polarimeter (HARP-2) sensors, and ultimately provides the parameters needed to develop the BRDF and polarized BRDF of polar surfaces, which is critical to perfect parameterizations in Earth-system models.

References

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