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## Secondary ice production over the Southern Atlantic Ocean: linking satellite data with aircraft observations

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In the past, numerous airborne in-situ measurements of mixed-phase clouds have exhibited a clear discrepancy between the observed ice particle and ice nucleating particle (INP) number concentrations of up to four orders of magnitude, with the highest differences observed in marine clouds. This suggests that primary ice nucleation is not the dominant source of cloud ice and that secondary ice production (SIP) plays a significant role in governing the ice phase in these clouds. Based on laboratory and field observations a number of SIP mechanisms have been hypothesized. However, most of these mechanisms are not well quantified and, therefore, only a few SIP mechanisms are included in weather models so far.

In our research, we aim to spatially extend the observations from aircraft campaigns by linking them to satellite data. Here we will show the work done linking the albedo and brightness temperatures from the 16 available spectral bands of Himawari-8, ranging from 0.47 – 13.3  $\mu\text{m}$ , with the ice particle number concentrations observed during the SOCRATES campaign in low-level boundary layer clouds over the Southern Ocean. Finally, we employed multiple linear regression machine learning techniques and also made use of the SOCRATES campaign lidar/radar onboard.