Cloud-precipitation processes from EarthCARE

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The treatment of cloud microphysics and cloud optical properties in climate models has significant influences on future climate predictions. One of the scientific objectives of EathCARE (ESA/JAXA) is to reduce the uncertainties related to cloud, aerosol, and radiation processes by coupling four sensors. By December 2025, JAXA had released all L2 standard products including Doppler related products such as the vertical air velocity and particle sedimentation velocity, which were initially planned for release as research products [1-5]. Further updates and release of cloud products (CLP), precipitation rate products (RAS), and combined aerosol-cloud products are planned this year. Update of ice habits and habit mixture profile estimates using enhanced observation from EarthCARE High-Spectral Resolution Lidar (lidar ratio and particle depolarization ratio) are expected to provide better understanding of these products that could be linked to vertical air velocities, aerosol and atmospheric conditions, radiation and precipitation processes.

References

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