The Cumulus and Stratocumulus CloudSat-CALIPSO Dataset (CASCCAD)

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Background and science question: Climate change effects how clouds form and change, which in turn, can have an effect on climate. In fact, Stratocumulus and cumulus clouds are the biggest uncertainty in projections of future climate change and the two types of clouds may respond differently to warming.

Can these clouds be reliably identified in satellite observations to help us represent these clouds better in our climate models?
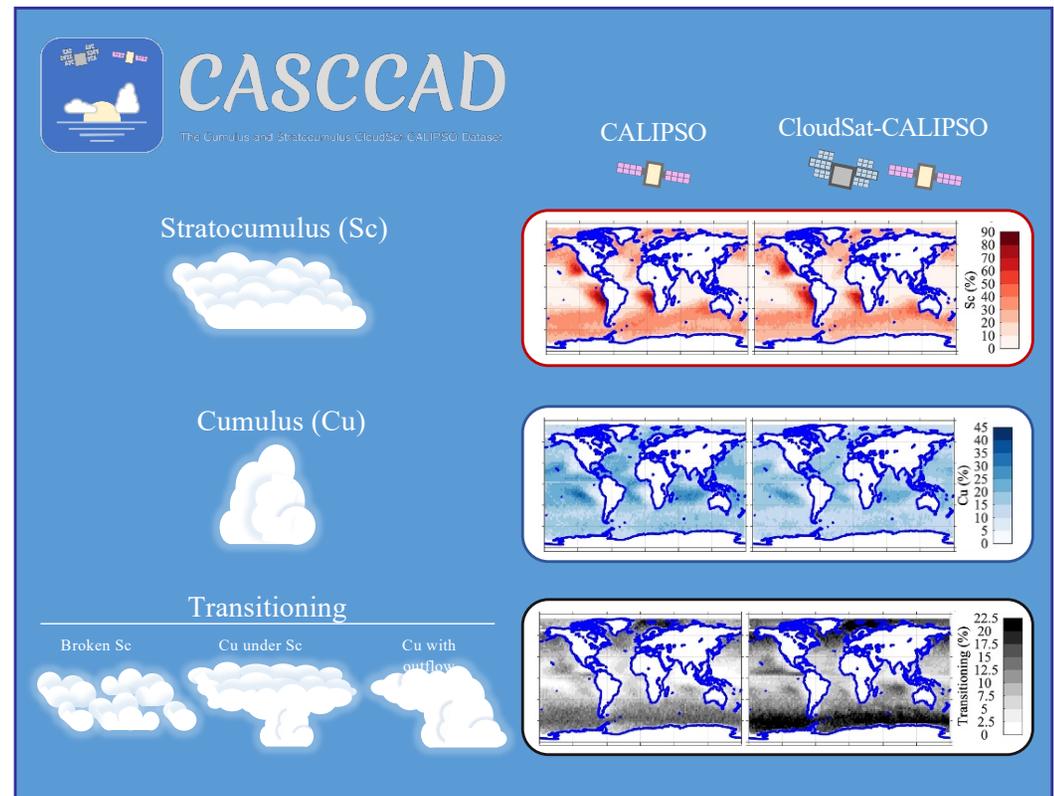
Findings:
- Our first dataset using CloudSat-CALIPSO active-sensor satellites was able to accurately identify the different types of stratocumulus and cumulus clouds based on their morphology.
- Results show that cumulus and stratocumulus are geographically separated more distinctly than suggested by previous satellite data products.

Impact: Implications for the identification of artifacts in climate model simulations of low-altitude clouds that may affect their projections of future warming.

Why does it matter? Can be used to identify the interannual cloud feedback as a constraint for climate model development.

Dataset publicly available:
https://data.giss.nasa.gov/clouds/casccad/