

# NASA mission to study ice clouds, help observe our dynamic atmosphere

May 23 2023

---



A new NASA mission, PolSIR, short for Polarized Submillimeter Ice-cloud Radiometer, will study high-altitude ice clouds, such as this cloud as seen from the International Space Station in 2008. Understanding how such clouds change throughout the day is crucial for improving global climate models. Credit: NASA

NASA has selected a new mission to help humanity better understand

Earth's dynamic atmosphere—specifically, ice clouds that form at high altitudes throughout tropical and sub-tropical regions. The PolSIR instrument—short for Polarized Submillimeter Ice-cloud Radiometer—will study such ice clouds to determine how and why they change throughout the day. This will provide crucial information about how to accurately simulate these high-altitude clouds in global climate models.

The investigation consists of two identical CubeSats—each small satellite is just a little over a foot tall—flying in orbits separated by three to nine hours. Over time, these two instruments will observe the clouds' daily cycle of ice content.

"Studying [ice clouds](#) is crucial for improving climate forecasts—and this will be the first time we can study ice clouds in this level of detail," said Nicola Fox, associate administrator for the Science Mission Directorate at NASA Headquarters in Washington. "Every NASA mission is carefully chosen to better understand our home planet."

The award is for for lifecycle costs no more than \$37 million, which does not include launch costs. The [radiometer](#) is an Earth Venture instrument—lower-cost instruments with a targeted research goal, which typically catch a ride along with another mission or commercial satellite in order to minimize launch costs. The Earth Venture class also focuses on providing frequent flight opportunities, so innovative science investigations can be flown relatively quickly, generally within five years or less. Missions like this provide key targeted research opportunities, which help us improve our understanding of what's driving change in the entire Earth system.

"Understanding how these ice clouds respond to a changing climate—and then, in turn, contribute to further changes—remains one of the great challenges to predicting what the atmosphere will do in the

future," said Karen St. Germain, who leads NASA's Earth Sciences Division. "The radiometers, which measure the radiant energy emitted by clouds, will significantly improve our understanding of how ice clouds change and respond throughout the day."

**More information:** [www.nasa.gov/topics/earth/index.html](http://www.nasa.gov/topics/earth/index.html)

Provided by NASA

Citation: NASA mission to study ice clouds, help observe our dynamic atmosphere (2023, May 23) retrieved 26 April 2024 from <https://phys.org/news/2023-05-nasa-mission-ice-clouds-dynamic.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.