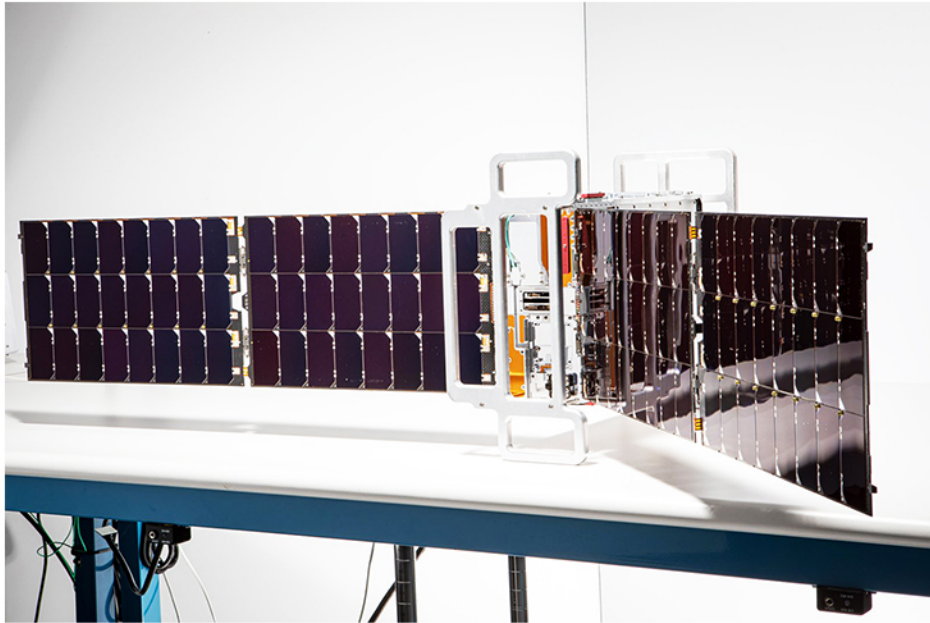


PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment)



NASA's Polar Radiant Energy in the Far-InfraRed Experiment (PREFIRE) will measure the amount of heat the Earth emits into space from its polar regions. This information is key to understanding the balance of energy coming into and out of Earth and how that affects the planet's climate. Two shoebox-size satellites will orbit the planet and take the first-ever systemic measurements of heat loss from the Arctic and Antarctic in far-infrared wavelengths. The data from PREFIRE will help scientists update climate and ice models, which will lead to better predictions of how sea level, weather, and snow and ice cover are likely to change.

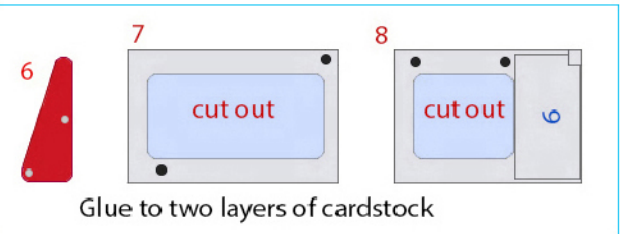
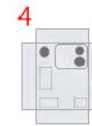
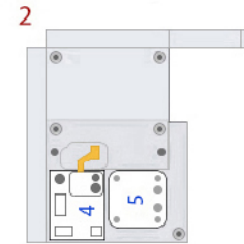
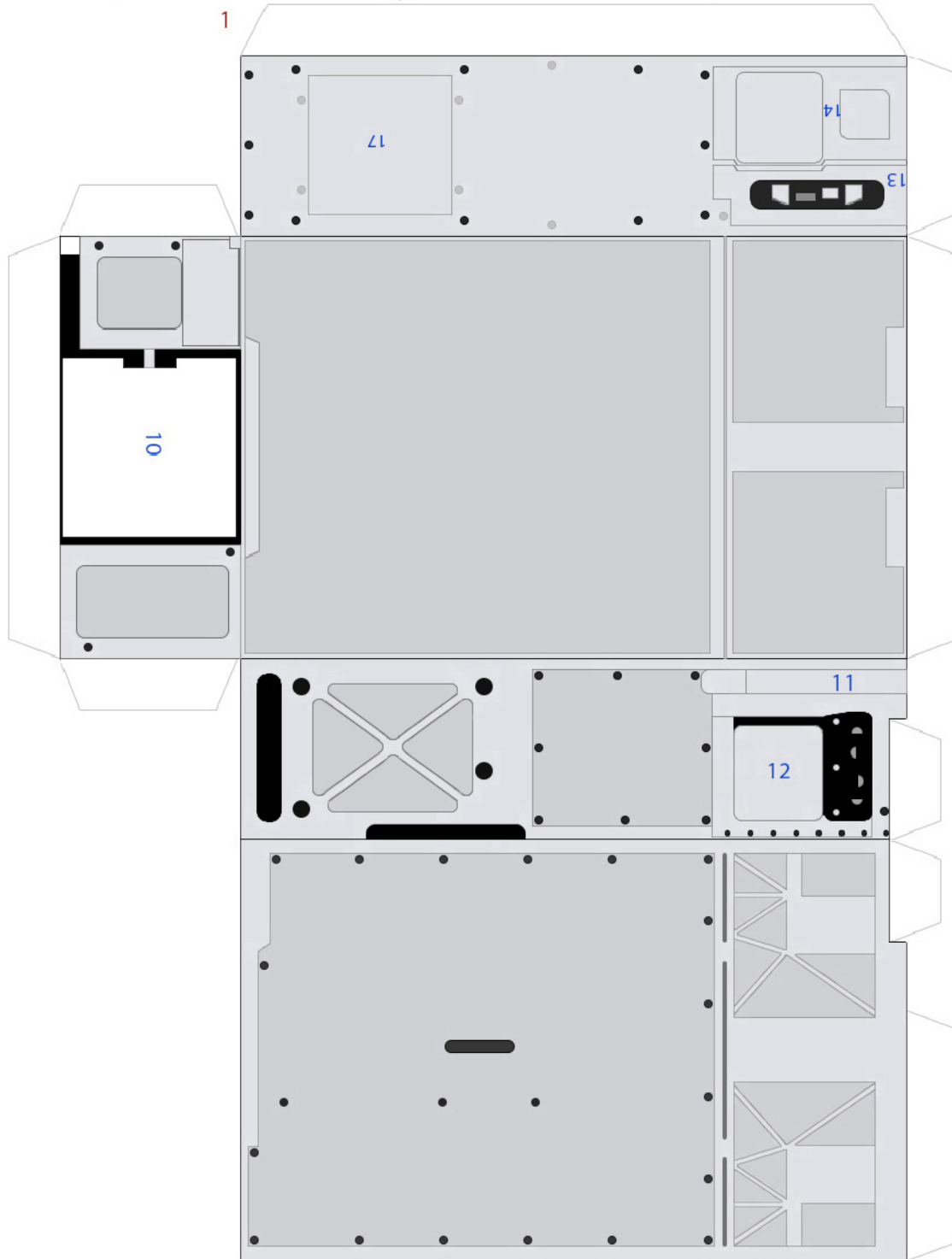
By filling in gaps in our knowledge of Earth's energy budget, PREFIRE will sharpen our understanding of what drives the loss of polar ice on land and sea, and related questions of sea level rise. This will help researchers better predict how the heat exchange between Earth and space will change in the future, and how those changes will affect things like ice sheet melting, atmospheric temperatures, and global weather.

Key Objectives

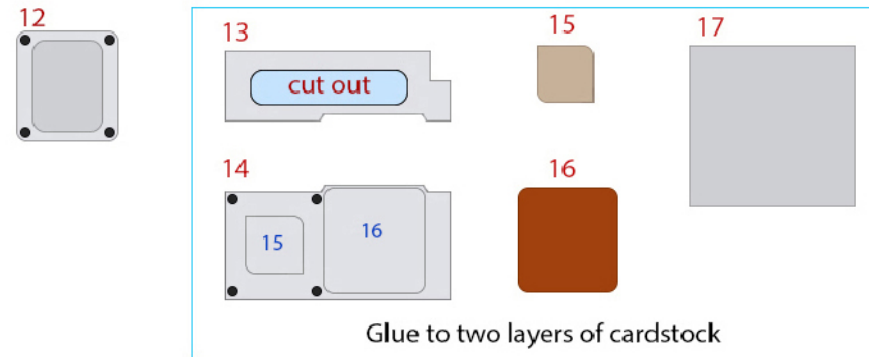
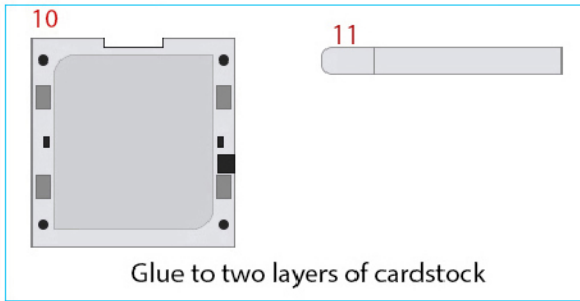
- Determine how much heat — in the form of far-infrared radiation — snow and ice surfaces emit into space and how the amount varies from month to month.
- Measure the amount of far-infrared radiation trapped by atmospheric water vapor and clouds in the Arctic and Antarctica and how this influences the greenhouse effect at the poles.
- Use data from PREFIRE to update far-infrared emission estimates in climate models to more accurately reflect observations and improve projections for Arctic warming and sea ice loss.
- After improving far-infrared emission estimates in climate models, assess how well models simulate ice sheet processes like melt rates.

PREFIRE was successfully launched on May 25, 2024 onboard Rocket Lab's Electron rocket at Mahia, New Zealand.

PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment) [Detailed Version](#)

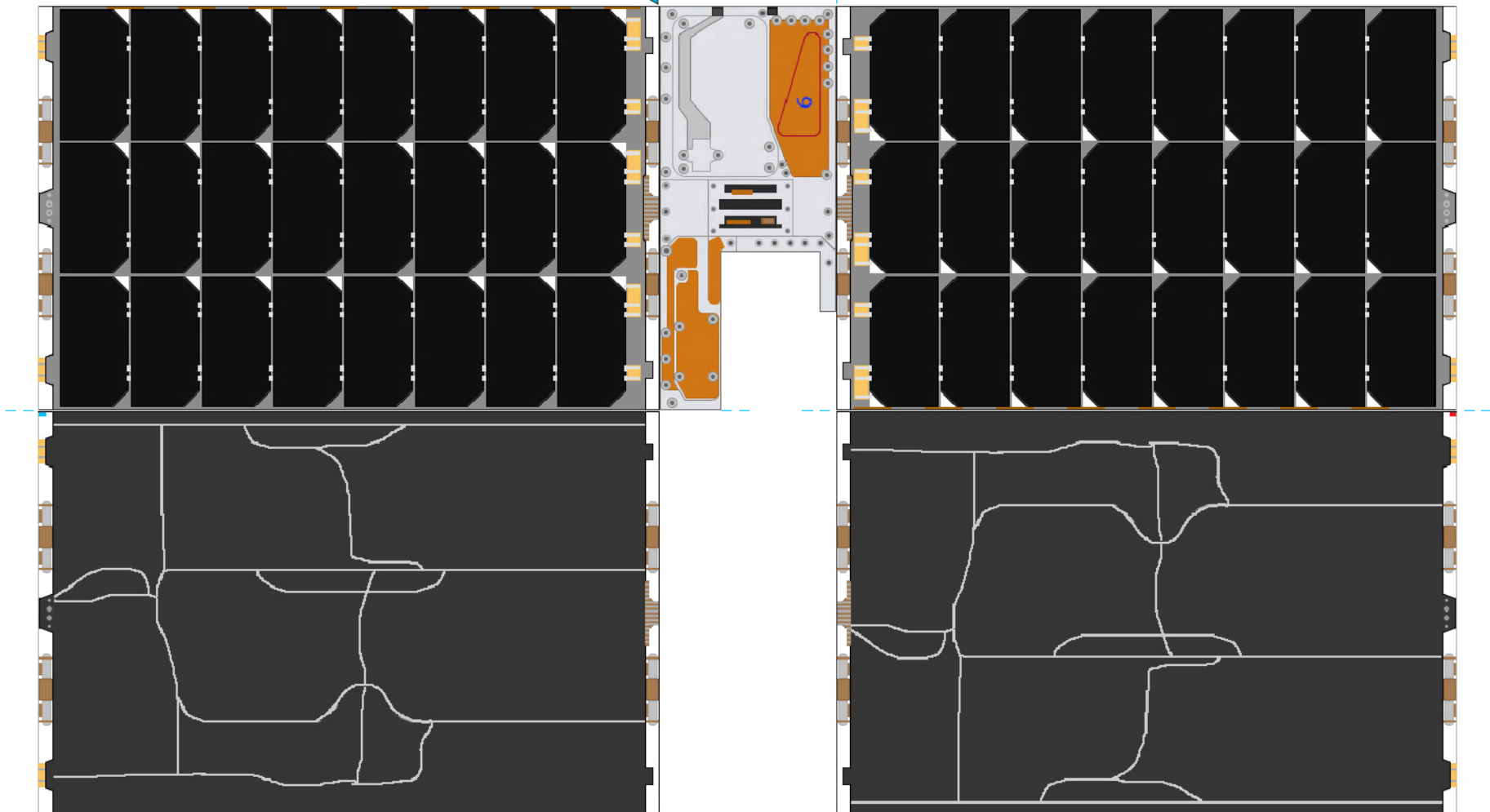


PREFIRE (Polar Radiant Energy in the Far-InfraRed Experiment) [Detailed Version](#)

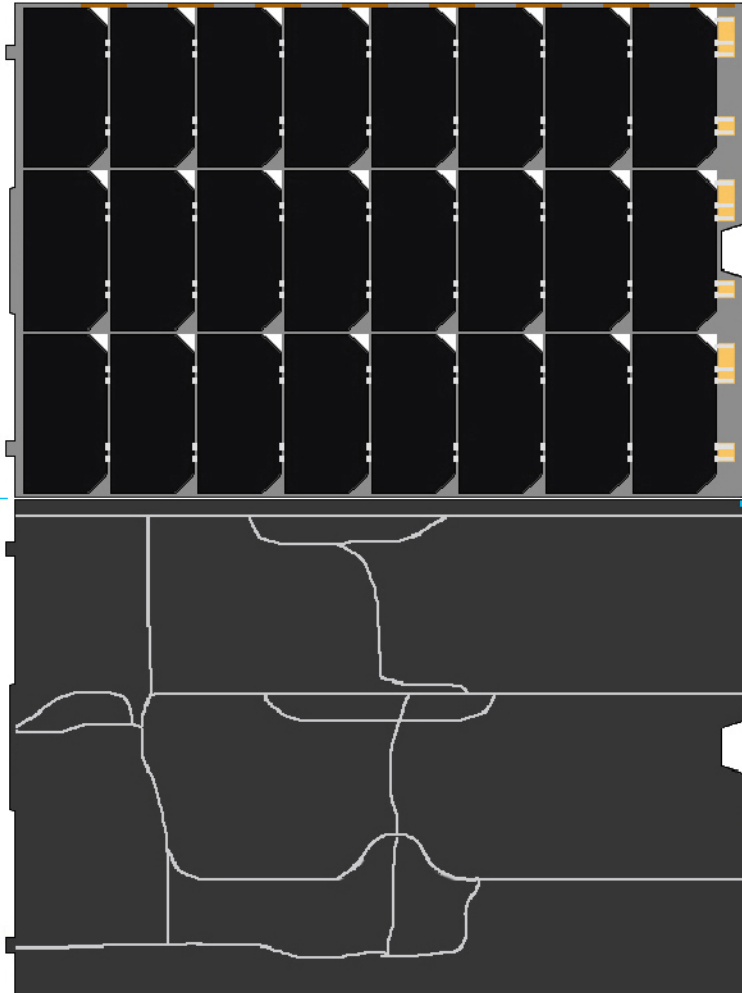


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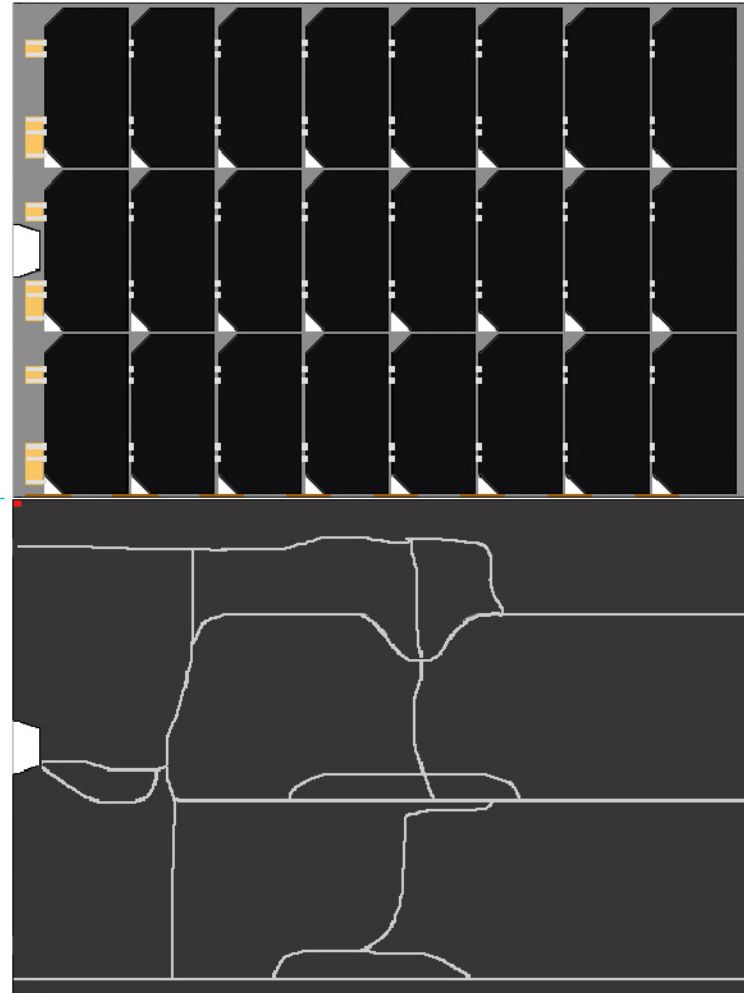


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Connector

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