

# Google's Project Suncatcher: Why AI Data Centres Are Moving to Space

December 16, 2025 • vajiramandravi.com



## Project Suncatcher Latest News

- Google has launched **Project Suncatcher**, a long-term research initiative to deploy solar-powered data centres in space starting in 2027, CEO Sundar Pichai announced.
- The plan involves initially testing small computing racks on satellites before scaling up. Pichai said that within a decade, **extraterrestrial data centres** could become commonplace, marking a radical shift in how and where digital infrastructure is built.

## About Project Suncatcher

- Project Suncatcher aims to deploy **solar-powered satellite** constellations equipped with **Tensor Processing Units** (TPUs) to perform large-scale machine learning computations in space.
- The system will use laser-based optical links to connect satellites, enabling data centre-level computational coordination.

- Google says its chips have been tested for radiation tolerance to withstand space conditions.
- As a first step, the company plans to launch two prototype satellites in partnership with Planet Labs by early 2027 to test and refine the technology.

## Need for Data Centres in Space

- The AI boom has led to a rapid expansion of terrestrial data centres, bringing significant environmental costs.
- These include **heavy water** consumption, rising dependence on fossil-fuel electricity, and a sharp increase in power demand—projected by Goldman Sachs to grow by up to 165% by 2030—intensifying climate concerns.

## Energy, Stability, and Reliability Advantages

- Space, particularly the lunar surface, offers **predictable conditions** and continuous solar radiation, reducing dependence on fragile terrestrial energy grids.
- Space-based systems are also **insulated from risks** like natural disasters and undersea cable disruptions that frequently affect Earth-based infrastructure.

## Data Sovereignty and Legal Flexibility

- Data localisation laws limit where companies can process and store data.
- Hosting data centres in outer space could bypass such constraints, as the **1967 Outer Space Treaty** prohibits national sovereignty claims over space, potentially allowing multi-country data hosting from a single extraterrestrial facility.
- Advances in rocket technology have significantly lowered the cost of space missions, making it increasingly viable to launch **experimental payloads** and test space-based data infrastructure.

## Key Challenges and Limitations

- Despite its promise, space-based data centres face major hurdles:
  - high construction and maintenance costs,
  - difficulty of repairs,
  - potential need for on-site specialists,
  - latency in data transmission due to distance from Earth, and
  - unresolved cybersecurity risks.

## How Other Tech Giants Are Exploring Space-Based Data Centres

- Several technology leaders are exploring space as the future home for data centres.
- OpenAI CEO Sam Altman has envisioned **Dyson sphere**-like AI data centres harnessing solar energy, an idea aligned with his \$500-billion Stargate project involving Nvidia, SoftBank, and Oracle. Practical experiments are already underway.
- Recently, the Starcloud satellite carrying Nvidia's powerful H100 GPU was launched to test AI computation in space.

- Earlier, Lonestar Data Holdings sent a mini data centre with 8 TB storage to the Moon during an Intuitive Machines mission.
- Other industry leaders share this vision. Jeff Bezos, through Blue Origin, has proposed moving polluting industries like data centres off Earth, while former Google CEO Eric Schmidt has also signalled plans to place data centres in orbit.
- Together, these initiatives indicate growing momentum toward extraterrestrial data infrastructure.

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