

A vibrant space scene featuring a large, textured planet in the upper left, a smaller planet in the lower right, and a colorful nebula in the center. The background is filled with stars and a gradient of blue, purple, and red light.

Space

constellr: A Fraunhofer Spin-off Monitoring Earth's Resources from Space



One Vision: A constellation of small satellites continuously monitoring the surface temperature of our planet with high resolution. The data can be used to analyse water levels, urban heat islands, infrastructures and forest fires



One Innovation: The High-Precision Versatile Ecosphere (HiVE) delivers 30m-resolution surface temperature data in near real-time, transforming how industries monitor and respond to Earth's changing surface



Towards a Sustainable Future: Preparedness for agriculture that is resilient to the challenges of climate change and population growth. According to the United Nations, humanity will need 50% more food by 2050 to sustain 10 billion people, while food security is already threatened by droughts, water scarcity, floods, and environmental challenges



From a Bus to a Fridge



Traditional satellites for monitoring Earth's surface temperature are massive and cost over €1 billion per mission, while constellr's microsattellites, no larger than a fridge, deliver the same capabilities for less than 1% of the costs



A Fraunhofer spin-off



European leader in satellite technology & data services



constellr: From Idea to Orbit

European Space Agency (ESA) prize

Fraunhofer EMI scientists Max Gulde and Marius Bierdel won third place in an ESA competition for satellite-supported efficient irrigation systems



Launch of the start-up, constellr

€2 million was raised to launch constellr through the support from Fraunhofer AHEAD program and German Ministry's EXIST funding



constellr Expands its Market Presence

constellr secures a multi-million, multi-year data contract from the EC and ESA under the **Copernicus Programme** and expands into **North America**, closing a €17M seed round after strong growth in **Europe and Brazil**



2017

2018

2020

2022

2023

2025
–
2028

EU
& Worldwide
Market
Expansion

Fraunhofer-Gesellschaft's Accelerator programs

Within the **Fraunhofer Accelerator**, Christian Mittermaier, complemented the science-based founding team with his business background



launch of Microsatellites

constellr's first thermal infrared Earth observation system **was launched aboard the ISS**. The telescope was developed in **collaboration with Fraunhofer**



1st launch into orbit

On 15 January 2025, **constellr launched its first thermal infrared satellite, 'SkyBee-1'**. Another launch is set for 2025 and more planned from 2026



"We wanted to use our Fraunhofer technology to help solve a global problem. However, the world of entrepreneurship was rather abstract for us and not part of our life plan. [...] Rather by chance, we got into conversation with an employee of Fraunhofer Venture."

Dr. Max Gulde, CEO of constellr

The RTO Fraunhofer was the place where:

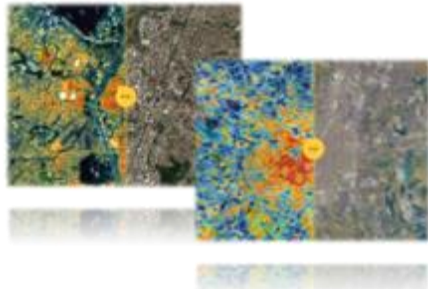
- **The idea** was conceived and developed into concept
- **The technology was matured** for a successful spin-out
- **The start-up** was created and accompanied
- **The collaboration continued** for Tech Development

constellr Technology's Impact on Earth



Urban Climate Resilience

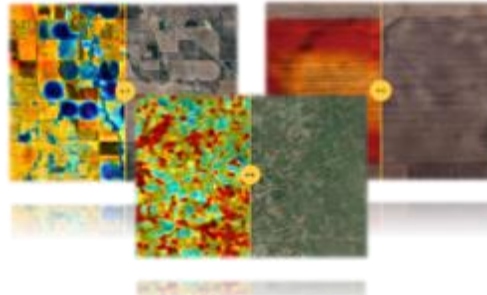
Urban Heat Islands & Mitigation Measures



As cities expand and temperatures rise, thermal intelligence helps pinpoint urban heat hotspots, while urban mitigation measures reduce heat island effects, improve air quality, and enhance biodiversity

Agriculture

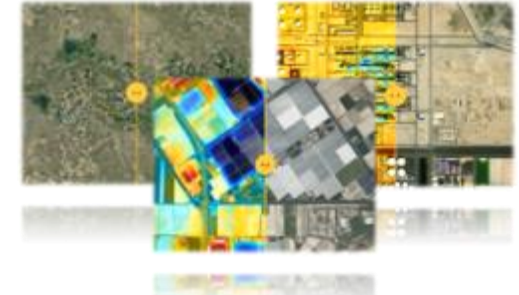
Crop Stress, Soil Temperature, Biomass & Yield Monitoring



Thermal data enables early detection of crop stress, optimized soil temperature assessments for planting, and advanced biomass and yield monitoring, providing farmers and industry stakeholders a market edge by identifying yield risks up to two weeks earlier than current tools

Resilient Infrastructures

Monitoring road network temperatures, energy infrastructure, and industrial sites



Enabling efficient detection of temperature extremes, thermal anomalies, and inefficiencies, optimizing maintenance, preventing damage, and reducing structural risks across critical systems



From 2026, **180 billion tons of water and 94 million tons of CO₂ could be saved annually**, while the global crop yield could increase by up to 4% without higher water consumption. This would be enough food for over **350 million people**



30+ Public organisations & Industrial partners supporting constellr: [European Space Agency](#), [US Department of Agriculture](#), [OHB](#), [BAYER](#), [terraPulse](#), [Copernicus](#), etc.



5 Sustainable Development Goals supported

