

Airbus awarded FORUM Earth monitoring satellite contract from ESA

Mission to measure heat emitted from Earth into space

€160M FORUM mission due to launch in 2027

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Stevenage, 28 June 2022 - Airbus has been awarded a €160M contract for the European Space Agency's (ESA) FORUM satellite to measure heat emitted from the Earth into space. FORUM, short for Far-infrared Outgoing Radiation Understanding and Monitoring, will be the first satellite to observe Earth in the far-infrared part of the spectrum, providing unique measurements of the Earth's outgoing energy to help improve understanding of the climate system.

Measurements from FORUM's spectrometer will enable scientists to compile a high resolution view of the Earth's greenhouse effect and the properties of ice clouds and water vapour in the atmosphere. Airbus is mission prime with OHB providing the instrument.

Jean-Marc Nasr, Head of Airbus Space Systems said: "This critical Earth observation mission to measure infrared radiation from the Earth for the first time, will give scientists and climatologists the data they need to improve their global warming forecasts.

"It builds on Airbus' heritage in designing and manufacturing cost efficient small Earth observation missions including Sentinel-5P and is the sixth Airbus primed Earth Explorer mission for the European Space Agency."

Science Minister George Freeman said: "This important new mission to further improve the accuracy of climate forecasts and view our planet through new eyes is another illustration of UK space tech expertise. Scientists at Imperial College London provided key support to ESA in defining FORUM's science objectives and the satellite is set to be built by Airbus in Stevenage. This is a significant industrial contract which demonstrates the UK's strengths in Earth observation technology and satellite manufacturing, as well as our global leadership in tackling climate change."

Simonetta Cheli, ESA's Director of Earth Observation Programmes, said, "We are thrilled to award the industrial contract to Airbus in the UK as Prime Contractor for FORUM, with OHB in Germany responsible for the instrument. FORUM adds to our highly successful family of Earth Explorer missions and, by acquiring novel information, will bring great benefits to climate science."

Airbus in Stevenage will lead the development of the satellite, with Airbus in Germany responsible for the Instrument signal detection chain, and Airbus in France providing platform product support.

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Using in-orbit proven technology will considerably reduce risk and costs on the programme. Avionics for the mission have been developed, validated and flown together on previous missions, which will enable savings in verification activities, software development and operating procedures.

The main instrument on FORUM will be a Fourier Transform Spectrometer operating in the far-infrared. The Sun's incoming shortwave radiation is absorbed at the Earth's surface and re-emitted into space, through the atmosphere, at longer infrared wavelengths. FORUM will measure the signature of this outgoing radiation, from which a crucial understanding of water vapour, ice clouds, surface snow and ice, carbon dioxide and other greenhouse gas characteristics can be derived. The satellite will also be equipped with a thermal imager for ground sample validation.

The FORUM satellite will fly in a loose formation ahead of the MetOp-SG A1 satellite for synergistic observations using MetOp-SG A1's infrared atmospheric sounding interferometer. Using MetOp's data at shorter infrared wavelengths will complement and further improve FORUM's own science.

Procurement from small and medium-sized enterprises (SME) will be a key element of the FORUM mission to further enhance the space supply chain across ESA member states. The 883 kg FORUM satellite will be in a polar orbit at an altitude of 830 km and is scheduled to launch on a Vega-C launcher from Kourou, French Guiana in 2027. FORUM will be the 9th Earth Explorer mission of ESA's Future EO Programme.



The Airbus-built FORUM satellite will be the first to observe Earth in the far-infrared part of the spectrum
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Note to UK Editors:

Professor Helen Brindley, from Imperial College London and her team helped to shape the mission, developing the scientific rationale. Using novel airborne observations they have demonstrated the benefit that FORUM can bring in characterising atmospheric water vapour, ice clouds and surface properties, all key players in determining climate sensitivity. Professor Brindley and colleagues from NCEO continue to sit on the Mission Advisory Group.

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