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# New Zealandâ??s MethaneSAT agricultural emissions science programme gears up to launch satelliteÂ Â

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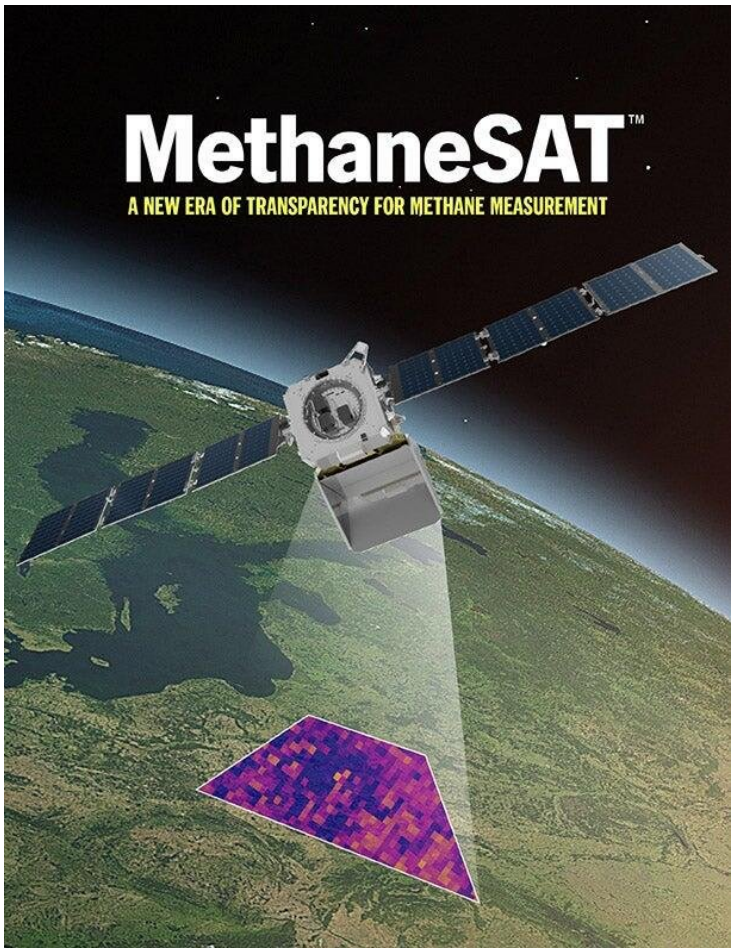


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MethaneSAT, is a global initiative led by the US Environmental Defense Fund to track and reduce methane emissions around the world.Â The US project is focused on methane leaks from oil and gas production, while the New Zealand-led agricultural programme is studying global emissions from agriculture, such as ruminant farming and rice production.

Science leader for the agricultural programme, NIWAâ??s Dr Sara Mikaloff-Fletcher, says the state-of-the-art satellite is unique, because it can measure over a large area and map methane at high spatial resolution and unprecedented precision.

â??MethaneSAT will give us the type of data that we could never get from ground-based measurements. It will map methane over 200 by 200 kilometre regions, and it will be able to detect as few as two parts of methane per billion when averaged over a 1km spatial resolution. MethaneSAT will be the first satellite well suited to quantifying diffuse agricultural emissions, due to its high precision and spatial resolution. We have the opportunity to be the first team to develop and prove this capability worldwide,â?• says Dr Mikaloff-Fletcher.

"New Zealand provides the perfect test ground for the MethaneSAT agricultural programme, because it has an unusual greenhouse gas profile and world class greenhouse gas measurement and modelling capability. While carbon dioxide (CO2) is the most important greenhouse gas for most developed countries, New Zealandâ??s biggest source of emissions is methane and the lionâ??s share of that comes from agriculture.Â A field campaign is happening in New Zealand to measure methane emissions at the surface and from aircraft to test this capability,â?• says Dr Mikaloff-Fletcher.Â

Atmospheric researchers on the project have been laying the groundwork since 2021, developing and testing models that will help them make sense of the satellite data, preparing and testing instruments that will be used to validate satellite information on the ground, and identifying the best places for the satellite to measure agricultural emissions around the world. Post-launch, access to data from the satellite scanning the atmosphere will herald an exciting new stage in the research.

New Zealand has a long history of world class greenhouse gas measurements and modelling.Â  For example, NIWAâ??s atmospheric observing site at Lauder is one of the two founding Total Column Carbon Observing Network sites, which are the gold standard for validating greenhouse gas observing satellites, including MethaneSAT.Â

The agricultural research programme is a collaboration between experts across New Zealand, including NIWA, Manaaki Whenua Landcare Research, University of Waikato, and Victoria University of Wellington, and the US based science team at Harvard University, EDF, and Smithsonian Astrophysical Observatory. The project is funded by the Ministry for Business, Innovation and Employment. Partners RocketLab and the University of Aucklandâ??s Te PÅ«naha Ä?tea-Auckland Space Institute are establishing and operating mission control for the satellite.