Media Release
Chiefs of Staff, News Directors

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New drone technology aids in better assessing impact of climate change in Antarctic regions

New drone technology which enables scientists to better assess the impact of climate change in Antarctic regions through analysing fragile moss has been developed by University of Tasmania scientists.

Associate Professor Arko Lucieer and Dr Zbyněk Malenovský from the University’s School of Land and Food joined researchers from the University of Wollongong to study the impact of climate change on mosses in East Antarctica through new methods using unmanned aircraft systems (UAS).

“Plants such as mosses are sensitive markers to subtle shifts in Arctic and Antarctic environmental conditions, including climate change,” Associate Professor Lucieer said.

“Traditional ground-based monitoring can be invasive, labour-intensive and physically demanding.

“High-resolution multispectral satellite observations have been used in the past, but they alone do not provide the resolution needed to properly assess plant health.”

To help provide better results, Dr Malenovský and Associate Professor Lucieer developed and deployed a new UAS with a hyperspectral sensor.

The specially designed UAS is able to fly at low-altitude, allowing it to collect imagery in unprecedented detail.

Researchers found that such drone image data with a pixel size of four centimetres, analysed by modern machine learning method, are able to detect vegetation health indicators, via quantitative estimation of chlorophyll content and leaf density, more accurately than satellite imagery with the highest available resolution of two metres.

“This new method helps to bridge the existing scale gap between detailed field observations and insufficient satellite observations,” Associate Professor Lucieer and Dr Malenovský said.
“By a combination of novel remote-sensing platforms and techniques, we opened up new opportunities for detailed monitoring of important vegetation processes and stress reactions.”

Dr Lucieer said the new method of UAS has also been utilised in vegetation communities across the Australian outback and for precision agriculture in Tasmania.

The research, “Unmanned aircraft system advances health mapping of fragile polar vegetation”, was published in *Methods in Ecology and Evolution*, with researchers Dianna H King, Johanna D Turnbull and Sharon A Robinson from the University of Wollongong.

***High resolution images are available on request.***

**Information released by:**
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