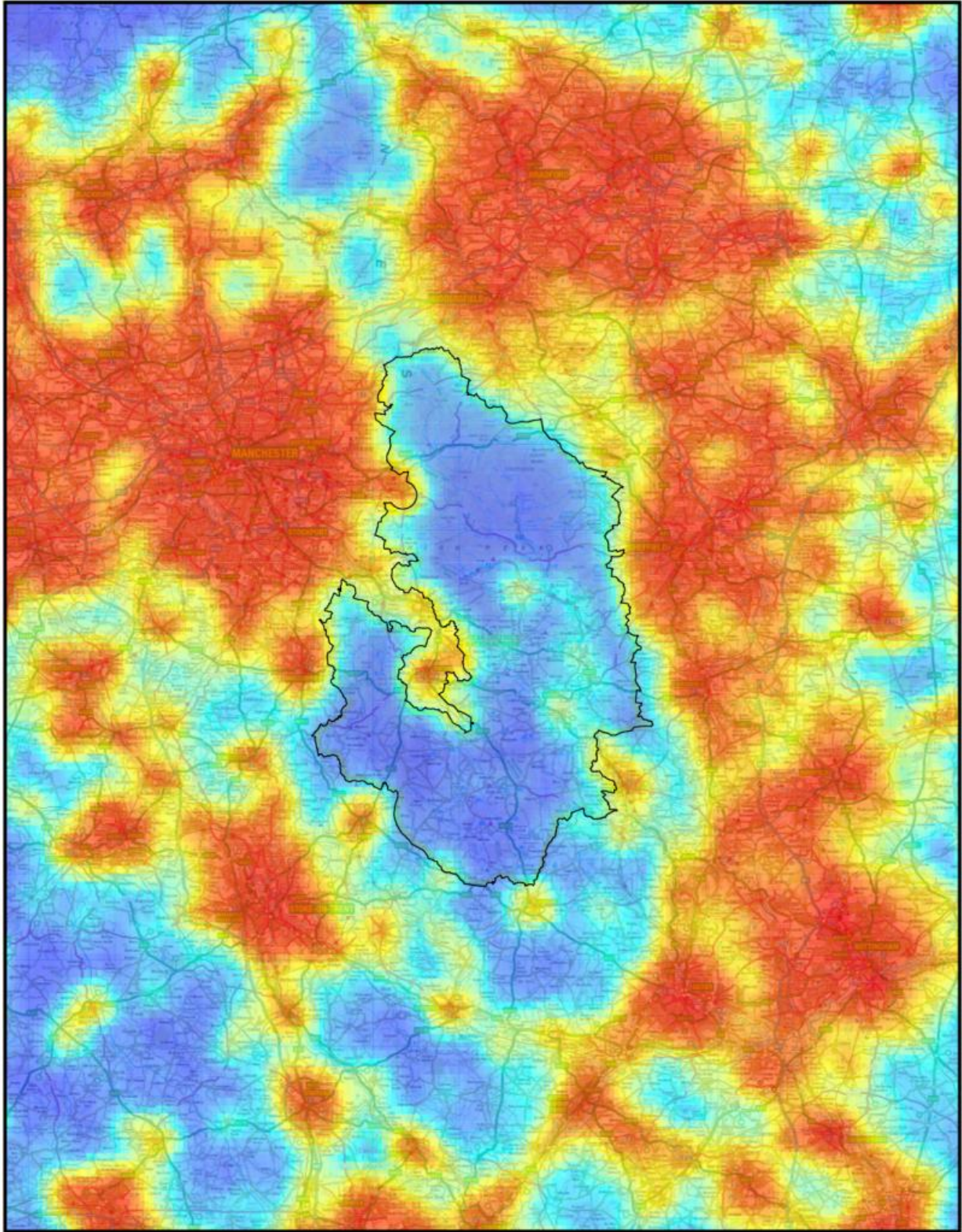


Drones to keep tabs on light pollution

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The map above shows the impact of light pollution in and around the Peak District

National Park, in 2009. This map was generated using data obtained from a satellite orbiting the Earth, and has been adjusted to use artificial colour. Even though approximately 16 million people live within an hour of the National Park boundary (outlined in black), it is apparent that it is an area that is relatively unaffected by light pollution, a result of the protection of this natural landscape. Credit: Peak District National Park Authority

Astronomers at Nottingham Trent University have developed a light, low cost system, deployable on a drone, that could help everyone monitor and control light pollution. The team, led by undergraduate student Ashley Fuller, present their work at the National Astronomy Meeting at the University of Nottingham.

Excessive light is a pollutant in its own right, as is the energy, and carbon footprint, needed to generate it. The cultural and scientific impact is very visible, and recent studies confirm that [light pollution](#) prevents a third of the global population from seeing the Milky Way.

Dark skies are preserved in some designated areas, with parks, islands and other reserves offering places in the UK and around the world where the night sky is still relatively pristine. All these places though need continuous monitoring.

The Nottingham Trent team will present a new mount and operational platform carrying a Sky Quality Monitoring device (SQM), which operates autonomously, and can be used to map the sky without any specialist training. Fuller worked on its development for a final year project, with Dr Daniel Brown and Dr Rob Morris, both also at Nottingham Trent.

The new monitoring system is based on a microcontroller and standard

servo motors, and the data it gathers is stored on an SD card. Fuller and the team see it being used by for example national park rangers carrying out their work on site. Crucially, it is light enough to be mounted on a drone, which will take the device to inaccessible areas, making it a lot easier to create a comprehensive map.

Fuller comments: "The [night sky](#) is a vital part of our heritage, and one we should strive to protect. With a drone-mounted autonomous system, we can quickly gather the evidence we need to show where the problem is worse, and on a more positive note, find out where people can see the best views of the stars."

The team would like to see the new light pollution monitoring system, with its straightforward and low cost design, being taken up by schools and colleges. As an astronomy project, it could inspire young people to develop the skills in IT, electronics and physics that are needed for sustainability and that are so much in demand in the wider economy.

Provided by Royal Astronomical Society

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