

A dedicated all-sky camera for AuroraWatch UK

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What is AuroraWatch UK?

AuroraWatch UK is a free service run by the Space and Planetary Physics group at Lancaster University. It alerts its users as to when an aurora might be visible from the UK.

Alerts are generated based on the current geomagnetic disturbance levels as measured by AW UK's magnetometers.

How popular is AuroraWatch UK?

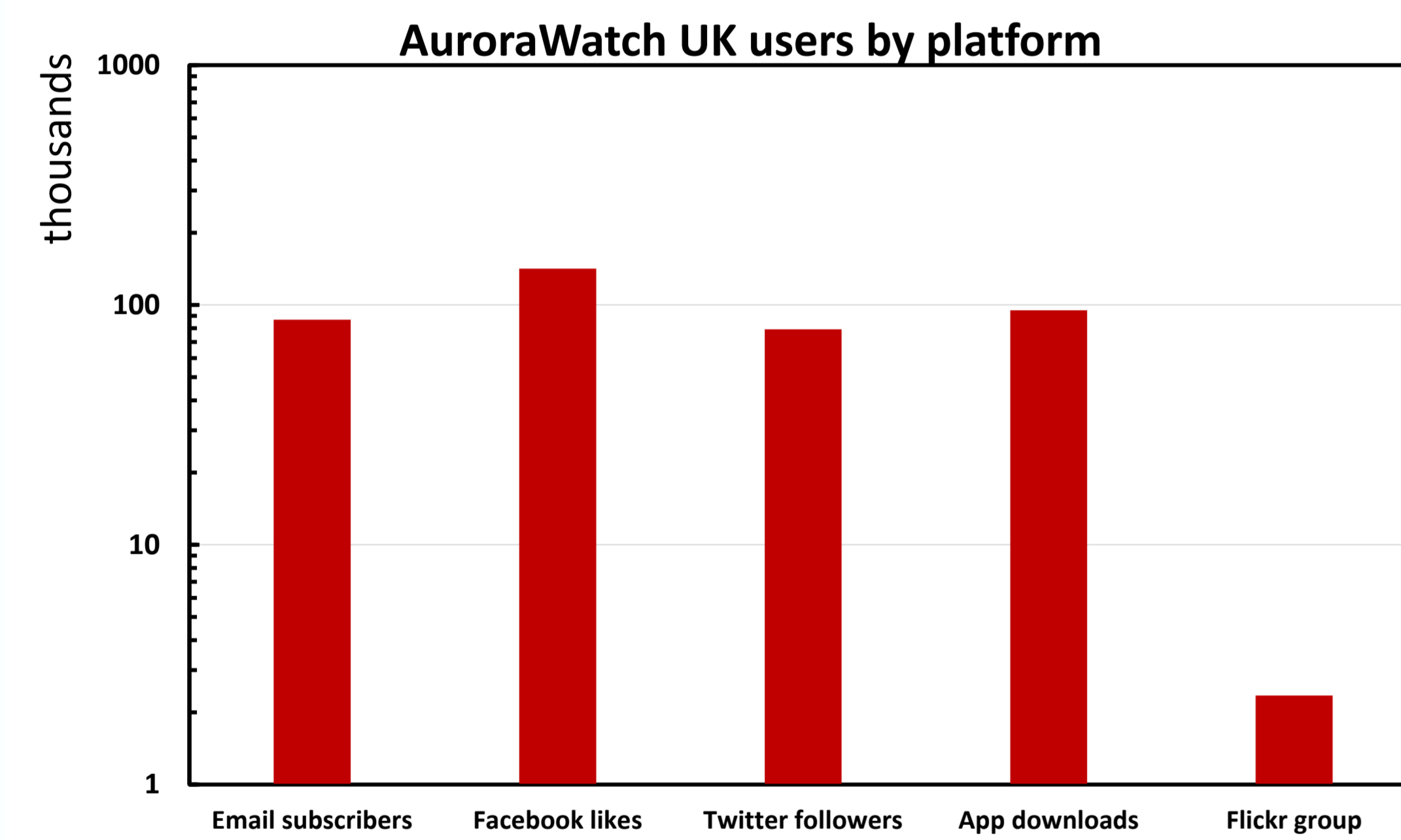


Figure 1. Number of AW UK users by platform.

In addition to the thousands of users who access the service, AW UK is frequently mentioned in the national press when an aurora is visible from across the UK.

Why does AuroraWatch UK want an all-sky camera?

An all-sky camera provides AW UK with an exciting opportunity to capture photos of auroral displays from the UK. These photos will provide both scientific value (such as allowing us to compare the images taken with our alert levels as a method of calibration) and outreach potential (producing a live stream of aurora images for the public to view).

Allowing our users to see the aurora in real-time will be an inspiring facility that neatly compliments our current alert system.

What system will we run?

Using funding from Lancaster University's Faculty of Science and Technology, we have purchased a **ZWO ASI174MC** astronomy camera and a **Fujinon FE185C046HA-1 1/2" 1.4mm f/1.4 C-Mount Fish-Eye Lens**. We are coupling the camera with a Raspberry Pi 2.



Figure 2. An example set-up currently in use by Thomas Jacquin in Canada.

The camera and lens will be housed inside a heated acrylic dome with power being provided through a power over Ethernet switch. Images will be fed in near real-time to the AW UK servers and published online.

The camera will be located in mainland Scotland, most probably at the AW UK magnetometer site on the outskirts of Aberdeen. Though the location is still yet to be finalised.



Figure 3. Location of the Aberdeen station: a possible site for the camera.

The total cost of the system is projected to be £1,500. A second system, once this set-up has been proven, may also be developed and placed elsewhere in the UK. Full specifications will be made public and available for reproduction.

What do we aim to achieve?

The same camera has been collecting high quality auroral images at the Kjell Henriksen Observatory at the University Center in Svalbard.

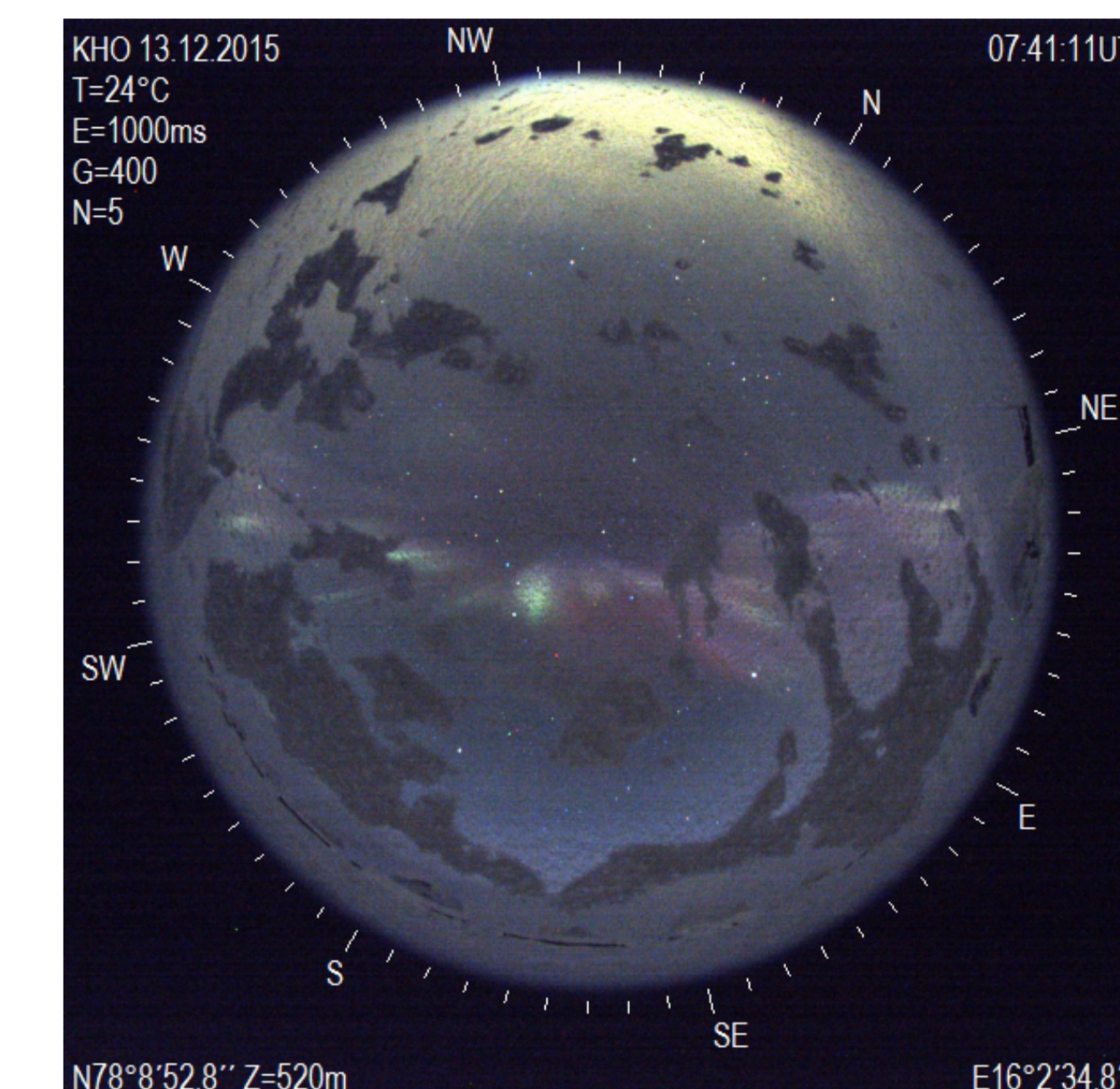


Figure 4. An all-sky image taken with the ZWO ASI174MC camera.

Furthermore, a real-time aurora camera currently in operation on the Shetland Islands recently captured stunning footage of the aurora.



Figure 5. "Cliff cam 3" captures the aurora from the Shetland Islands on 16 March 2016.

We aim to produce similar high quality real-time captures of the aurora and other night-sky phenomena. We will provide a live feed of the images through the AW UK website as well as an archive for scientific study.

Studies will be undertaken to combine the camera images with citizen science data to determine the accuracy of AW UK alert levels and for other auroral research.