

## CAS UKMON Report to CAS Committee Meeting 23/11/2017

This report covers activities between the 15<sup>th</sup> September 2017 and the 19<sup>th</sup> November 2017 for the CAS Meteor Observation Camera 2 located as part of the Society Observatory at National Trust Dyffryn Gardens.

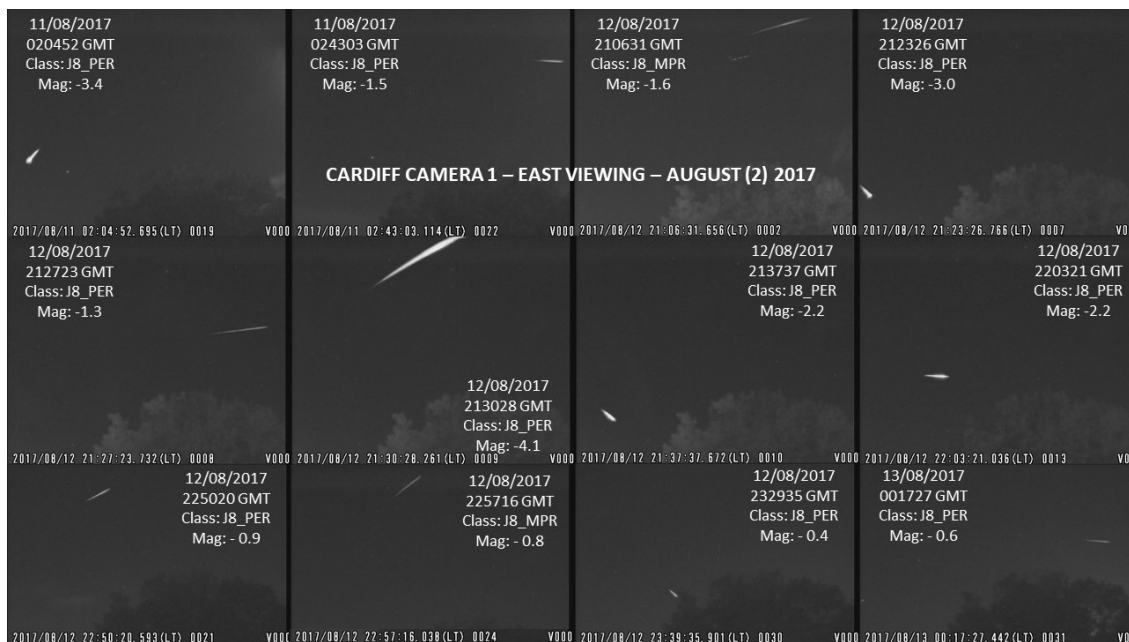
Camera 2 captured 85 meteor trails in September 2017 and 64 meteor trails in October 2017; no fireball events were recorded. There have been 89 event captures in November to the 14<sup>th</sup> November.

The CAS website CAS\_UKMON entry has been updated to the end of October 2017 for Camera 1, end October 2017 for Camera 2 and today for this report and general information.

The UKMON central database has been updated to the end of October 2017 for Camera 1 and the end of October 2017 for Camera 2. In the last report (September 2017) it was noted that there was an apparent lack of Perseids captured by Camera 2 during the peak of the Perseids however it can be reported now that for Camera 1 there were 55 Perseid meteor events captured with 9 having a magnitude greater than -3.0.

[http://www.cardiff-astronomical-society.co.uk/cas\\_ukmon2](http://www.cardiff-astronomical-society.co.uk/cas_ukmon2)

Some images:



Camera 1 August 2017 Selection 2



Composite Camera 1

9<sup>th</sup> – 13<sup>th</sup> August 2017



Cardiff Camera 2 October 2017

During October some data from Camera 2 (KDM-6101G) was shared with UKMON because there was an interest in the performance of this new camera model. The response back was “By the way the camera is set to 35 degrees and faintest star is +6.1 mag., impressive!”

Last Saturday (18<sup>th</sup>) I attended the UKMON meeting at the Natural History Museum, London a report from the day is below.

Edward Cooper  
CAS UKMON Co-ordinator  
19<sup>th</sup> November 2017

Report on UKMON Meeting held 18<sup>th</sup> November 2017 at the Natural History Museum, London

The meeting was the third time the group had met since 2012 with 20 people in attendance, most for the whole day but a few for specific portions of the day.

The timetable for the day was as follows:

Topic	Presenter	Start	End
Intros	Richard Kacerek, Peter Campbell-Burns, UKMON	10:00	10:10
State of the Network	Richard Kacerek, UKMON	10:10	10:30
William Perkin High School	Anita Kapila, William Perkin High School	10:30	11:00
Break		11:00	11:10
UFO Automation	Steve Bosley (HAG/UKMON)	11:10	11:40
Orbital Dissimilarity	Peter Campbell-Burns (UKMON)	11:40	12:20
<b>Lunch</b>		<b>12:20</b>	<b>13:20</b>
NHM work	Ashley King, NHM	13:20	14:00
FRIPON	Jim Rowe, UKMON / SCAMP	14:00	14:40
Discussion	All	14:40	15:00
<b>Break</b>		<b>15:00</b>	<b>15:15</b>
New Archive / future plans	Richard Kacerek, UKMON	15:15	15:55
The Australian Desert Fireball Network, Establishing a UK Arm	Martin Suttle, NHM	15:55	16:35
Closing Remarks	Richard Kacerek, Peter Campbell-Burns, UKMON	16:35	16:50

All the talks were aided by PowerPoint presentations and these will be made available shortly in the meantime below is a brief résumé of the topics covered.

State of the Network - Richard Kacerek

The network currently has 20 active cameras, there are a few more sites which are either in the process of being relocated or have fallen by the wayside for now. Of most significance to CAS is the closure of the station at Scotch Street, Northern Ireland as this one occasionally provided what is termed “unified” (i.e. captures the same event) observations with Cardiff CAM2. This happened in August this year when both Exeter and Scotch Street captured the same meteor event as Cardiff. The UKMON network is principally southern based, since there are other networks established elsewhere in the UK; some UKMON stations report to more than just UKMON.

It was decided that a review of where some of the cameras are pointing would be worthwhile to increase coverage, either in the UK or across the English Channel towards France.

The software for capture and analysis originally produced by Sonotaco in Japan is static and not being developed. In fact, some of the manuals are only available in Japanese. At present CAS have no

requirement for these texts. There are a lot of users of the software across the world, but the meteor application was not the reason for initial development.

Cooperation with other networks international and national plus a school (William Perkin C of E High School) and the NHM were noted with both giving presentations at the meeting.

A description of the relatively new UKMON website / archive architecture was given which is based on a Cloud concept and significantly server-less so no maintenance of hardware is required. There are multiple mirrors of the data (circa 58) around the world. Development continues on this with an ever-expanding archive of data with tools being developed to allow almost instantaneous access to the data. Just as an example a live Perseids event can be visualised by multitudes of people in real time without crashing the website.

New hardware – this refers to the recently installed camera (KDM-6101G) at the Dyffryn Observatory.

Reports (via slides) were given illustrating the data gathered for each of the main meteor showers and overall statistics for data held in the archive.

The future, continued development of the website, data hosting for other networks, more automation and products (alerts, reports and graphics). A library of slides for presentations. And maybe an “App” which was demonstrated to aid reporting of meteor observations.

#### William Perkin C of E High School - Anita Kapila

This was an account of a school initiative annually engaging 15 children in a school club i.e. not a curriculum requirement. Initial funding was awarded by the Royal Society Partnership Grant to establish a UKMON Station and work alongside Professor Monica Grady of the Open University Planetary and Space Science Department. The NHM have also been involved providing workshops and similar activities at the school. For a more official report see: <https://ukmeteornetwork.co.uk/news/william-perkin-school-joins-ukmon/>

#### UFO Automation - Steve Bosley

This topic explained the background for the development of “R” scripts to aid automation of the initial stages of data processing. [R is an open source programming language and software environment for statistical computing and graphics that is supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis.]

The scripts have been developed to help Steve Bosley of the Hampshire Astronomical Group to process the data from 4 cameras and to be able to satisfy the differing quality criteria for two different data archives.

#### Orbital Dissimilarity - Peter Campbell-Burns

This was another essentially software / analysis topic using “R” scripts (plus some Excel), to analyse the orbits of observed meteors and verification of their origins when compared to the Sonotaco tool “UFO Radiant” which has the manual in Japanese. To cut the story short the “UFO Radiant” package is quite good at what it does but if you want to go further “R” scripts are available to do this.

Dr John Mason remarked that the Perseids as observed had changed over the years and now presented as a number of filaments rather than a single batch.

NHM work – Ashley King (NHM Planetary Materials Network)

The work of the NHM with respect to meteorites was described, there are two permanent researchers and a number of other PhD, Masters students. The NHM collection contains approximately 2,000 individual meteorites in about 5,000 registered pieces

Next year the NHM are going to have a new temporary exhibit on meteorites.

Their camera is currently out of action due to building works at the NHM which have not only destroyed the room where the acquisition PC was housed but have removed the access stairs to the roof where the camera still is. It is anticipated normal service will be resumed next year when the building works complete.

The main interest in UKMON is for outreach and their collaborative work with the William Perkin C of E High School.

Twitter @NHM\_Meteorites

SCAMP (System for Capture of Asteroid and Meteorite Paths) - Jim Rowe

This is described more fully at <https://ukmeteornetwork.co.uk/SCAMP/>

It is a UK network (3 at present Manchester, Honiton and Barnet) of all-sky digital cameras with the intention of tracking a meteor / meteorite event sufficiently well to result in the recovery of the meteorite. France have an established network of more than 100 cameras called FRIPON. There is another network in Italy PRISMA.

Might be something to consider providing more coverage to the west than the current network but would need funds and internet access as well as a suitably high location.

The Australian Desert Fireball Network, Establishing a UK Arm - Martin Suttle & Luke Daly

The talk described a project academically led to establish a network of all-sky cameras across most of Australia. The initial cameras used on the project were film cameras at £100k a go and the size of a small car when packaged. Over the years the cameras have reduced in size and cost to £2k based on an DSLR in an enclosure with a microcomputer.

In Australia they have tracked and recovered three meteorites (Bunburra Rockhole 2007, Murrili and Halloween Dingle Dell).

They are now looking to setup networks in the Czech Republic and the UK.

<http://fireballsintthesky.com.au/> is the project website and also promotes an “App” like the one demonstrated in an earlier talk.

This might be something to follow up, potentially with an application for a small grant from STFC for the hardware.

Closing Discussion

School engagement is problematic in terms of funding and resource (people).

UKMON is resource limited and doesn't want to introduce payment.

The members want to keep collaboration without the need for structures and committee.

Ideas need funding.

I might have found a solution to timekeeping on the PC at Dyffryn with no internet link, South Downs Planetarium have had the same issue, solved it but need to refresh what the solution was in sufficient detail to be useful.

Post meeting:

I have made an offer without commitment to Richard Kacerek for the next meeting to be hosted in Cardiff, he's pleased for the offer and will consider something in 2018. More on this in the future.



3<sup>rd</sup> UKMON Meeting at the Natural History Museum, London 18/11/2017

Edward Cooper  
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19<sup>th</sup> November 2017