

Collision course: Amateur astronomers play a part in efforts to keep space safe

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Example of a satellite moving across the sky. Credit: Dstl

When the Basingstoke Astronomy Society (BAS) heard about Dstl's Space Programme they were keen to find ways that they could help. Dstl's team came up with an idea that would help them to find out whether a low-cost distributed network of cameras could make a worthwhile contribution to the future UK [space](#) situational awareness effort.

The [amateur astronomers](#) used commercially available telescopes, tripod-mounted DSLR cameras and low-light cameras to record images of satellites such as the International Space Station, Cryosat, and Remove Debris. By collecting accurate time stamps for the images, Dstl were then able to process the data and compare expected orbits to the data provided by the astronomers.

Dstl were pleased to find that for low Earth orbit satellites, down to about the size of a kitchen freezer, small aperture prosumer level lenses and cooled CCDs similar to those used by amateur astronomers, are capable of monitoring their positions and maintaining a reasonably accurate orbit.

Heavy traffic is commonplace on Earth but now congestion is becoming an increasing problem in space. With over 22,000 artificial satellites in orbit it is essential to keep track of their positions in order to avoid unexpected collisions. Amateur astronomers from the Basingstoke Astronomical Society have been helping the Ministry of Defence explore what is possible using high-end consumer equipment to track objects in space.

Grant Privett, of the Defence Science and Technology Laboratory (Dstl), will talk about this surprising collaboration on Thursday 4th July at the Royal Astronomical Society's National Astronomy Meeting in Lancaster.



Member of Basingstoke Astronomical Society has his eyes on the sky. Credit: Dstl

"The accuracy of the exposure timing is absolutely critical, and requires some attention to detail" explains Privett, "the BAS astronomers were very good and clearly highly talented so together we formed a good team".

"We found there are no obvious impediments to using commercially available kit to provide small component of a more capable and diverse system for monitoring space, where satellites of importance to UK communications, economy, and defence operate".

The ability of such a relatively low-cost and deployable approach to data gathering is being examined to ensure Dstl can provide the best possible guidance and advice to UK Government in its future procurements. The full technical results from the collaboration will be published later this year.

More information: nam2019.org/

Provided by Royal Astronomical Society

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