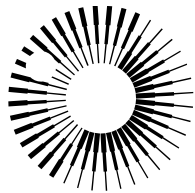




Conflicts of Interest? Satellite Constellations and the UK and European Responses

Robert Massey, Royal Astronomical Society
@robertmmassey



Royal
Astronomical
Society

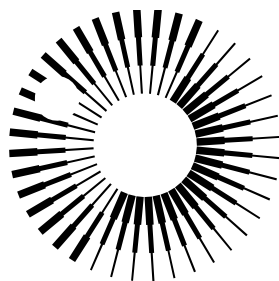




Dark and Quiet Skies for Science and Society II

Implementing the recommendations

La Palma, Canary Islands, Spain
3 - 7, October, 2021



Royal
Astronomical
Society



6 October 2021

2

A little history...

- Project West Ford in 1961: 480 million dipole antennae
- Protests from astronomers, including in UK and USSR
- Francis Graham-Smith noted potential issue for optical astronomy in 1980

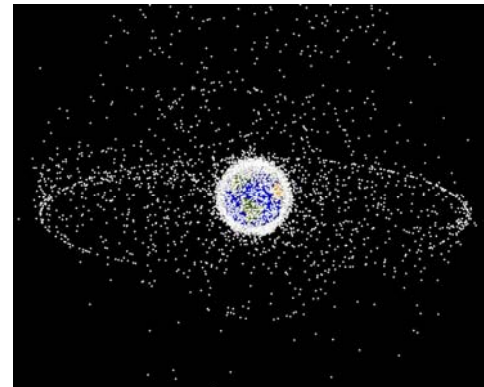
“The Council of the Royal Astronomical Society views with greatest concern the reported intention of the U.S. National Aeronautical and Space Administration to put into orbit a large number of reflecting dipoles.

Such a step would begin to shut off one of the few wavelengths available to radio astronomy to further our knowledge of distant regions of space. At the present stage of development of radio astronomy it is quite impossible to say that a particular wave-length could be dispensed with, and it would be scientifically a grave disaster if this project were permanent.

QJRAS, June 1962

Where we were, and where we're heading...

- 2019: around 2,000 satellites deployed in Low Earth Orbit (up to 2,000 km altitude)
- Now: +1791 Starlink satellites at 550 km, +322 OneWeb satellites at 1200 km





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Early responses

- American Astronomical Society, International Astronomical Union, RAS issued statements of concern
- (Predictable) Twitter outrage too



Robert Massey
@RobertMMassey

Imagine the outcry if a terrestrial environment was desecrated in the same way. Is [@elonmusk](#) at all bothered?



Alex Parker
@Alex_Parker · 25 May 2019

I know people are excited about those images of the train of SpaceX Starlink satellites, but it gives me pause.

They're bright, and there are going to be a lot of them.

If SpaceX launches all 12,000, they will outnumber stars visible to the naked eye.

[Show this thread](#)

9:25 am · 25 May 2019 · Twitter for Android

3 Retweets 2 Likes

10 JUNE 2019

AAS Issues Position Statement on Satellite Constellations

** Contact details appear below. **

On May 23rd entrepreneur Elon Musk's company [SpaceX](#) launched 60 Starlink communication satellites aboard a single rocket. Within days skywatchers worldwide spotted them flying in formation as they orbited Earth and reflected sunlight from their shiny metal surfaces. Some people, unaware that artificial satellites can be seen moving against the starry background every clear night, reported UFO sightings. Astronomers, on the other hand, know exactly what they



3 June 2019

IAU Statement on Satellite Constellations

[Click to Enlarge](#)

Over the past decades, considerable effort has gone into designing, building, and operating a variety of satellite constellations for a variety of purposes, including providing communication services [1]. Until this year, the number of such satellites was below 200, but that is changing rapidly. In that event, satellite constellations will be visible to the naked eye.

RAS statement on Starlink satellite constellation



UK 'space landscape' (1)

- Outer Space Act (1986) and Space Industry Act (2018)
- BEIS oversees most science spending – secretary of state grants orbital licences
- Licensing mostly CAA, OfCom regulates radio spectrum
- UK Space Agency is delivery body



OneWeb

- \$500m part-purchase by UK government, alongside Bharti Global, driven by former advisor Dominic Cummings
- Doubts over procurement process (civil servants, select committee chair)
- Now integral to UK Space Strategy

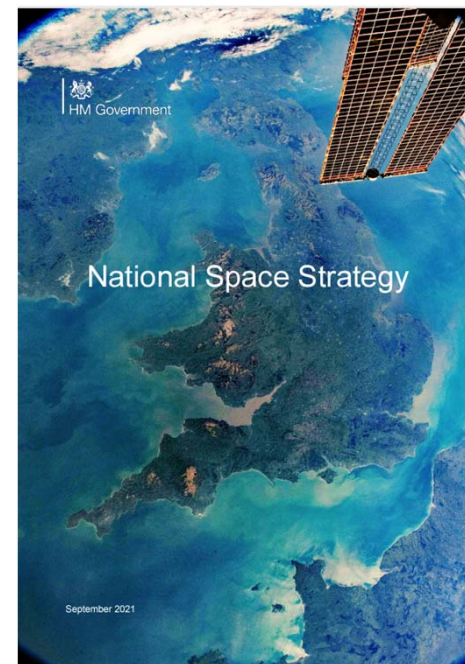


Contains Parliamentary information
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UK 'space landscape' (2)

- New Space Strategy (September 2021)
- Covers growth, 'Global Britain', *science and technology*, defence and space services – including satellite broadband
- Space sustainability
- *No reference (yet) to ground-based astronomy*



European ambitions

- EU proposal for €7 billion constellation
- Mooted to tackle Internet dead zones in Africa as well as Europe
- Feasibility studies underway
- Could be built via European Space Agency

Europe Wants To Build Its Own Satellite Mega Constellation To Rival SpaceX's Starlink



Jonathan O'Callaghan Contributor @
Science

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Jonathan is a freelance space journalist that covers commercial spaceflight, space exploration, and astrophysics



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Working Groups: RAS

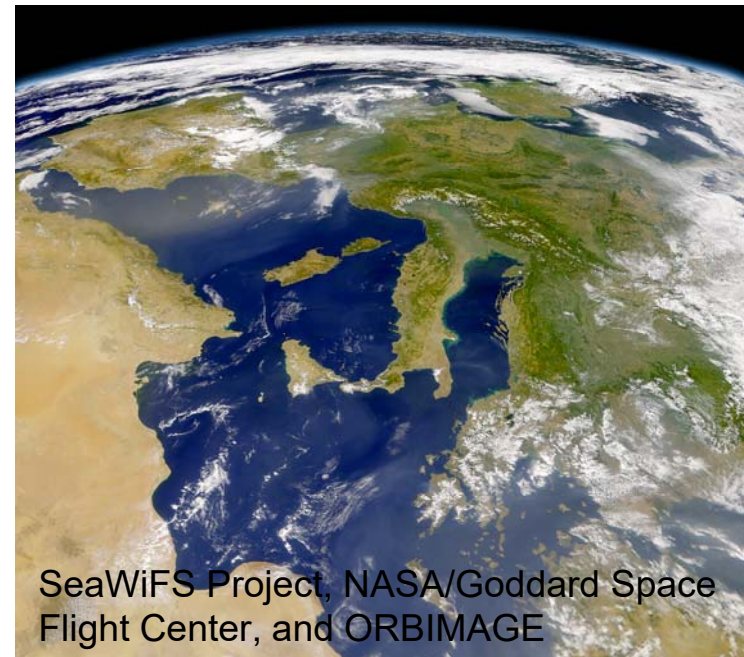
- Slow compared with AAS...
- RAS group includes academics, industry, funding agencies, major observatories
- Sub-groups cover optical and radio astronomy



Lucinda Offer / RAS

Working Groups: EAS

- Europe-wide remit
- Membership from astronomical community, European Satellite Operators Association
- Liaison with EAS member societies in more than 30 countries



SeaWiFS Project, NASA/Goddard Space Flight Center, and ORBIMAGE



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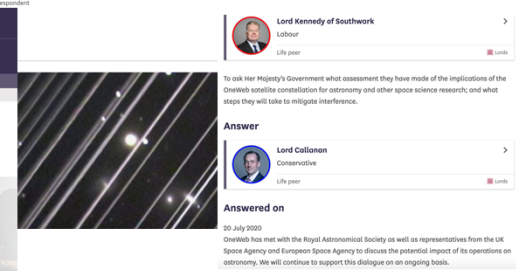
What we're doing...

- Parliamentary questions
- Science and Technology Facilities Council studies
- Commons Science and Technology Committee included satellites in inquiry
- Dialogue with UK Space Agency and OfCom
- Briefing journalists



Mega-constellation firms meet European astronomers

By Jonathan Aracé
BBC Science Correspondent



What we're doing...

- Sessions at EAS annual conference
- Meetings and liaison with European Commission
- Briefing MEPs (Niklas Nienas, Green group, would like to talk to Sky and Space Intergroup)



What's next?

- IAU Centre for Protection of the Dark Sky from Satellite Constellations: EAS and RAS supporting SKAO / NOIRLab bid
- Public engagement and awareness
- Grassroots campaigns: public and MPs, MEPs
- Arguments for reform of national licensing regime: protection of sky included in space sustainability and recognition of astronomy as 'space activity'
- **Urgent need for formalised engagement at national and European level**



Thank you for
your
attention!