

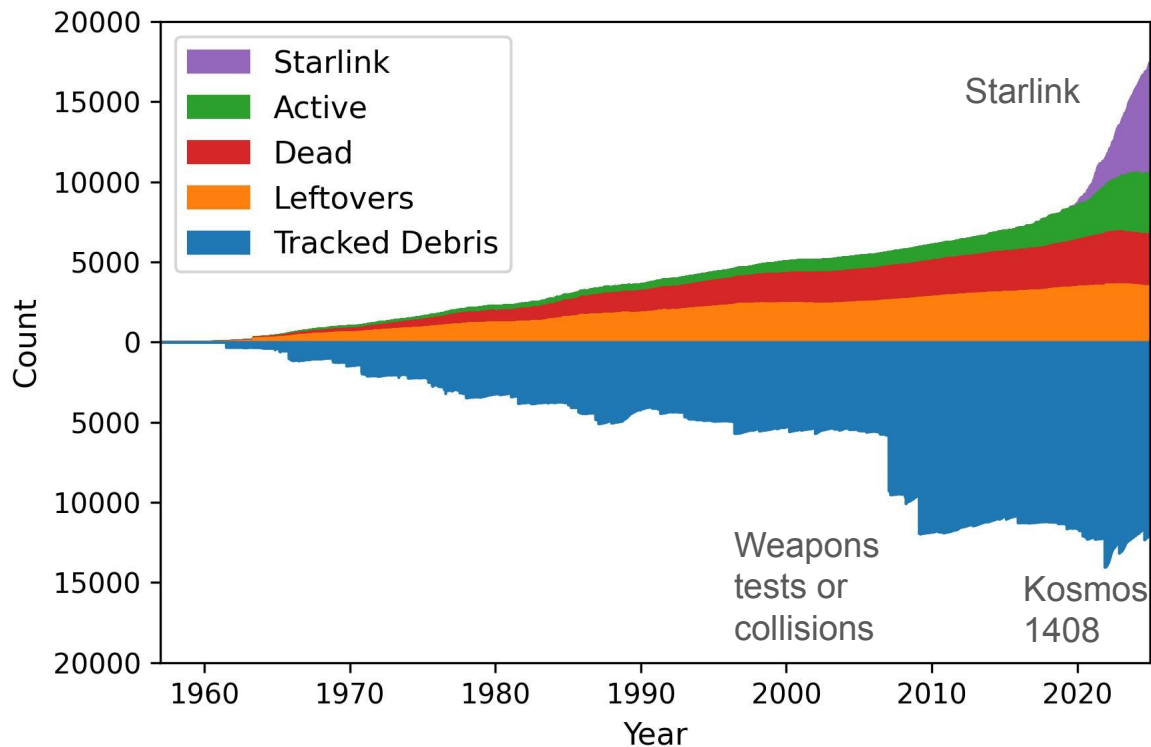


IAU Centre for the Protection of the Dark and Quiet Sky

**Collaboratively improving our
understanding of satellite
constellations**

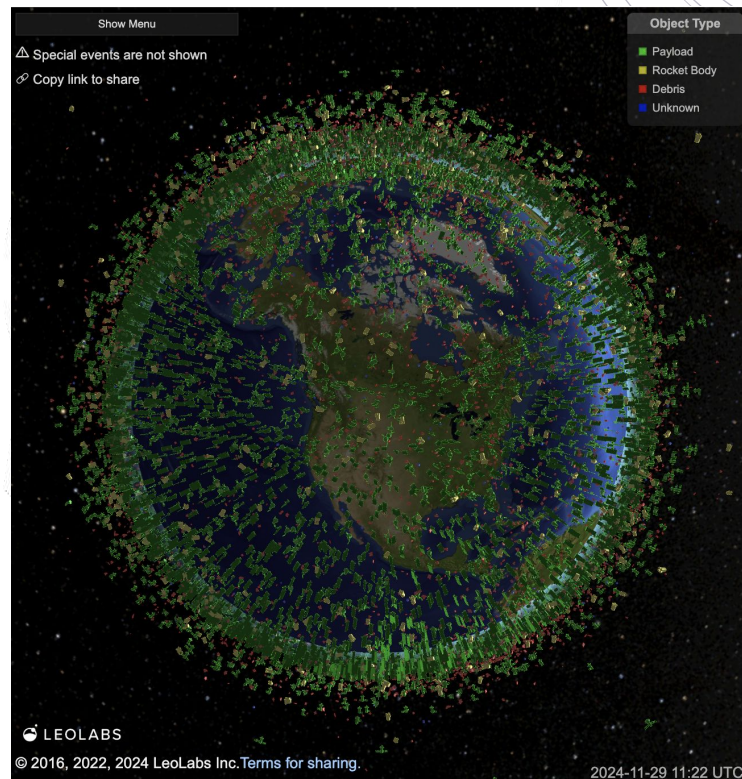
Mike Peel
SatHub co-lead
Imperial College London
NAM, 21 July 2026

Rapidly increasing numbers of satellites



Space and the sky is changing rapidly

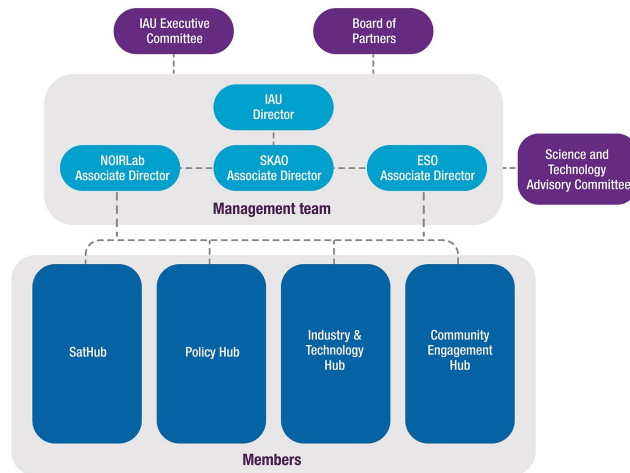
- 15,000+ satellites in Low Earth Orbit
(10,000 of which are Starlink....!)
- Plans for > 3,500,000 satellites by 2030s
- Major concerns:
 - Effects on optical astronomy
 - Effects on radio astronomy
 - Effects on the night sky
 - Space traffic management
 - Space debris



Centre for the Protection of Dark and Quiet Sky

- Centre of expertise of the International Astronomical Union, hosted by the SKAO; NOIRLab; and ESO
- International cooperation among software engineers, observers, astronomers, satellite industry folk, policy experts, space lawyers, government officials
- Our mission:
 - coordinate efforts and unify voices across the global astronomical community to protect the dark and quiet sky from satellite constellation interference.

IAU Centre for the Protection of the Dark and Quiet Sky (IAU CPS) org chart



CPS membership map

CPS membership (April 2026)



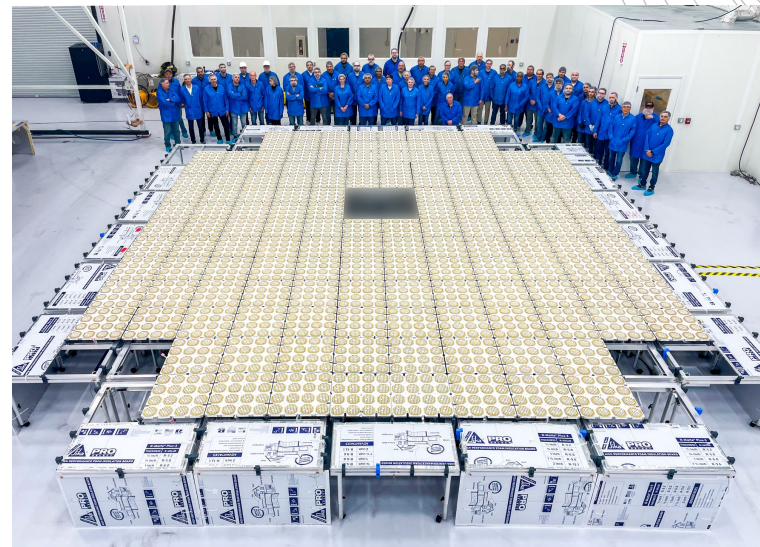
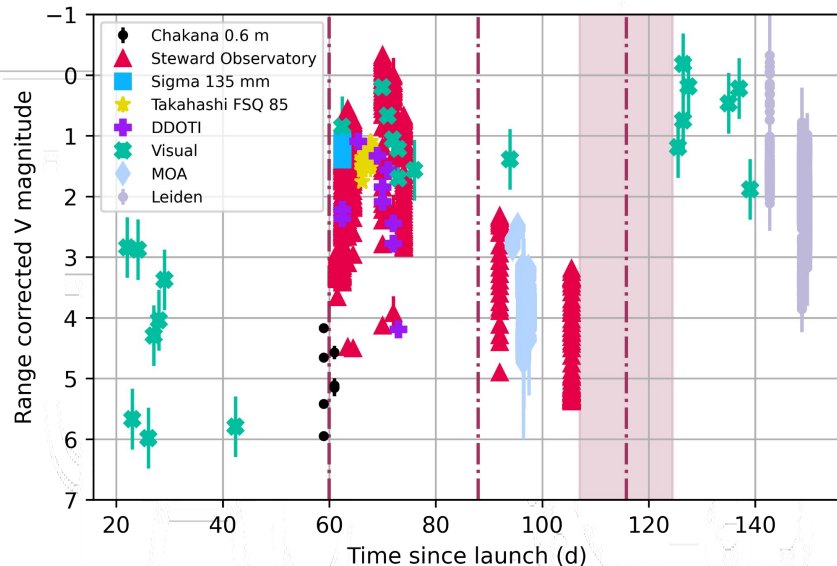
Total members 574

Argentina	3	Malaysia	4
Australia	18	Malta	1
Austria	10	Mauritius	1
Bangladesh	4	Mexico	3
Belgium	6	Morocco	7
Brazil	3	Nepal	4
Bulgaria	1	New Zealand	6
Canada	22	Nicaragua	1
Chile	13	Nigeria	4
China	4	Pakistan	3
Colombia	1	Peru	1
Cyprus	2	Poland	4
Czech Republic	2	Portugal	4
Denmark	2	Romania	3
Egypt	4	Russia	1
Ethiopia	2	Saudi Arabia	1
Finland	2	Serbia	3
France	20	Singapore	3
Germany	24	Slovakia	1
Greece	5	Slovenia	2
Honduras	1	South Africa	11
Hungary	2	South Korea	9
India	31	Spain	18
Indonesia	1	Sweden	4
Iran	2	Switzerland	13
Iraq	2	Thailand	1
Ireland	3	The Netherlands	13
Italy	18	Türkiye	3
Japan	3	UK	61
Jordan	1	UAE	5
Kenya	3	USA	163
Luxembourg	1	Venezuela	1

Four hubs

- SatHub
 - Satellite observations and data analysis to understand problem + find mitigations during data processing. Includes SatChecker and SCORE (see SSA talk tomorrow!).
- Industry & Technology Hub
 - Foster collaboration between the astronomy and satellite operator communities
- Policy Hub
 - Studies national and international policies and regulations related to the use of space
- Community & Engagement Hub
 - Bridge between all involved stakeholders and affected communities

Case study: BlueWalker3's optical brightness



- CPS SatHub observational campaign + publication
- 64m² phased array, prototype for mobile phone connections using standard phones + satellite
- Optical measurements show it to be brighter than all except top 10 stars (Nandakumar et al., Nature, 2023)
- (+ launch vehicle adapter bright & untracked for first few days, + position predictions degrade over time)

Policy Hub activities

- UN Committee on the Peaceful Uses of Outer Space
- Dark and Quiet Skies agenda item in the Scientific and Technical Subcommittee (STSC)
- Group of Friends for the Dark and Quiet Skies for Science and Society
- International Telecommunication Union (ITU) - input into World Radio Conference 2027 Agenda Items
- Inputs into the EU Space Law Consultation
- Engagement in national regulation activities

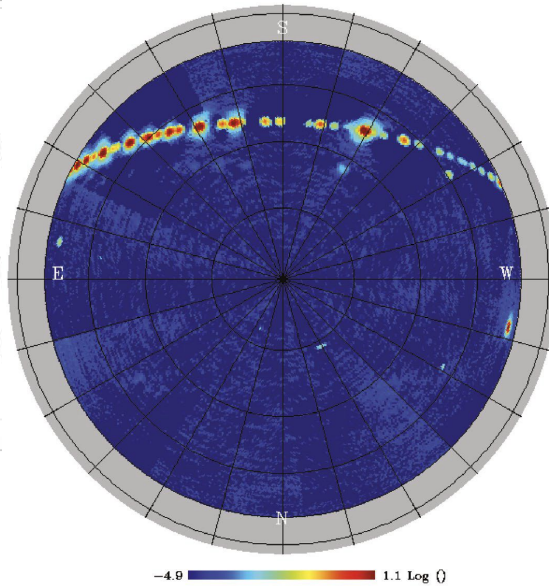


Impact on the optical night sky

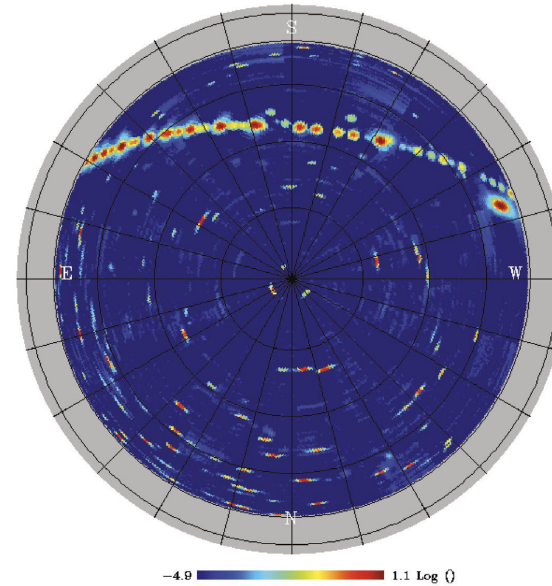


Impact on radio observations

Observations from QUIJOTE telescopes from Teide Observatory (Tenerife)



- Taken in 2014
- Shows bright band of geostationary satellites



- Taken in 2024
- Additional interference (red dots) caused by Starlink satellites



Thanks for listening!

Please join us! It's free, and you can join in conversations on Slack & elsewhere!

Join at cps.iau.org - or use QR code below!

