

Tracking Space Junk

with Mars Buttfield-Addison

Hi, I'm Mars

- PhD candidate, developer and tutor - **University of Tasmania** and **CSIRO**
- Author - **O'Reilly Media**
- Developer, speaker, tutor, creator of STEM educational materials - **Freelance**

→ **themartianlife.com**

What Does Orbit Look Like Today?

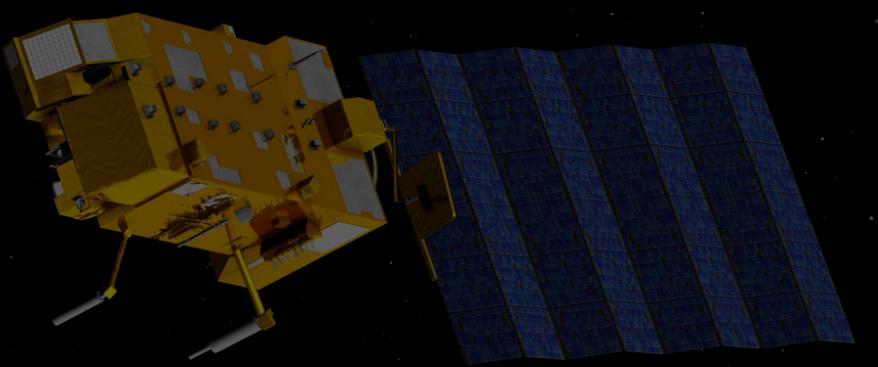
- ~7000 Functioning Satellites
- ~35,000 Debris Objects
- >100 Million Fragments

How Did Space Junk Come About?

- Dead Satellites
- Launch Waste
- Explosions/Collisions
- Test Spacecraft
- Disposal from Orbital Repairs

What Do We Do About Space Junk?

- Try to **remove** it
 - Sails, grabbers, nets, lasers...
- Try to **prevent** it
 - Detection and tracking systems
 - Collision warning systems



How does that work?

- Sensors (data collection)
- Supercomputers (data processing)
- USSPACECOM, others (co-ordination)

So Where Does My Work Come In?

- **Atypical sensors**—radio telescopes built for astronomy
- **Commensal observation**—no sensor control
- **Live processing**—real-time GPU compute

Why That Is Hard?

- "Focusing" Issues
- "Framing" Issues
- Multiple and inconsistent unknown variables

How Would It Help?

- **Adaptation of dozens of new sensors** → only a software update (+ integrations) away!
- **More sensitive sensors** → detect smaller fragment debris!
- Just a stop-gap until **active removal** and **slowed launch...**

So What Else Needs To Be Done?

- **Pre-launch prevention** (in every launch-capable country)
- **Consequences for non-compliance** (not just fines)
- **Ground-based redundant infrastructure** (where possible)



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Thank You For Listening!

Any Questions?