SPACEABLE

Educating observers at all levels internationally

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One sky for all

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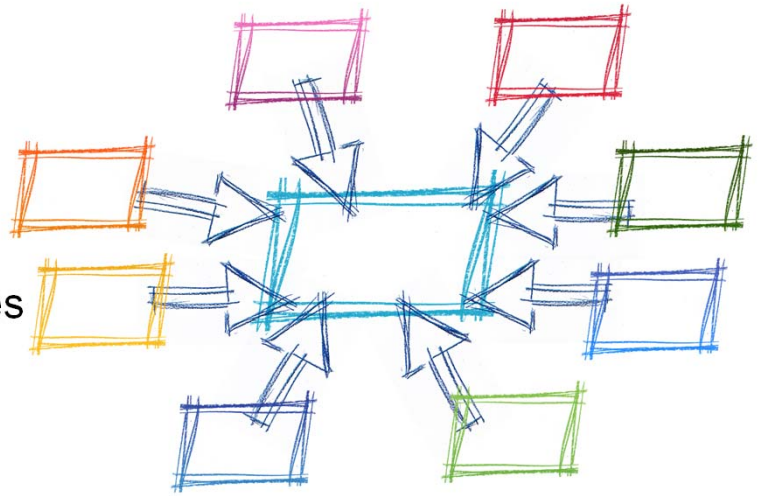
Goals

- Appreciate the different kinds of satellites in orbit, and the harmful impact of satellite mega-constellations on astronomy, stargazing, and our night skies,
- Appreciate the purpose and importance of satellite observations,
- Access and use existing satellite databases,
- Efficiently use and contribute to SatHub,
- Plan satellite observations based on criteria such as location, time, hardware (telescope, camera, etc.),
- Carry out satellite observations using the hardware they have available to them,
- Report serendipitous and planned observations (images, satellite-identifiers, time etc.) using the appropriate file format and,
- Perform analysis on images to determine timing, speed, and brightness of satellite trails

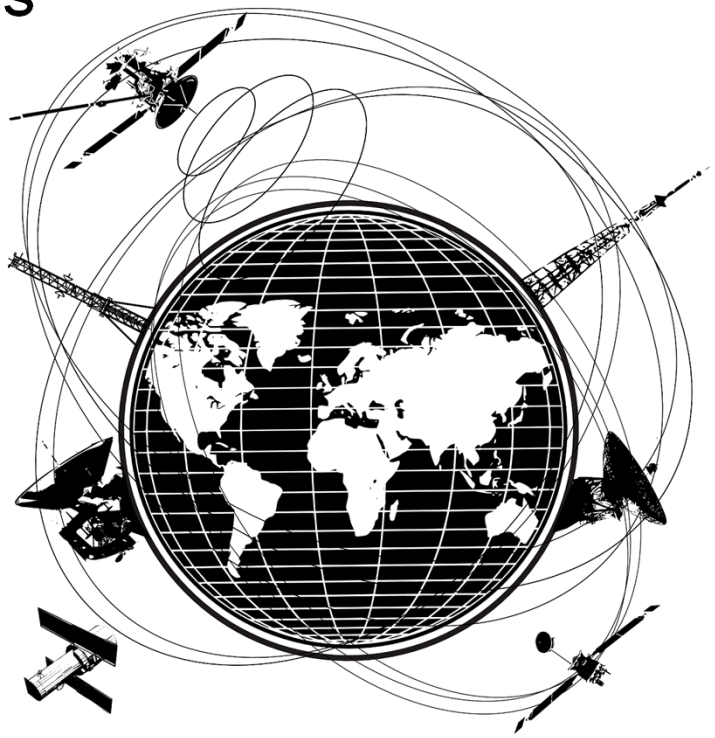
Core curriculum : Artificial satellites



- History of the space industry
- Types of satellites:
  - Purpose
  - Orbital parameters
- Basics of radio frequency transmissions from satellites
- Satellite Databases
- Impact of Satellite Constellations on Astronomy
- Observing Satellites: an overview
- Space Law applicable to satellite orbits, as part of the broader international legal regime, as well as national legal frameworks
- Glossary of terms

Core curriculum : Observing satellites

- Overview of software
- Planning observations
  - Hardware considerations
  - Software considerations
  - Identifying targets
  - Setting up
- Serendipitous observations
- Coordinated observations
- Radio frequency considerations



Core curriculum : Reporting observations

- Image/Data types: CCD/Radio (fits), DSLR (raw), CMOS (fits), other
- Header information: location, time, satellite information, etc.
- Sharing data (SatHub, likely with Trailblazer as an example)
- Licensing considerations (CC BY-SA or similar strongly recommende

Core curriculum : Image/data analyses

Aperture, PSF, and “streak” photometry
Analyzing your observations
Analyzing archival data
Masking satellite trails from data

Advanced modules : Software development

- Coordinating with SatHub's software resources
- Contributing to PassPredict, TrailFix, and other software proposed by the Algorithms WG
- Contributing to existing repositories like CLEOsat
- Best practices for accurate simulations of future LEOsat impacts.

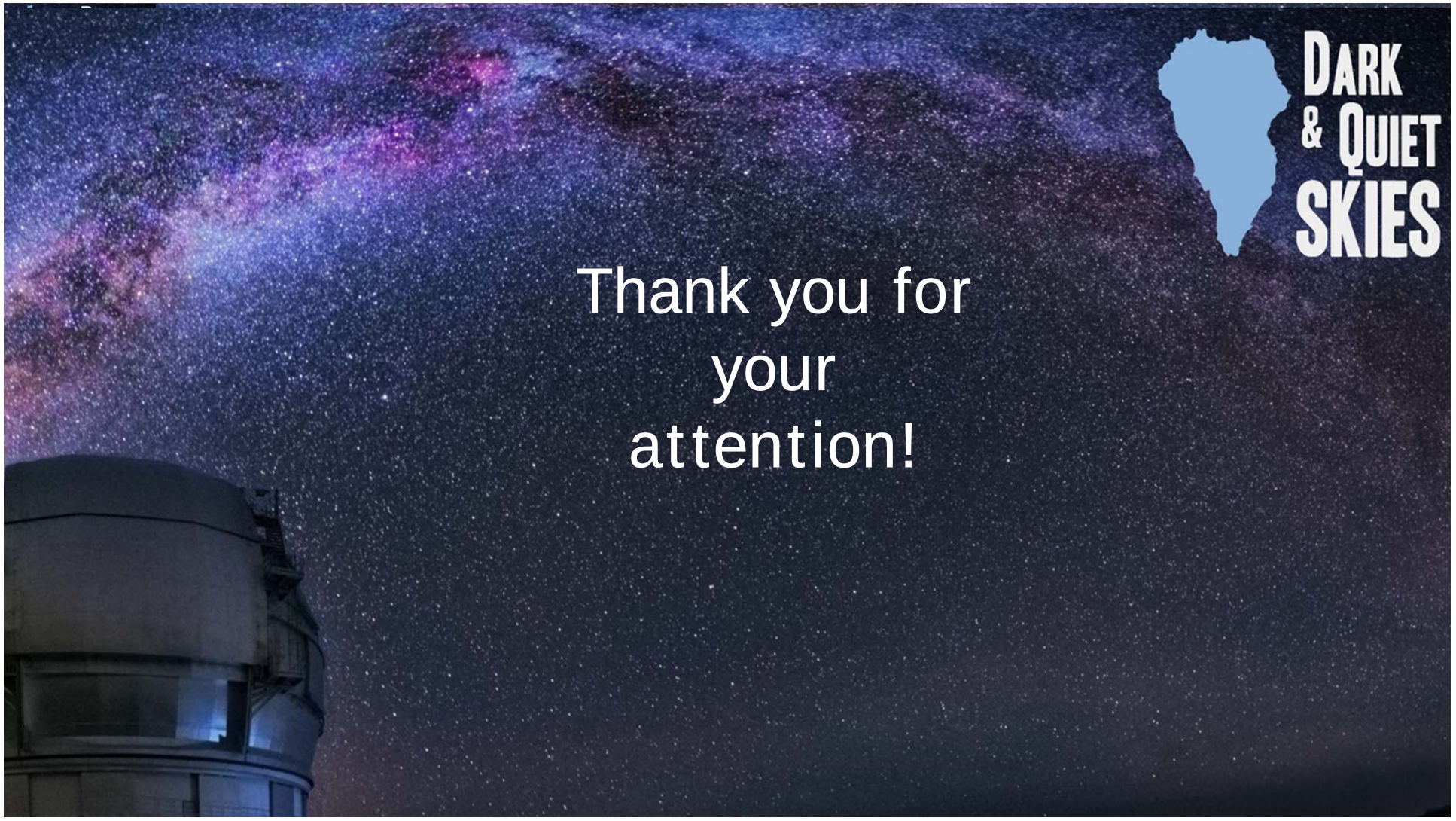
Advanced modules : Radio astronomy

- Spectrum Management 101: ITU-R Radio Regulations and national administrations
- Use of the radio spectrum by radio astronomy
- Spectrum allocation for various satellite constellations and other uses
- Accessing information from ITU, FCC, UN COPUOS, and other databases
- Disentangling interference from LEOsats and other sources

Advanced modules : International and National Laws Governing Outer Space

- The Outer Space Treaty (1967)
- US Commercial Space Launch Competitiveness Act (2015)
- National Environmental Policy Act (1970)
- Ancestral Global Commons approach (Venkatesan et al., Nature Astro 2020)

Conclusion


DARK
& QUIET
SKIES
Thank you for
your
attention!