

Astro 331 HW 3

2023 Fall

due lesson 3

Documentation:

5%

FalconSAT-24 is in a 400 km polar circular orbit.

Its camera has a swath width of 3 km. Approximately how much area can the sensor record in 10 minutes?

How fast will FalconSAT's RAAN drift?

How fast will FalconSAT's argument of perigee drift?

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Below is a partial list of requirements for a space system funded by the state of California to provide warning of wildfires throughout the state.

Identify 5 problems in this set using the properties of good requirements as covered in class. Justify your decisions—specifically, highlight and name a problem rather than simply saying “this is bad.” Finally, improve the deficiencies you identify. If appropriate, improvements can include deleting requirements.

programmatics

- The system shall provide full time jobs for at least 200 Californians.
- The system shall be ready within 3–5 years.
- The system shall cost no more than \$5 M.

system

- To save costs, the system shall consist of no more than one space vehicle.
- The spacecraft shall provide continuous coverage of California from 30°N to 85°N.
- The system shall alert firefighters to a fire very fast.
- The space vehicle shall orbit at a semi-major axis of exactly 300 miles.

sensor

- The sensor shall detect all fires.
- To avoid false alarms, the sensor should not detect any wavelengths shorter than 700 nm.
- It would be good to detect gamma radiation.

