



# Sea State - Orbit Preferences

- **Priorities for Large Scale Monitoring in Near Real Time & Assimilation into Forecast Models**
  - **Features are large scale, but quickly moving**
    - Mesoscale SSH features smaller size (~100km) and slower moving.
  - **Need global coverage -**
    - frequent revisits (ideally 6 hourly) to each ocean region
    - Coverage to (ideally) 70° latitude
  - **Should try to maximise information retrieved by avoiding repeat coverage of highly correlated data.**
    - Ideally ground tracks should be evenly separated
    - In any case separation should be greater than 100km and 3 hours.
    - Swath instruments, or bistatic instruments with small track separation not suited to this application.
  - **Can arrange orbits to satisfy frequent revisit to region with ~100km spacing on time scale which is small with respect to SSH features?**



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- **Priorities for Feature / Event Studies**
  - **Different coverage priorities**
    - Ideally - dense coverage of extreme events.
    - Swath coverage well suited.
  - **Repeatability not a priority**
- **Priorities for Generating Climatologies**
  - **Need global coverage**
    - > 6 transects of each ocean grid cell per time division (week/month).
    - Coverage to include high latitudes (> 70°)
- **Priorities for Coastal Studies**
  - **Repeat tracks would be useful.**
  - **Difficult to get good temporal or spatial coverage with respect to scales of coastal variability in sea state.**



# Orbits

- Orbit Maintenance / Repeatability
  - Repeatability not a priority for most sea-state applications.
  - May be useful for some coastal climate studies.
  - +/- 2km on nominal track achievable with all proposed missions.
- Orbit Height
  - Height 650 km - higher drag, less stable orbit, allows lower power instrument.
  - Orbit at ~800 km preferred - easier to maintain orbit.
    - Altimeter power implications
    - Uplink/downlink budgets
    - Launch / end of life orbit decay implications



# Other Considerations

Launching a constellation into multiple planes adds significantly to launch costs and/or to the time to acquire orbits.

