

Cross Scale Meeting Practicalities Splinter.

- Orbit
- Spacecraft
- Instrumentation
- Telemetry/data
- Ground segment

Orbit:

Not Polar.

Perigee was discussed, as this is the most fuel expensive.

Options, 10, 4, or 1 Re.

10 Re – more costly in terms of payload etc.

Lower perigee = more payload (20% more than 10 Re?).

SCOPE 2 Re (~7000 km alt) x 30 Re.

Conclusion: Cross Scale = 25-30 x 1-4 Re.

Spacecraft/Instrumentation:

Identical spacecraft result in cheaper build costs and testing, so these are favoured.

Modular system for instrumentation placement on spacecraft.

Problems with this: axial booms, and heavy composition instruments, also spacecraft loss: Mother regarded strongest, so with full instrument suite can recover loss of smaller sc. BUT ONLY if mission starts with 12 spacecraft.

Common DPU, system bus, data processing, so 'consortium' type instrument suites.

Practical issues regarding instrument building, can single institutes cope with building 10+ instruments? Cluster 8 ion instruments, 8 electron instruments, so within the same order of magnitude, so can be done.

Standardisation important – processing, onboard timing.

Spacecraft/Instrumentation continued...

Instrument modes. ON/OFF as baseline.

Calibration of this number of instruments is issue. Test 1-3 months per single instrument, so calibration timeline can run into years. Delivery of instruments years before launch to facilitate calibration!

Calibration and operation (modes etc) constrain instrumentation. There is a requirement for 'simple' instrumentation.

Science Operation

How to deal with limitation of telemetry.

Event selection. 'on duty' scientists who review data and select events. Much more reliable than automated process to catch event.

Near real time, within 7 days.

(SCOPE stores 1 week data onboard)

What is format of this data?

- .survey data of high enough resolution

- .onboard moments

Definition of science seasons?

Didn't get to...

Operation- telemetry, ground segment, ground stations.

What do we do with this discussion?

It is clear that some of these items should be included throughout the mission design and build, not just from (near) launch.