



# L5 – Remote Sensing Summary

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# Remote Sensing Summary

1. A number of L5 mission concepts discussed (Carrington, EASCO, INSTANT...) – fair agreement between speakers about the priorities for space weather remote sensing instruments.
2. No real debate about the use of a coronagraph and an HI instrument as essential elements (priority 1 and 2).
3. Some debate about magnetograph & EUV imagers deployed at L5:
  - Some say high-telemetry, high-mass, context devices, can be done from L1/Earth orbit/ground.
  - Others stress the need to see over the limb.
  - How do we settle that one?
  - Jonathan should have asked each table ‘what would be your choice for the third instrument?’

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4. What is the question? Are we saying 'tell me there is something on the way' or 'the Sun looks like it is going to do something'?
  - The former requires the coronagraph/HI combination
  - The latter needs the imagers (magnetograph and/or EUV)
  - So, we need both... Do we need both at L5?
  
5. Traffic lights: Do we have four basic phases?
  - 'The Sun looks calm' – GREEN
  - 'The Sun looks ready to do something' – AMBER ONE
  - 'There is a CME on the way' – AMBER TWO
  - 'L1 observations confirm the magnetic orientation' – RED

The first two require the imagers (magnetograph and EUV); the third needs the coronagraph/HI; the confirmation (fourth) needs L1 in-situ data.

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5. The difference between 'science' and 'operational' instruments
  - Degraded resolution (time, space) – don't need all the 'bells and whistles'; reduce size/telemetry
  - Ground support (24/7)
  - Robustness (minimise mechanisms/sit and stare)
  
6. Re-fly the STEREO/SECCHI payload?
  - STEREO still operational but... STEREO B?  
Drifting orbit not appropriate?
  - No magnetograph
  - Good model payload; good experience
  - Major lesson – need to be  $> 30$  degrees. Need to debate whether need to go as far as L5.

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7. Not much was said about the urgent need to have another coronagraph operational a.s.a.p. – LASCO is aging and the CORs are in the wrong place – this is an L5 meeting but worth stressing!

8. The magnetic field is key – all agree on that one! Does the INSTANT approach indicate a way to go with magnetic information in the corona (albeit not ideal emission lines) linked to polarized HI data?

- Indeed, polarization measurements (coronagraph and HI) need thorough assessment for space weather application

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## 9. Not a mature field

- we still cannot look at the Sun and say ‘that region will flare and be associated with a CME onset in 20 minutes and it will arrive at Earth in 3 days and cause a 3 hour power loss in Swindon...’
- But, we can monitor solar ‘complexity’; we can see CMEs on the way; we can confirm their magnetic orientation at worst at L1
- ...and we **MUST** continue the scientific research to improve our understanding/capability!