**Random errors**

We will have pre-launch models of random noise for OCI and hopefully others. However we will also need to monitor this on-orbit. In the first 60 days there should not have been too much degradation so we will be able to compare to pre-launch and see if anything significant has changed (Brian). After that we can continue to monitor. On-orbit resources include solar/lunar cals, as well as looking at variability in homogeneous regions (e.g. dark ocean far from clouds).

Note lunar irradiance uncertainty from the ROLO model is high (5-10%) - projects e.g. Kevin Turpie’s LUSI and LaRC’s Arcstone ([http://gsics.atmos.umd.edu/pub/Development/LunarCalibrationWS2020/19e\_CostyLukashin\_Workshop\_Arcstone\_20201119.pdf](https://gcc02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fgsics.atmos.umd.edu%2Fpub%2FDevelopment%2FLunarCalibrationWS2020%2F19e_CostyLukashin_Workshop_Arcstone_20201119.pdf&data=04%7C01%7Camir.ibrahim%40nasa.gov%7Ce0a6da67fa354db4a0a208d93a7a9159%7C7005d45845be48ae8140d43da96dd17b%7C0%7C0%7C637605120387069431%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=usJSdR6DT33ZJomsDYgTGjJmEvpoxWdsBlpNsoVuDx4%3D&reserved=0) ) are underway to address this. Unclear how much better things will be before launch.

The HARP team are developing and SNR model that will be angle and wavelengths dependent.

Lachlan and Robert suggested that an on-orbit SNR estimate is more viable that relying on the pre-launch SNR models (see example: [https://doi.org/10.1016/j.rse.2013.02.012](https://doi.org/10.1016/j.rse.2013.02.012%22%20%5Co%20%22Persistent%20link%20using%20digital%20object%20identifier%22%20%5Ct%20%22_blank))

**Systematic errors**

There may also be on-orbit change in polarization sensitivity to be monitored (as in e.g. MODIS).

There will be uncertainties in spectral response function, both from pre-launch characterization, as well as smile distortion (should be minor) and on-orbit changes (longer-term degradation, and within-orbit due to changes in thermal environment). Pending the improvement in the Lunar radiance model, the systematic uncertainty can be better assessed on orbit post-launch.

**General discussion**

Lorraine - we can't standardize everything in the mission but we can maybe have groups of algorithms standardize their treatments of relevant aspects. Within disciplines and/or sensors. Synergy algorithms may have additional uncertainty sources (e.g. relative georegistration errors between sensors).

Ancillary: are the uncertainties (error plus variation) in the ancillary sources (NCEP, MERRA) quantified? If not, can we say anything? If they are not quantified, this should be documented (and maybe figure out how to assess, or at least make common assumptions). If they are, great, also need to document and use.

Andy looked at NCEP wind speed/RH vs. ship-borne measurements some time ago (Figure 5 of https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2011JD016689 ) but we need something more comprehensive. Minwei has been looking and has not had luck, but the expected impact of ancillary uncertainty would be marginal, at least for Rrs with additional understandings required for other disciplines/products. Andy will reach out to GEOS folks and do a search. Additional literature research is needed by the team to better assess the ancillary data uncertainties.

Robert, Heidi: remember that we will need qualitative flagging (e.g. forward model inappropriate here) as well as propagated uncertainty estimates. Robert mentioned that the uncertainty in products can be miss leading in certain conditions where the forward model errors are too large.