S2VT day 2PM - Level 2 validation parts 3+4 (1/3)

- CMIX-II - cloud mask intercomparison
  - 25 participating algorithms from 20 parties.
  - Best-performing algos are Machine Learning (ML) but not all ML good
  - Cloud shadow detection needs good cloud detection
- Cloud masking cross-mission validation (S5P vs S2)
  - Cross-mission val assumes ref mission has lower uncertainty
  - Advantage: global coverage and uncertainty/precision inclusion
  - Need to manage different definitions (cloud mask/cloud fraction)
- S2 classification with Neural Networks applied to pre-class masks:
  - How to map diff labels for diff algorithms/missions, e.g. PACO and Sen2Cor?
  - Cloud and snow masks are commonly, not physically compatible, confusion
  - Uses also DEM and illumination field to aid classification

S2VT day 2PM - Level 2 validation parts 3+4 (2/3)

- Reducing S2 parallax with per pixel angle info:
  - Need per pixel view angle (not just mean across scene) info for good A/C
  - Improvement is visible for bathymetry application (not needed for seagrass)
  - Included in the future atmospheric correction library: CHIME OSL
  - MPC tool for per pixel/wavelength view angle
- New "paradigm shift" zarr EOPF format for Sentinel products (S1/2/3)
  - More efficient for cloud-based operations and storage
  - Tools to convert current SAFE files into Zarr data trees.
  - Advantages for CalVal: Small download costs, Fast, chunk-based processing.
- Digital Twin Earth (Eradiate R/T) synthetic images for S2 CalVal:
  - E.g. 3DREAMS: study of effects of adjacency on aerosol retrieval
  - Use cases: ACIX reference data, TLS 3D, 3D analysis of Gobabeb calval site, …

S2VT day 2PM - Level 2 validation parts 3+4 (3/3)

- Generating and validating high-resolution AOD (urban/industrial apps)
  - Sen2Cor is limited in AOD retrieval over bright/arid sites
  - MSIAC provides high res AOD (and could provide more aerosol properties?)
- BRDF effects in S2 and correction with HABA-CHIME algorithm
  - BRDF from sun angle variability (so not just wide swath missions view angle)
  - Visible in S2 time series from forward/backward scattering
  - BRDF multiplicative factor, based on the surface characteristics (Sen2like), reduces anomalies in time series
  - Should standard product be BRDF-normalized? Or a tool to apply?
  - TODO: look at sidelapping orbits for different S2 (A/C)

Anything important missing? Any other comments/questions?