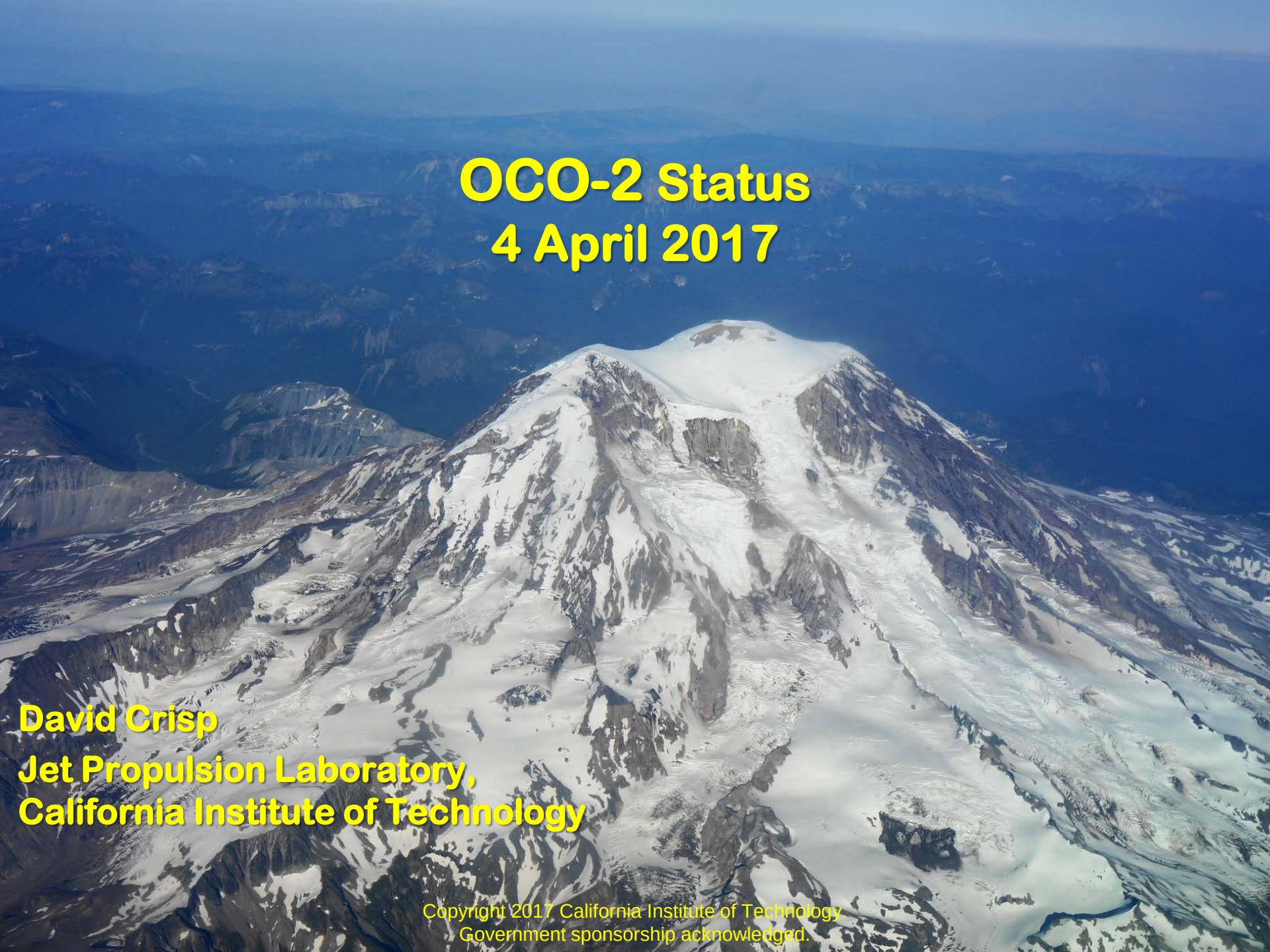

OCO-2 Status
4 April 2017

David Crisp

Jet Propulsion Laboratory,
California Institute of Technology

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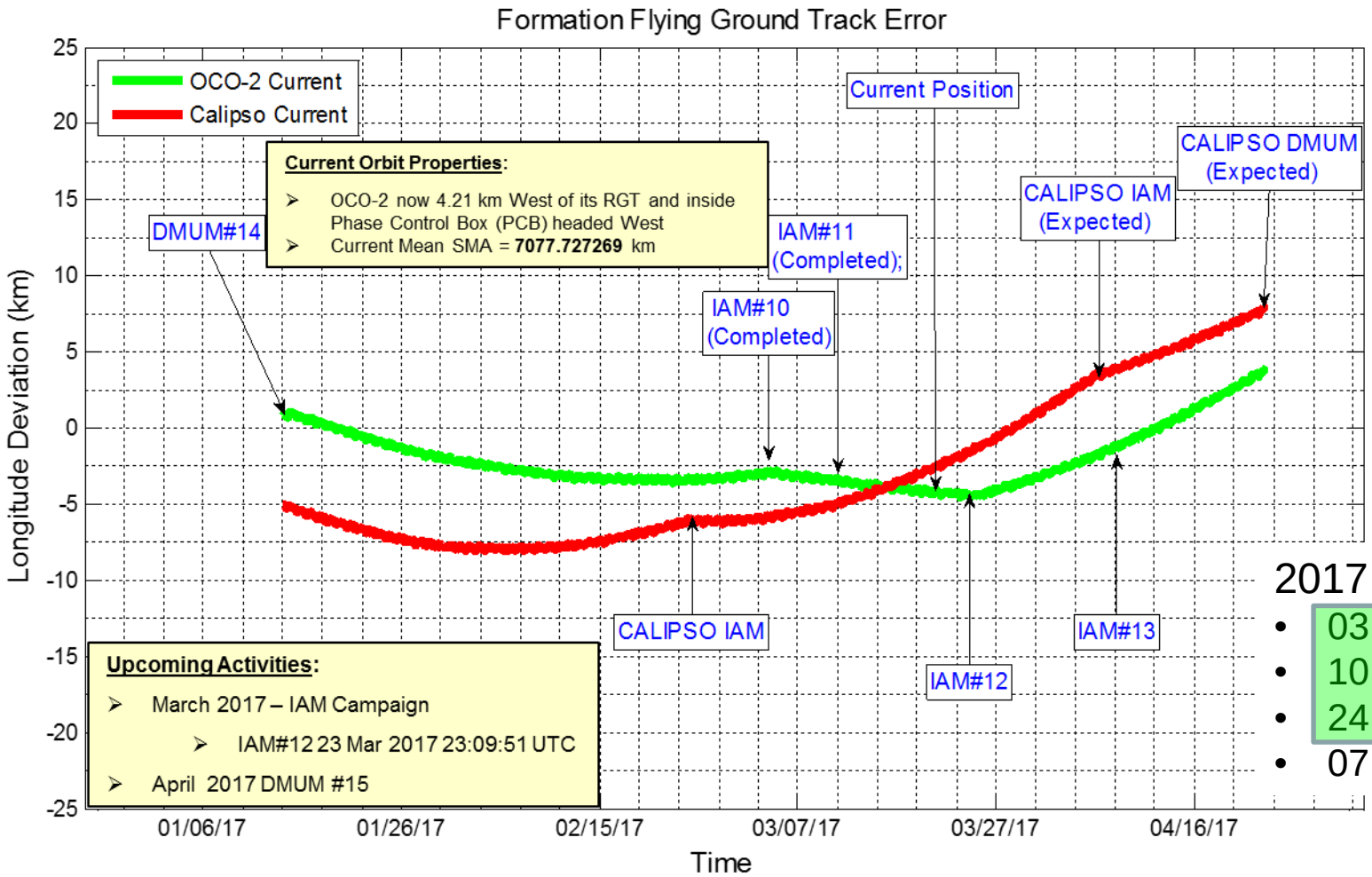
Government sponsorship acknowledged.

OCO-2 Status

- Observatory Status: Nominal
  - Inclination Adjust Maneuver (IAM) Sequence in progress
    - First 3 completed, one left – April 7
- Instrument Status: Nominal
  - Recovery from February 21 – March 1, 2017 Decon nominal
- Science and Validation
  - Science Team Meeting 21-23 March
  - V8 testing continues
    - Tests to go – BRDF (final), ZLO correction, Pointing, Cirrus prior
    - New issue – a possible pointing offset?

OCO-2 and CALIPSO Ground Tracks

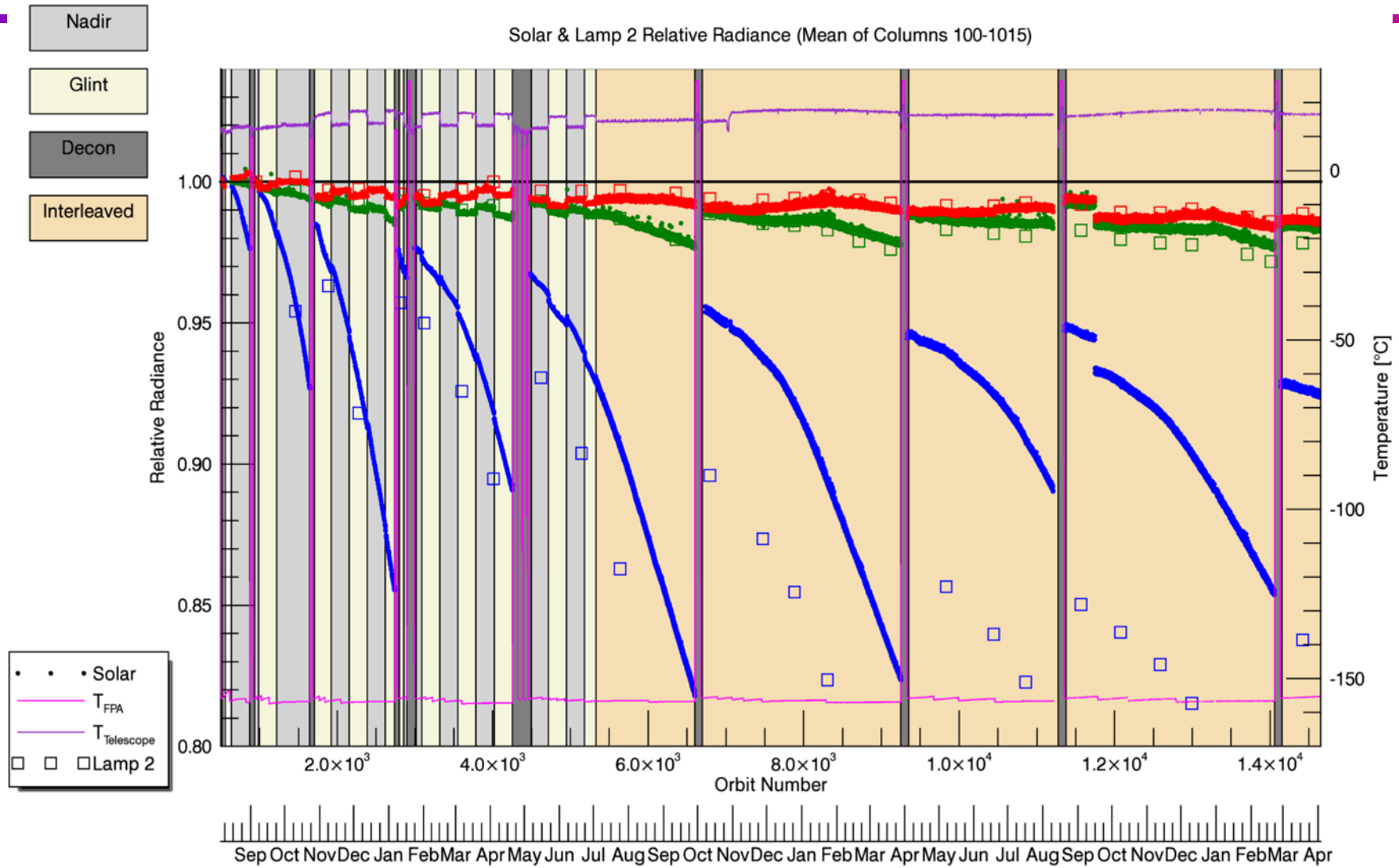


2017 IAM Schedule

- 03 Mar 00:29:12
- 10 Mar 00:35:31
- 24 Mar 00:48:30
- 07 Apr 01:02:49

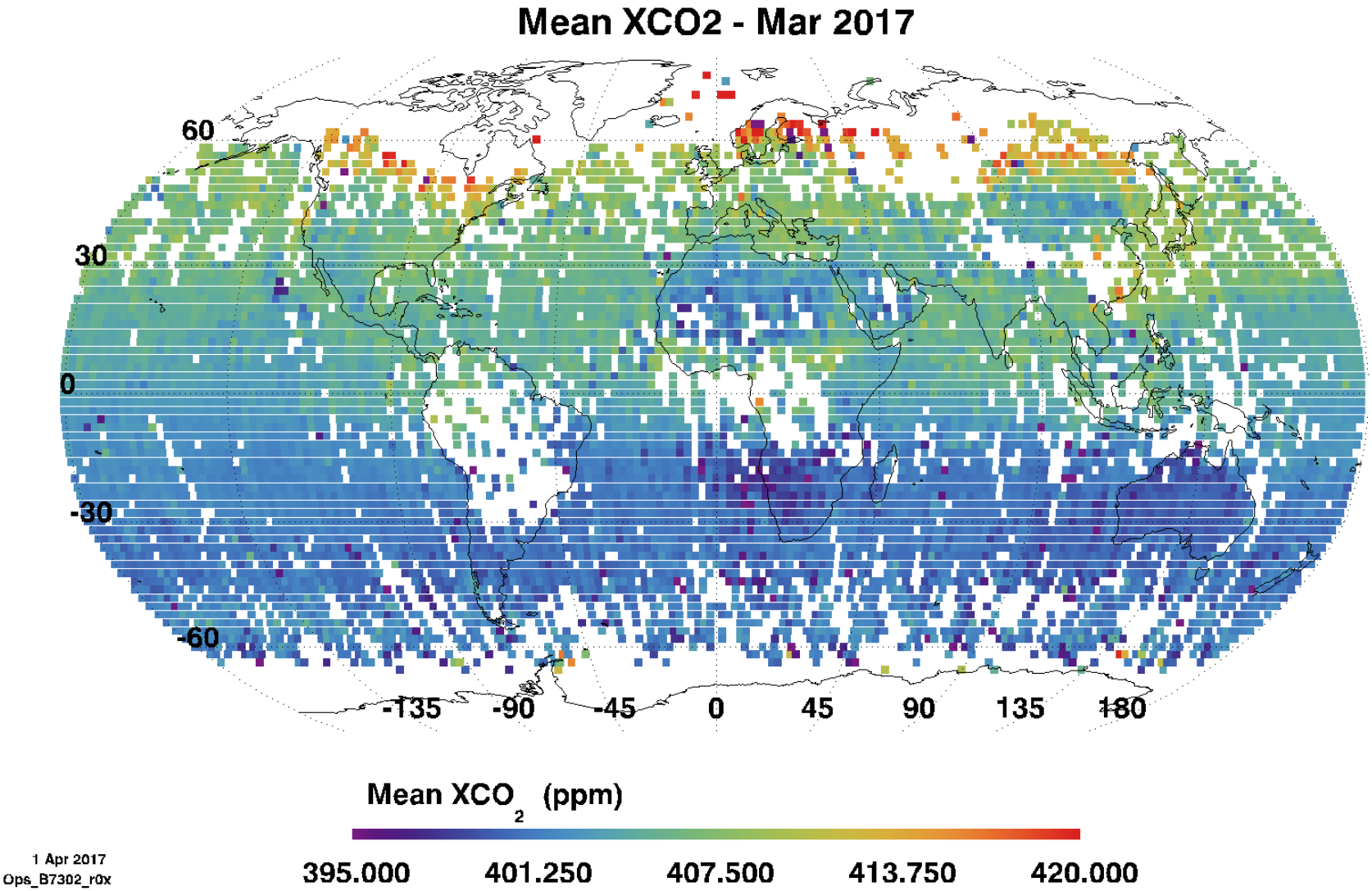
The 2017 IAM series is progressing as planned.

OCO-2 Instrument Trending



Clean Again

Latest X_{CO2} Data (forward stream)



March 21-23 Science Team Meeting at Caltech

OCO-2 Science Team Meeting

- Monday 20 March: Breakout Sessions
  - Morning: Validation
  - Afternoon: Flux Inversion
- Tuesday – Thursday 21-23 March Science Team Meeting
  - Plenary Sessions
  - Speed Talks
  - Posters
- Thursday afternoon – ABSCO breakout

- Friday 24 March: GeoCarb Science Team Meeting

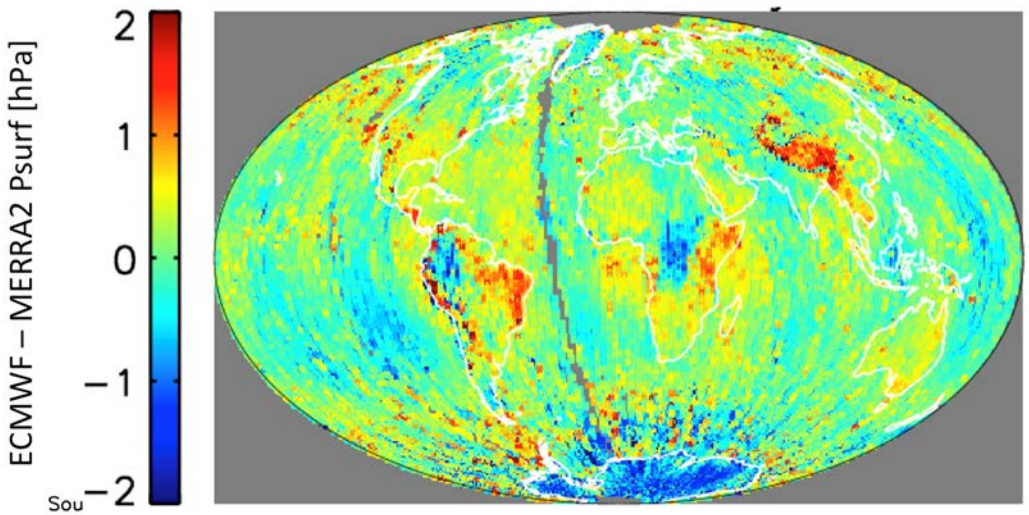
- Annmarie has posted the oral presentations on Partnerspace. Contact her if you need access.

V8 Testing Highlights

- Issue still in work

Prior Meteorology Update

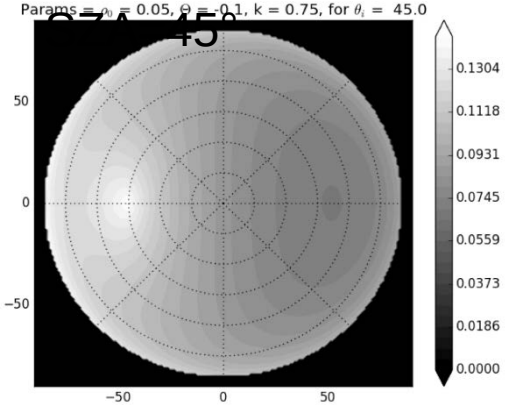
- Switching prior meteorology from ECMWF to GEOS5 FP-IT.
  - ECMWF 0.25x0.25 deg, updates every 6 months
  - GEOS5 0.5x0.5 deg, more stable
- Small but nonzero differences in retrieved XCO2, primarily driven by surface pressure differences.

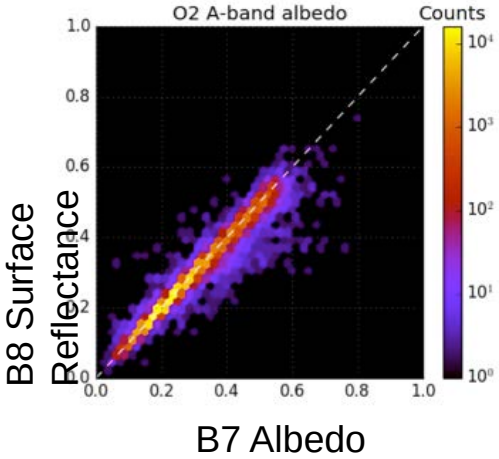


BRDF Update
Chris O'Dell

- Use a non-Lambertian model with a fixed directional parameterization (RPV model with parameters for soil)
- Tests showed that our spectra typically have little to no information on the BRDF shape
- Still effectively retrieve mean & spectral slope of reflectance, but now as scaling factors to new BRDF (shape) model.
- BRDF model provides more consistency for target observations, but little change in retrieved XCO2.
- Still updating implementation to correct errors – results pending.

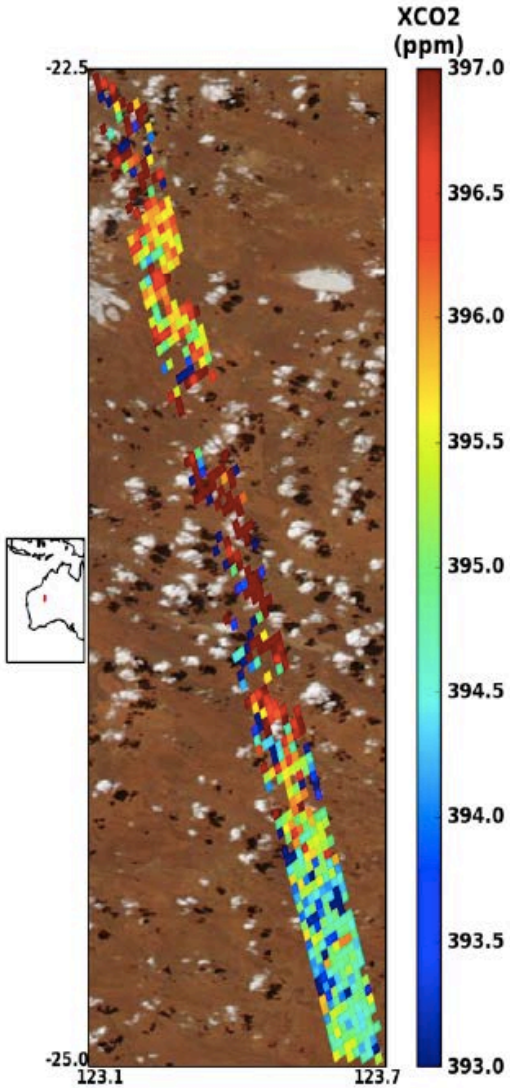
RPV Kernel,





B8 needs better cloud filtering

Chris O'Dell

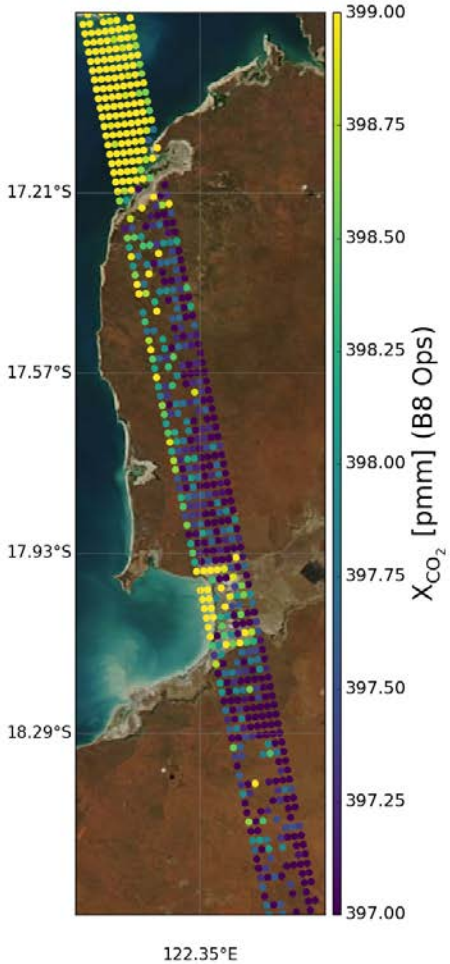


- Many obviously cloud-contaminated cases remain in the "good" v7 data.
- No clear way (yet) to fix the retrievals in these cases.
- Work will be starting soon on filtering this out, many ideas floating around.

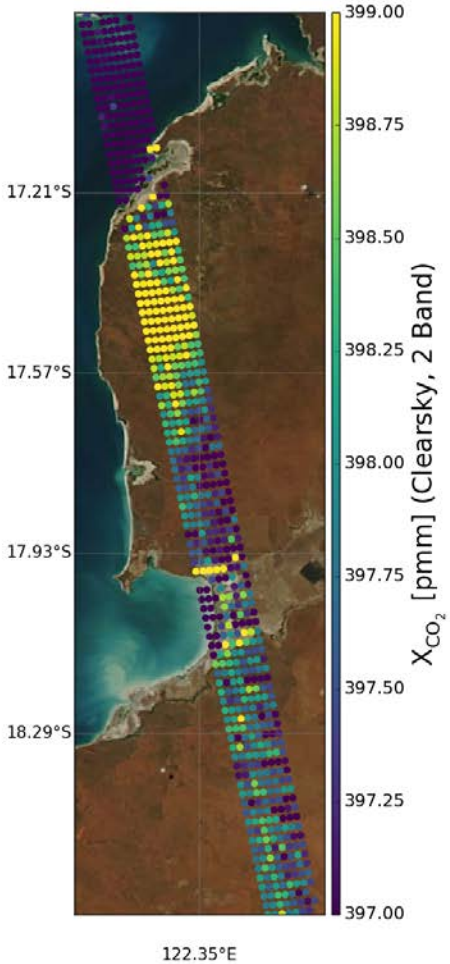
Ocean/Land Biases

Rob Nelson and Chris O'Dell

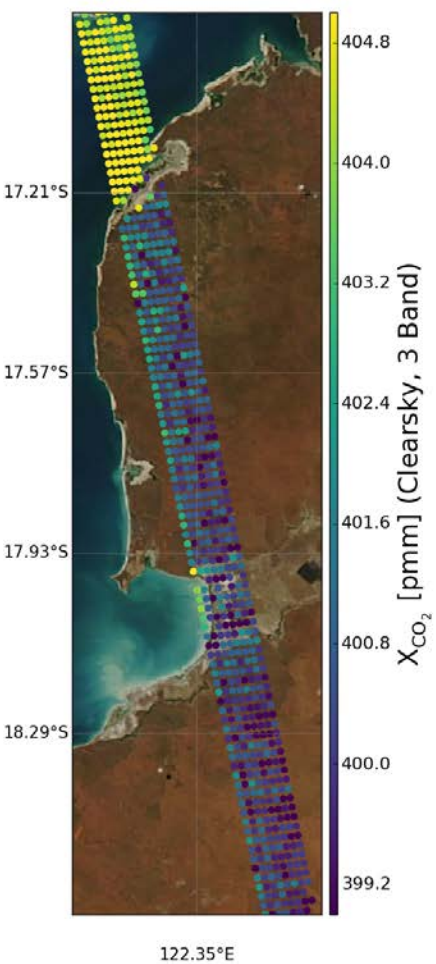
Ops



Clear-sky;
Psurf fixed



Clear-sky;
Psurf retrieved

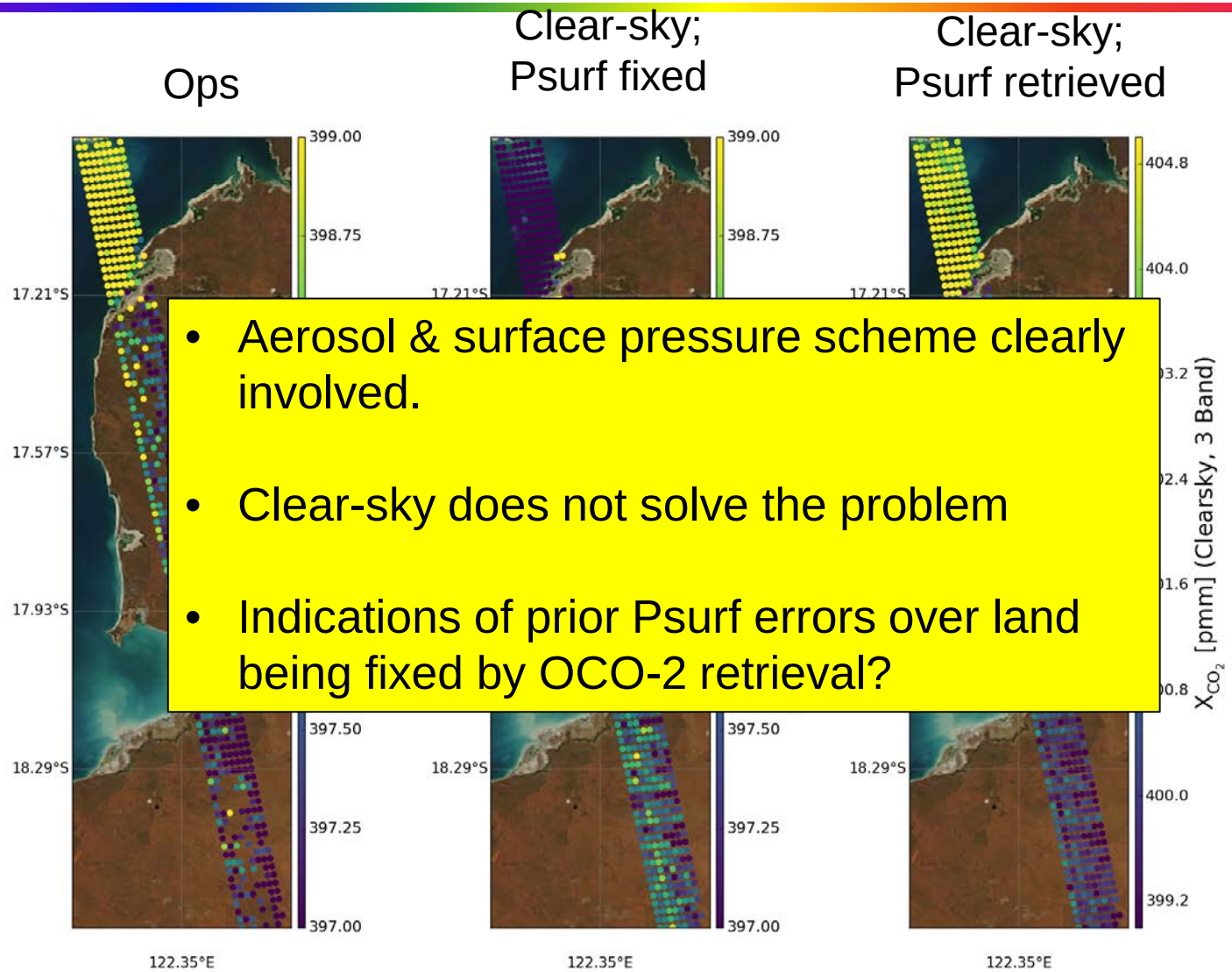


Clear land-ocean biases exist even in very clear conditions

Surface pressure is clearly a part of the problem, but does not explain the whole problem

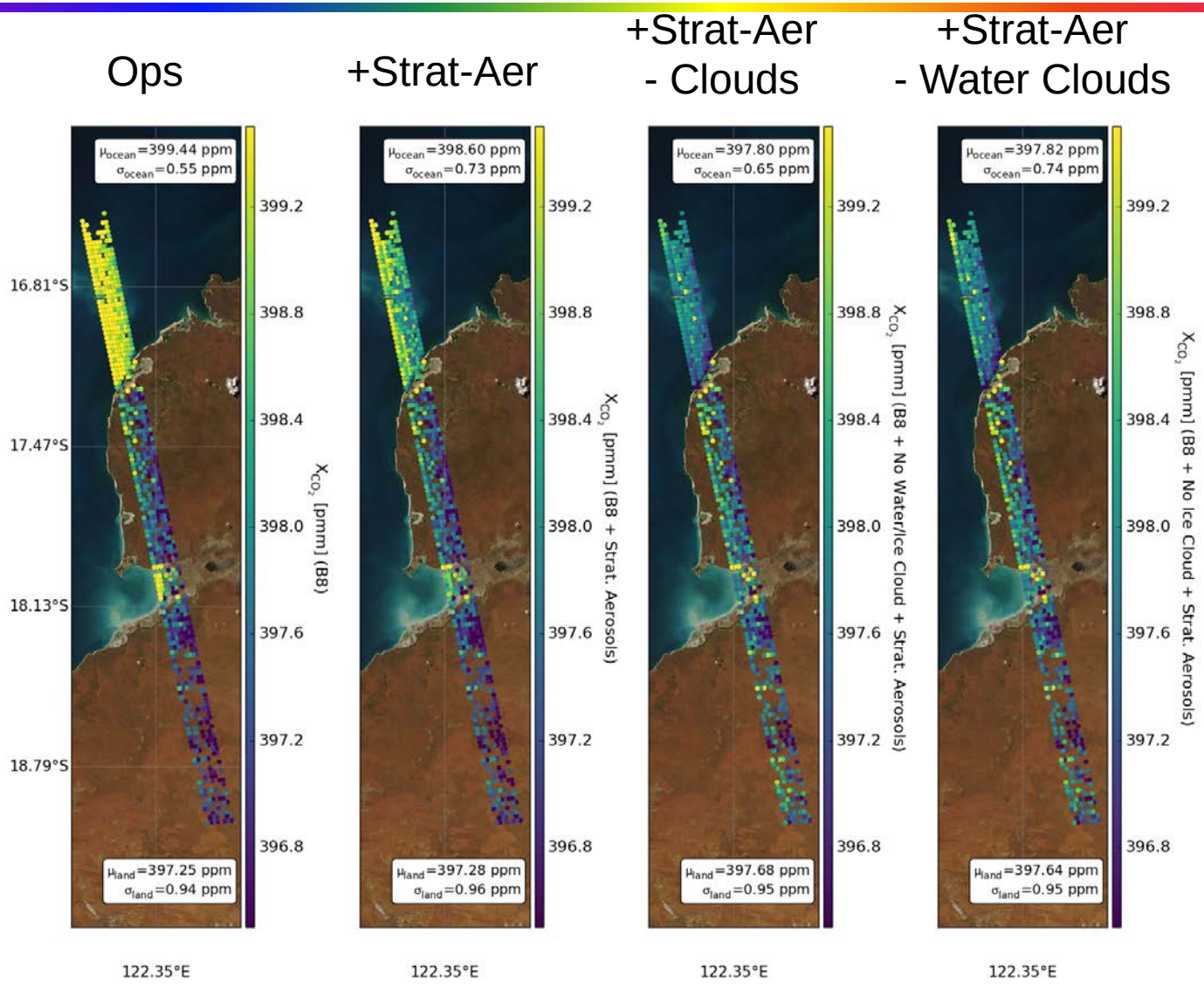
Ocean/Land Biases

Rob Nelson and Chris O'Dell

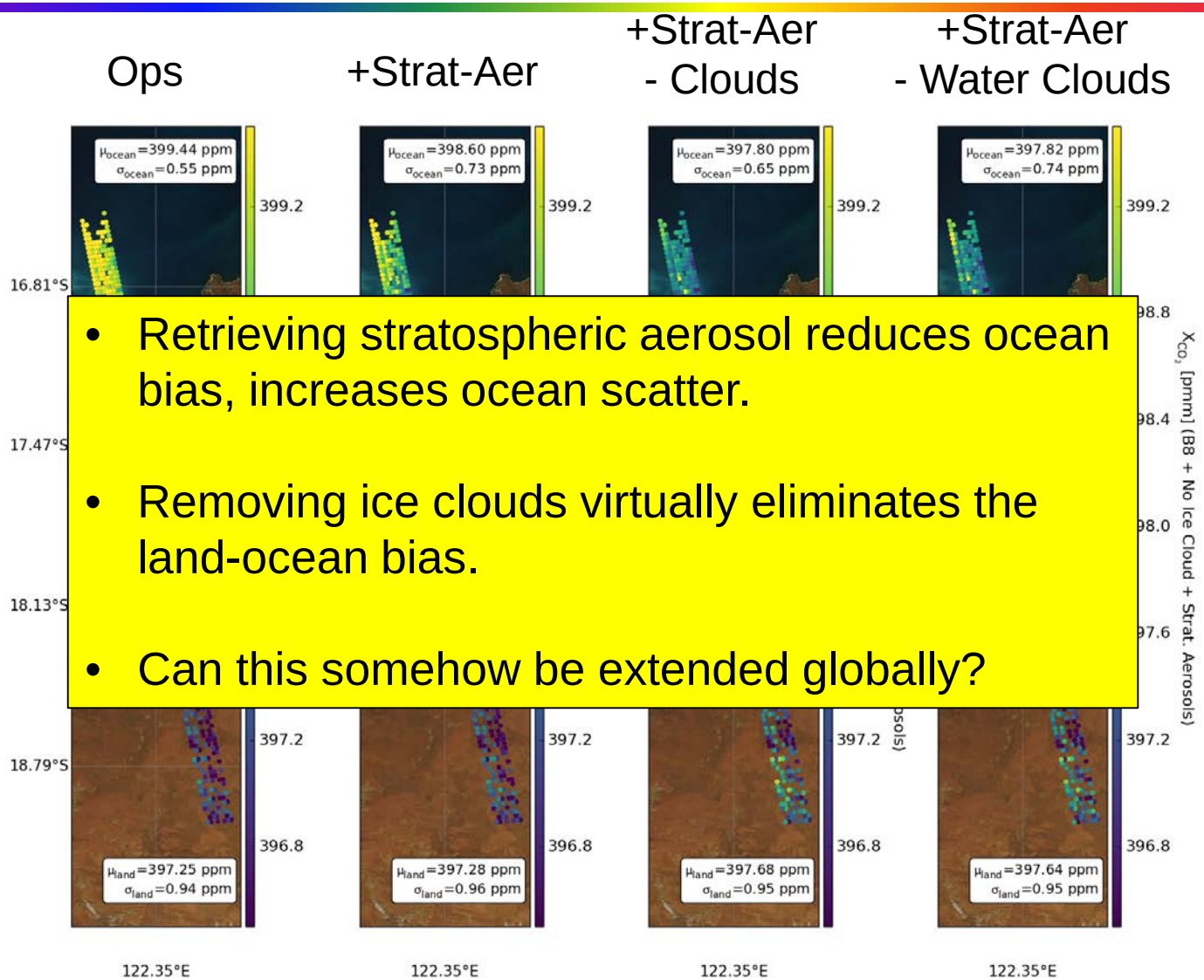


- Aerosol & surface pressure scheme clearly involved.
- Clear-sky does not solve the problem
- Indications of prior Psurf errors over land being fixed by OCO-2 retrieval?

Alternate Retrievals (Nelson)



Alternate Retrievals (Nelson)

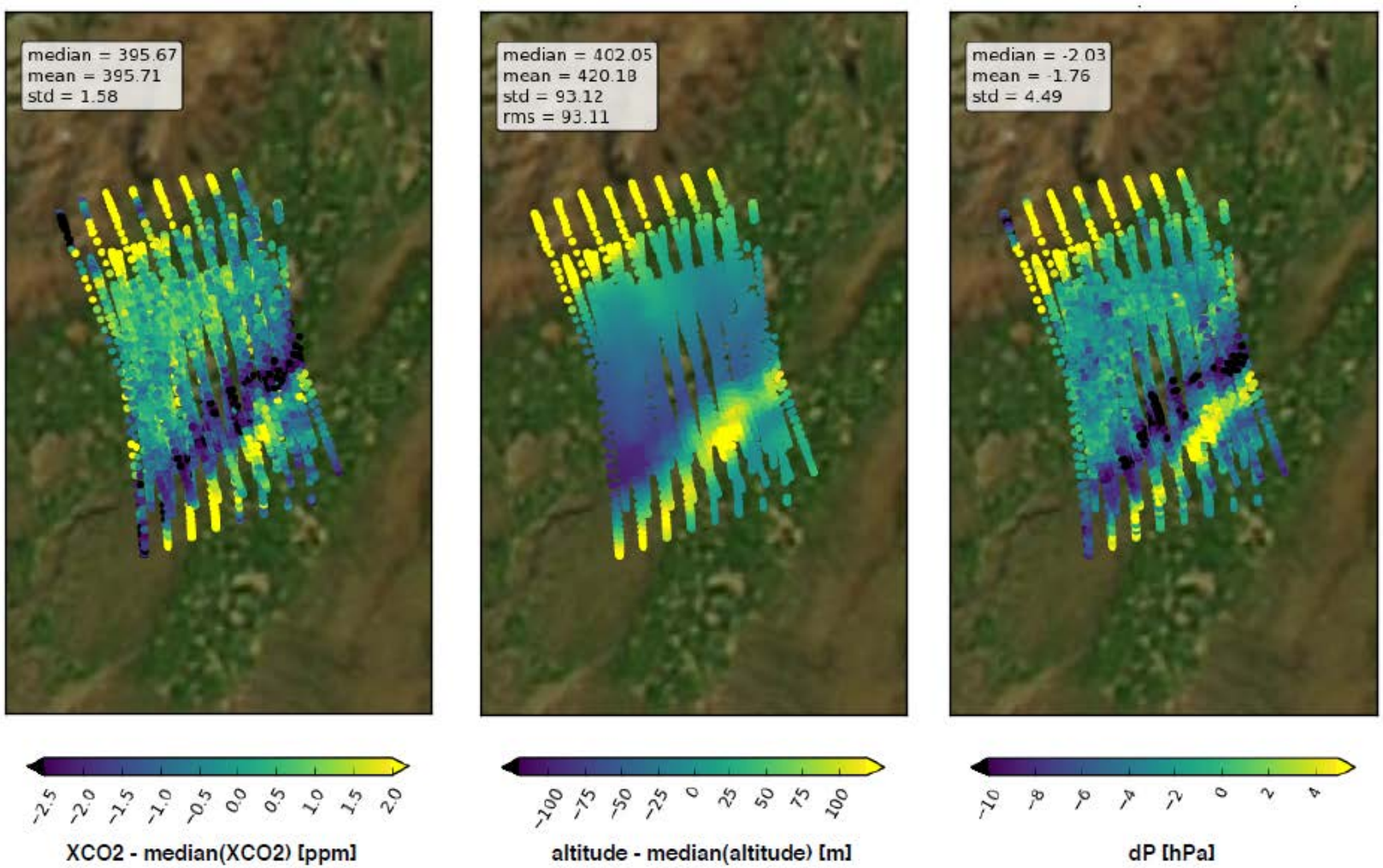


- Retrieving stratospheric aerosol reduces ocean bias, increases ocean scatter.
- Removing ice clouds virtually eliminates the land-ocean bias.
- Can this somehow be extended globally?

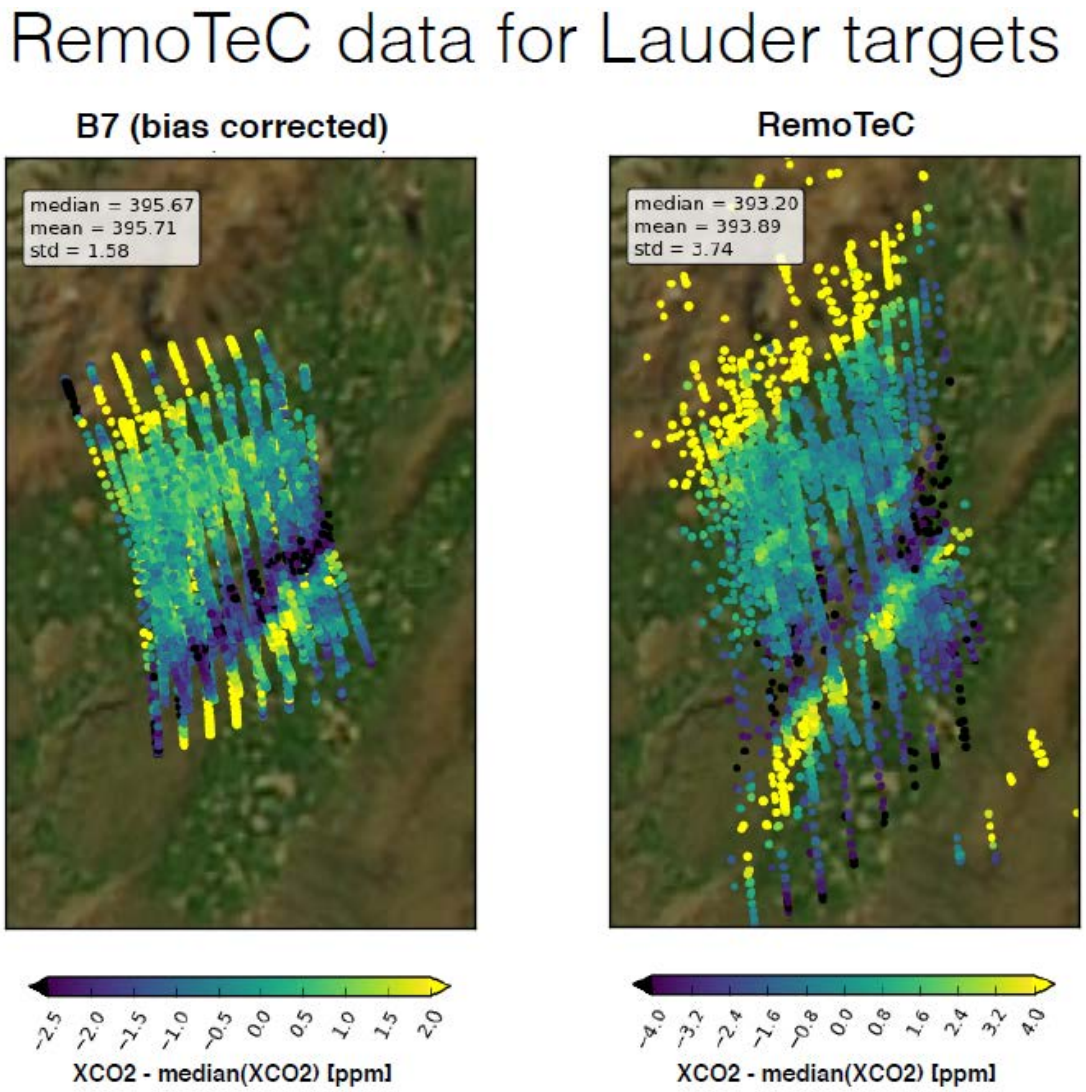
Evidence of a Pointing Offset??

Matt Kiel

Target: Lauder Orbit 1585



Similar Results Seen in RemoTeC Retrievals

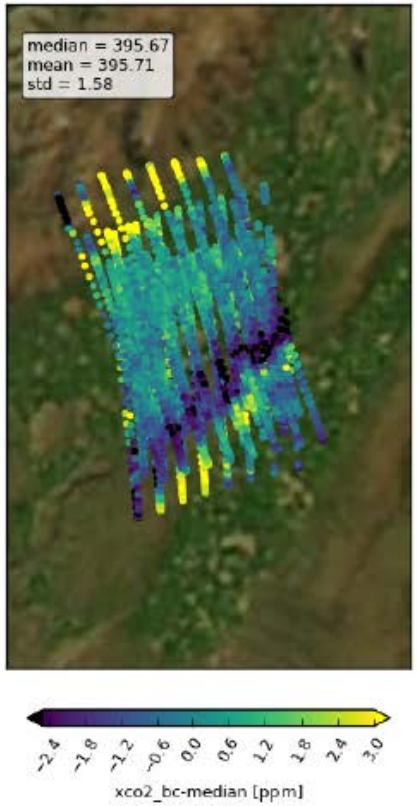


Amplitude of Bias varies with Observation Angle

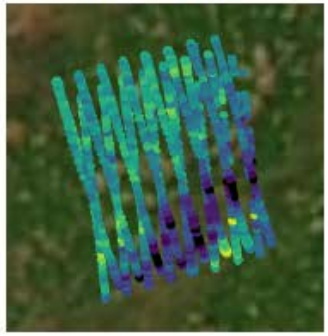
Viewing geometry - LauderNz_1585

retrieval_zenith_angle:

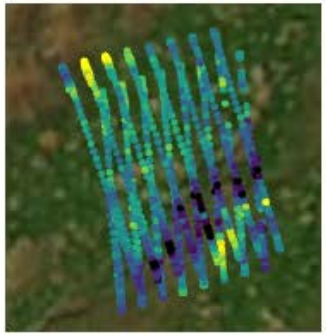
all data



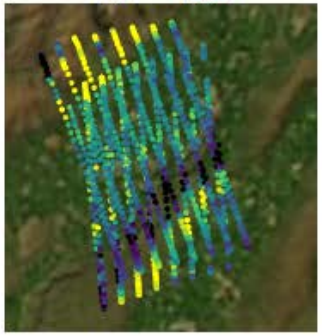
20° - 30°

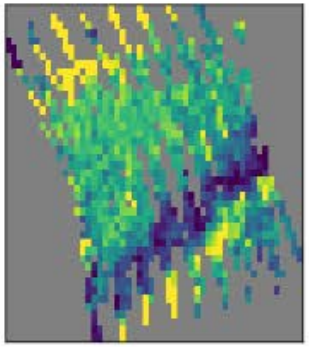


30° - 40°



40° - 50°





all data regridded on 0.01° x 0.01° to avoid overlap of points

Upcoming Activities

- 10-13 April: GAW Symposium, WMO, Geneva
- 19-21 April: A-Train Symposium, Pasadena, CA
- 23-28 April: EGU, Vienna
- 25-27 April: CEOS SIT, Paris, France
- 20-25 May: JpGU, Chiba, Japan
- 23-24 May: NOAA ESRL GMD Annual Meeting, Boulder CO
- 6-8 June: IWGGMS, Helsinki
- 28-30 June: CEOS VC-AC, CNES HQ, Paris
- 6-11 August, AOGS, Singapore
- 21-25 August, ICDC10, Interlaken, Switzerland