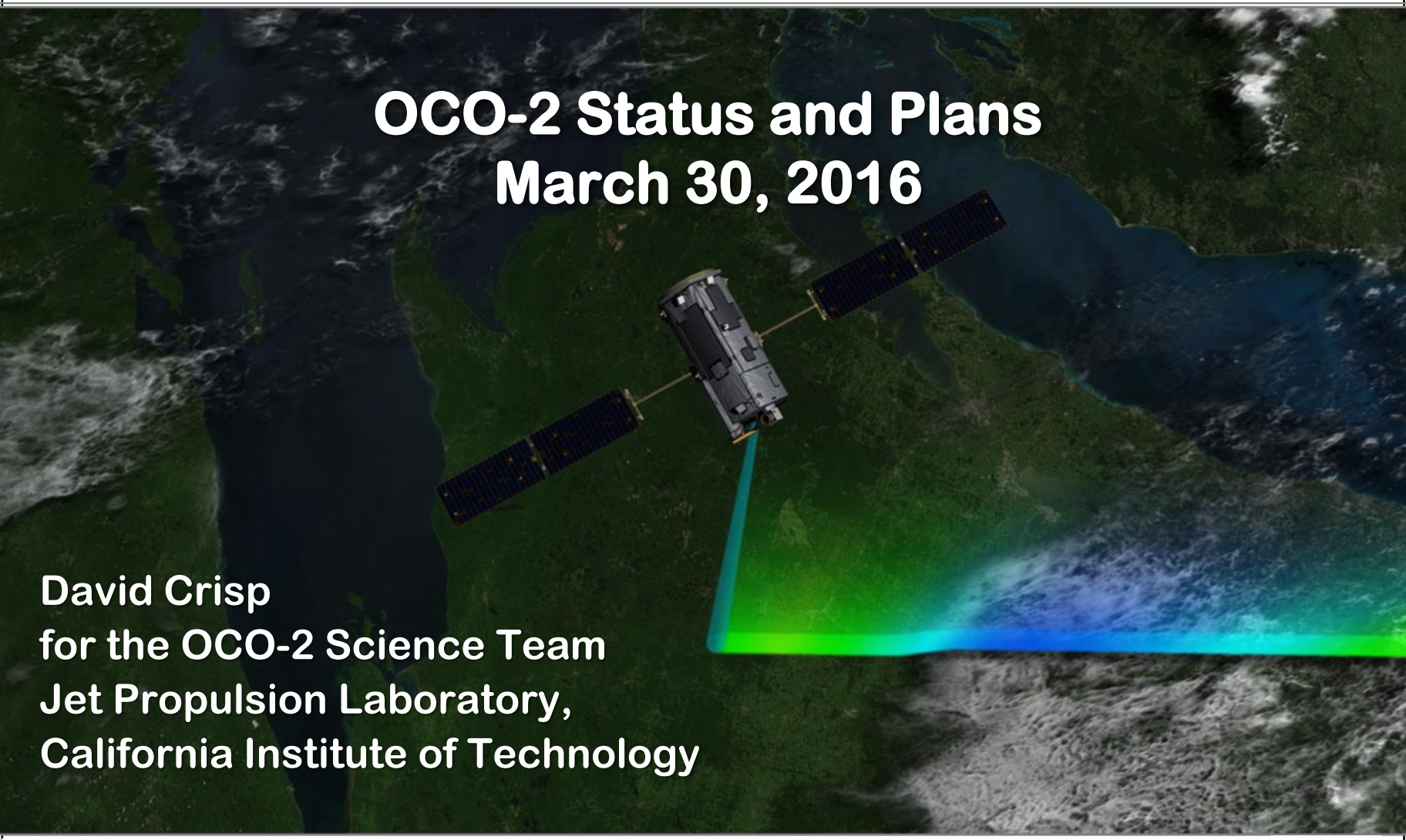
OCO-2 Status and Plans
March 30, 2016



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California Institute of Technology

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Topics Covered

- OCO-2 status update
  - Observatory Status – Inclination Adjustment Maneuvers
  - Instrument Status – Decontamination Cycle
  - Data Delivery status
- Progress and plans for processing GOSAT v201.201
- OCO-2 Science Team Meeting Summary
- OCO-2 Vicarious Calibration At Railroad Valley
  - Mini-Campaign 12 – 14 April 2016
- Upcoming Meetings

OCO-2 Observatory Status

- The OCO-2 spacecraft operations are "NOMINAL"
- We are now half way through our Inclination Adjustment Maneuvers (IAM), and all is going as planned
  - 10 Mar 2016 21:43
  - 17 Mar 2016 23:18
  - 07 Apr 2016 22:07
  - 26 Apr 2016 22:39
- The IAM on 7 April will be combined with a Drag Make-up Manuever (DMUM)
- We are monitoring Aqua's IAM progress and may have to modify our plans if their plans change

OCO-2 Instrument Status

- The instrument is currently executing its 6th Decontamination Cycle
  - Cryocooler turned off on Orbit 9250 on 28 March
  - If all continues to go as planned,
  - The instrument optical bench and focal plane arrays have been warmed to 28 C for about 2 days
  - If all goes a planned, the instrument will be back at its operational temperatures and thermally stable as soon a 4 April

- Other issues under investigation:
  - Solar Calibration and SIF measurements indicate that the "fast degradation" may be associated with a zero level offset and/or a small change in the ILS.
  - These changes are under investigation to assess their impact on the V7/7r products, and to produce a correction in V8

OCO-2 B7r Standard Production Calendar

as of 3/28/2016

Build 7.n.00 L2 XCO2 Production & Delivery Status - Retrospective Calibration

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
July																															
August																															
September						D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
October	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D				D	D	D	D	D
November	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
December	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
January-15	D	D	D	D	D	D				D	D	D	D	D	D	D	D								D	D	D	D	D	D	D
February	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D			
March	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
April	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D											
May							D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
June	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
July	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
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October							D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D			D	D	
November	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
December	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
January-16	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
February	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
March																															

Warm | Cold, unstable | Cold, stable | Completely without Science

B7 processing
complete | - incomplete | not begun

B7r processing
complete | - incomplete | not begun

Facility
cluster | Pleiades | Amazon

Production and Deliveries of B7r are now complete through February 2016

OCO-2 B7r Lite Production Calendar

as of 3/28/2016 Build 7.n.00 Lite XCO2 Production & Delivery Status - Retrospective Calibra

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
July																															
August																															
September						D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
October	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D					D	D	D	D
November	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
December	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
January-15	D	D	D	D	D	D				D	D	D	D	D	D	D	D								D	D	D	D	D	D	D
February	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D			
March	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
April	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D											
May							D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
June	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
July	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
August	D		D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
September	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D			
October							D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D				D	D
November	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
December	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
January-16	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
February	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D		
March																															

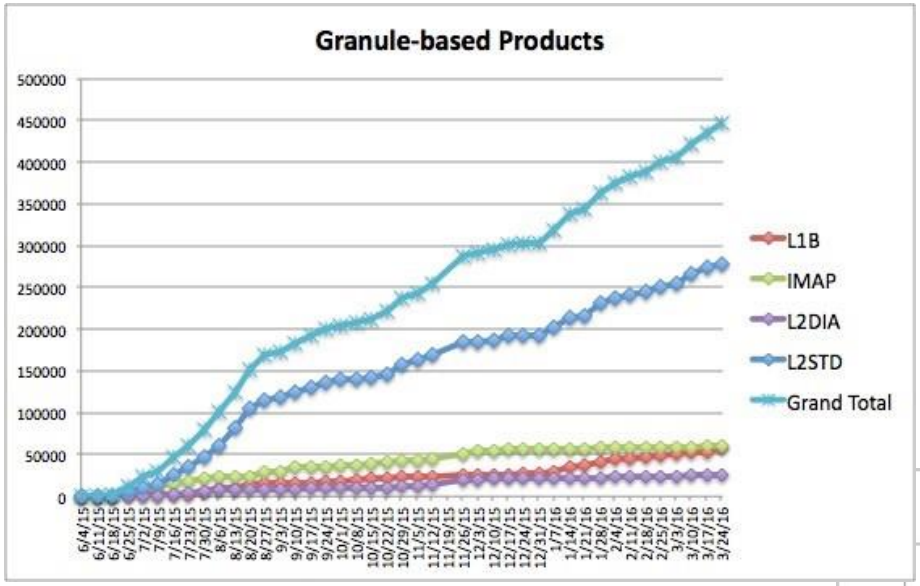
Warm | Cold, unstable | Cold, stable | Completely without Science

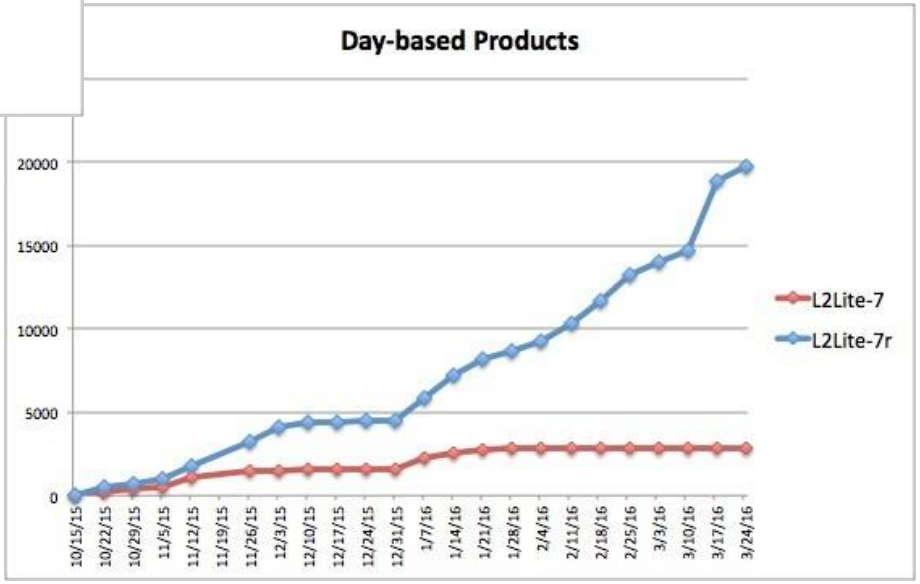
B7r processing
complete | - incomplete | not begun

Days delivered to GES DISC
D all orbits delivered

Production and deliveries of B7r Lite files are also complete through February 2016.

Download Statistics (2/18/2016)





OCO-2 Data product downloads continue at a rapid pace

Plans for Processing the GOSAT v201201 Product

- The OCO-2 Science Data Operations System (SDOS) team is preparing to reprocess the v201 product
- Substantial progress has been made in understanding the differences between the v161.161 and v201.201 product
  - Best Estimated radiances and geolocation implemented
  - Corrected wavenumber implemented
- A "sample" L1b orbit has been created and is being reviewed
- Testing program will commence later this week
- Schedule for processing is contingent on test results, but we hope to have preliminary results before the JpGU meeting in late May

OCO-2 Science Team Summary

- The 3rd post-launch OCO-2 Science Team meeting was held at Caltech on 21-23 March.
  - ~100 team members attended in person and another dozen or so participated remotely by WebEx.
- The first day was devoted to breakout sessions
  - Validation, Spectroscopy, Cloud/Aerosol, Uncertainty Quantification, and Flux Inversion theme groups.
- The plenary session on the following two days included reports and discussions covering all areas of the science activity.
  - Tuesday afternoon was devoted to a "Flux Inversion Intensive" that focused attention on the progress and challenges encountered in team's initial flux inversion efforts.
    - Great progress is being made and robust features are beginning to appear in the preliminary flux inversion products
    - The large data density and subtle biases in the version 7 OCO-2 X_{CO2} estimates are continuing to pose significant challenges.
      - An apparent -0.5 ppm glint bias over the topics and a +2 ppm bias at high latitude are receiving the most attention

A Few Highlights (1)

- Annmarie Eldering introduced the v7 product with maps
- Christian Frankenberg described new results from SIF observations from OCO-2 and the CFIS aircraft instrument, and identified a calibration artifact associated with the fast degradation in the A-band signal
- Paul Wennberg summarized the validation status, site-by-site, showing the impact of the bias correction
- Vivienne showed the progress made so far with the testing of the new ABSCO tables (improved residuals, lower surface pressure bias and variance, etc.)
- Chris O'Dell reviewed the progress with the L2 retrievals and bias correction and discussed the errors introduced by recently-discovered ECMWF surface topography error
- Tommy discussed the cloud screening results documented in his new paper

A Few Highlights (2)

- Florian discussed point source observations with a focus on LA, Nagoya, and Cairo
- Annmarie Eldering and Chris O'Dell summarized the updates being considered for Version 8, including pre-processor, cirrus and aerosol priors, ABSCO, solar model, BRDF, Met topography updates
- I summarized results from the cloud-aerosol group, showing substantial improvements clouds and XCO2 retrievals using CALIPSO data as the cloud/aerosol prior

- On-page summaries were solicited from all task leads
  - Formatted in a way that can be understood by managers

- The next Science Team Meeting is now being targeted for early October.

Upcoming Meetings

- 17-22 April 2016: EGU, Vienna
  - Neither Annmarie's or Florian's Travel was approved for EGU!
- 17-22 April 2016: International Radiation Symposium, Auckland, New Zealand
- 9-13 May 2016: ESA Living Planet Symposium, Prague
- 17-18 May 2016: NOAA ESRL GMD Annual Meeting, Boulder
- 22-26 May 2016: JpGU, Makuhari Messe, Japan
  - Crisp submitted two talks + Hyperwall, air/hotel in place
- **6-7.5 June, 2016: GOSAT RA PI Meeting, Kyoto (Crisp attending)**
- **7.5-9 June, 2016: IWGGMS-12, Kyoto: ABSTRACT DEADLINE: 1 April!**
  - **14 OCO-2 team members from JPL have forecasted trip**
- **10 June, 2016 OCO-2/GOSAT TIM, Nara**