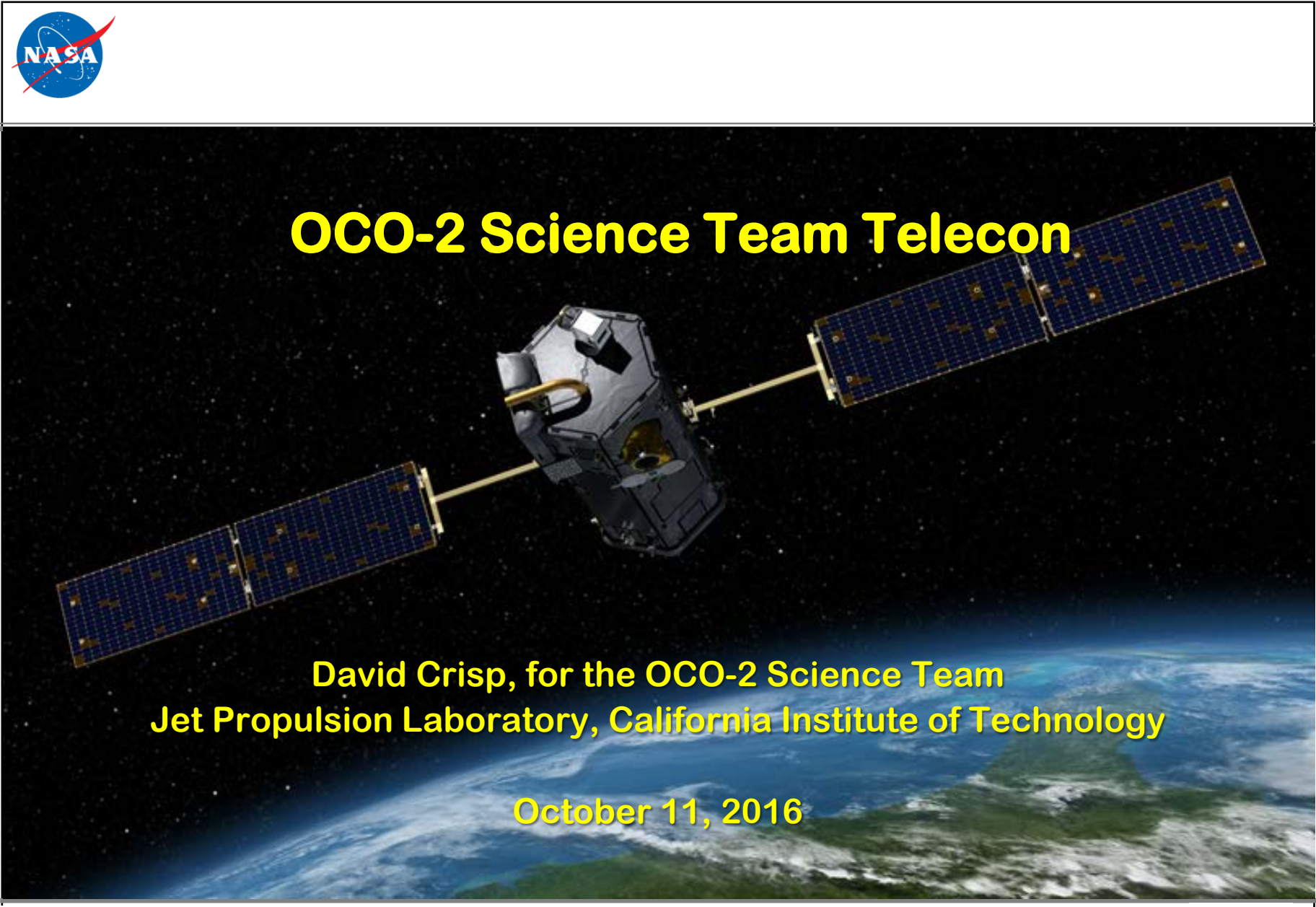


OCO-2 Science Team Telecon

David Crisp, for the OCO-2 Science Team
Jet Propulsion Laboratory, California Institute of Technology

October 11, 2016

Agenda

1. Preparations for the OCO-2 Science Team Meeting: https://sites.google.com/site/oco2oct2016stm/home
   - Updated agenda
   - Speed talks and Posters
   - Logistics (hotels, cars, dinner, etc.)

2. Opportunity for a Special Issue of Science featuring OCO-2 results

3. Status of other OCO-2 publications

4. Breakout Sessions for the 2017 Joint NACP and AmeriFlux Principal Investigators Meeting (PIM)

OCO-2 Science Team Planning

Science Team Meeting

- The OCO-2 Science Team Meeting will be held on 25-27 October at the NCAR Mesa Facility
  - 1850 Table Mesa Drive Boulder, Colorado, 80305

- If you have not registered, but plan to attend either in person or via WebEx, please register ASAP at
  https://sites.google.com/site/oco2oct2016stm/home/registration
- 80 people registered to date
- ~50 people signed up for speed talks -- ~2 hours
- Posters: ~25 identified so far

- Dinner - 7pm on Wednesday, Oct 26th – Please bring CASH!!
  - Reservation for 80 people at the Mediterranean Restaurant.
    - We will be seated at 4 tables of 20. See menu on web site
  - $35 - $40 per person + tip + extras (more drinks or additional food.

Tuesday, October 25

WebEx 993 340 281
call 844-575-9329

Topic	Discussion Leader	Start Time	duration (min)
Registration and check in		8:00 AM	30
Welcome from NCAR	Jim Hurrell	8:30 AM	10
Welcome from HQ	Ken Jucks	8:40 AM	10
Welcome, Overview, Logistics and Introductions	Dave Crisp	8:50 AM	10
Mission Status	Gunson on behalf of PJ	9:00 AM	15
SPEED TALKS (with a couple of catch your breath breaks)	ALL	9:15 AM	120
early Lunch break	ALL	11:15 AM	75
reconvene		12:30 PM	0
flux team kickoff	Baker	12:30 PM	15
science background	Jacobson	12:45 PM	20
Flux inversion results	Crowell	1:05 PM	45
addressing biases	Schuh	1:50 PM	20
UQ related presentations	UQ team	2:10 PM	50
BREAK	ALL	3:00 PM	30
POSTERS	ALL	3:30 PM	60
ACOS overview (what it contains, compare to OCO-2, TCCON)	Chris + others	4:30 PM	30
v7 review (bias correction, TCCON stats)	Chris + others	5:00 PM	30
End of Day	ALL	5:30 PM	0

Wednesday, October 26

WebEx 993 340 281/call 844-575-9329			
Topic	**Discussion Leader**	**Start Time**	**duration (min)**
Registration and check in		8:00 AM	30
Welcome, Overview and Logistics	Dave Crisp	8:30 AM	10
local sources talk 1	Kort +	8:40 AM	20
local sources talk 2	Lauvaux +	9:00 AM	20
local sources talk 3	Schwandner	9:20 AM	20
OCO-3 and local sources	Eldering	9:40 AM	20
discussion	all	10:00 AM	20
BREAK	ALL	10:20 AM	30
pre-v8 overview - what is changing	Eldering/O'Dell	10:50 AM	20
comparison of pre-v8 to TCCON and models	O'Dell/Fisher/etc	11:10 AM	20
timeseries analysis of pre-v8	Fisher	11:30 AM	20
other features of pre-v8 (screening, bias drivers)	team	11:50 AM	20
discussion	Eldering/O'Dell	12:10 PM	30
LUNCH	ALL	12:40 PM	60
flux part 2	Dave Baker	1:40 PM	65
GSFC highlights	Leslie Ott	2:45 PM	30
COFFEE	ALL	3:15 PM	30
POSTERS	ALL	3:45 PM	60
SIF part 1	Ying	4:45 PM	20
SIF part 2	Philipp	5:05 PM	20
SIF discussion	led by Ying	5:25 PM	20
End of Day	ALL	5:45 PM	

Dinner for those who signed up - bring cash 7pm

Thursday, October 27

WebEx 993 340 281
call 844-575-9329

Topic	Discussion Leader	Start Time	duration (min)
Registration and check in		8:30 AM	30
Flux recap = where are we as a mission	Schimel et al	9:00 AM	20
Flux recap - what else do we need regarding the data	Baker et al	9:20 AM	20
Discussion	all	9:40 AM	20
Action item review	Eldering	10:00 AM	15
COFFEE	ALL	10:15 AM	30
paper plans	Eldering and Schimel	10:45 AM	30
senior review - where we are	Crisp and Eldering	11:15 AM	20
senior review - what we need from team members	Crisp and Eldering	11:35 AM	25
End of Meeting		12:00 PM	0

Reconfigure for End of Prime Mission Review: HQ + Project Begins at 1 PM

Speed Talks (1 of 2)

talk number	first name	last name	affiliation
1	Abhishek	Chatterjee	NASA GMAO
2	Andrew	Zammit Mangion	University of Wollongong
3	Andy	Jacobson	University of Colorado and NOAA Earth System Research Lab
4	Annmarie	Eldering	JPL/Caltech
5	Anthony	Bratt	UMBC
6	Arlyn	Andrews	NOAA ESRL
7	Aronne	Merrelli	Space Science and Engineering Center, Univ. of Wisconsin-Madison
8	Bohai	Zhang	University of Wollongong
9	Brad	Weir	NASA GSFC/USRA
10	Brian	Connor	BC Scientific Consulting
11	Britton	Stephens	NCAR
12	Charles	Miller	JPL
13	David	Baker	Colorado State University
14	David	Crisp	JPL/Caltech
15	Doyeon	Ahn	University of Maryland
16	Florian	Schwandner	JPL
17	Greg	Osterman	JPL
18	Gretchen	Keppel-Aleks	Michigan
19	Heather	Cronk	CIRA/CSU
20	Hibiki	Noda	NIES
21	Hiroshi	Suto	JAXA
22	Janne	Hakkarainen	Finnish Meteorological Institute
23	John	Miller	NOAA
24	Jon	Hobbs	JPL

Speed Talks (2 of 2)

talk number	first name	last name	affiliation
25	Junjie	Liu	JPL
26	Kang	Sun	Harvard-Smithsonian Center for Astrophysics
27	Karen	Yuen	Caltech/JPL
28	Kei	Shiomi	JAXA
29	Laura	Iraci	NASA Ames Research Center
30	Lesley	Ott	NASA GSFC
31	Makoto	Saito	National Institute for Environmental Studies, Japan
32	Matthias	Katzfuss	Texas A&M University
33	Peter	Somkuti	University of Leicester
34	Ralf	Bennartz	University of Wisconsin - Madison
35	Riley	Duren	JPL
36	Scot	Miller	Carnegie Institution
37	Sean	Crowell	U Oklahoma
38	Sourish	Basu	NOAA ESRL
39	Steven	Massie	University of Colorado
40	Susan	Kulawik	BAERI/Nasa Ames
41	Thomas	Lauvaux	PennState University
42	Tommy	Taylor	CSU
43	Tomohiro	Oda	USRA/GSFC
44	Vivienne	Payne	JPL/Caltech
45	Woogyung	Kim	Yonsei University
46	Yeonjin	Jung	Yonsei University
47	Ying	Sun	JPL
48	Yukio	YOSHIDA	NIES, Japan

Posters

poster number	topic	first author	poster title
1	validation	Ken Davis	ACT-America
2	validation	Steve Wofsy	ATOMs
3	validation	Greg Osterman	overview
4	algorithm	Peter Somkuti	OCO-2 retrievals from Univ of Leicester:
5	algorithm	Janne Hakkarainen	OCO-2 CO2 anomalies and/or Sodankylä observations and validation
6	algorithm	Robert Nelson	Methodology and Evaluation of OCO-2 Column H2O Retrievals
7	algorithm	Yeonjin Jung	aerosol retrievals
8	algorithm	Susan Kulawik	Lowermost Troposphere retrievals
9	alg	Taylor	preprocessor for v8
10	spectroscopy	Matt Cich	
11	spectroscopy	Joe Hodges	
12	spectroscopy	Keeyoon Sung/Shanshan Yu	
13	clouds	Mark Richardson	Cloud Properties from OCO-2 A-band
14	clouds	Sebastian Schimdt	3D effects in OCO2 data
15	clouds	Merrelli, Bennartz, O'Dell	CALIOP-constrained OCO2 retrievals
16	UQ	Amy/Jon	
17	UQ	Jon/Brian	
18	UQ	Bohai and company	
19	UQ	Gretchen	
20	local	Wofsy group	Boston local source measurements
21	local	Thomas/Xinxin	local source analysis
22	flux	junjie	?

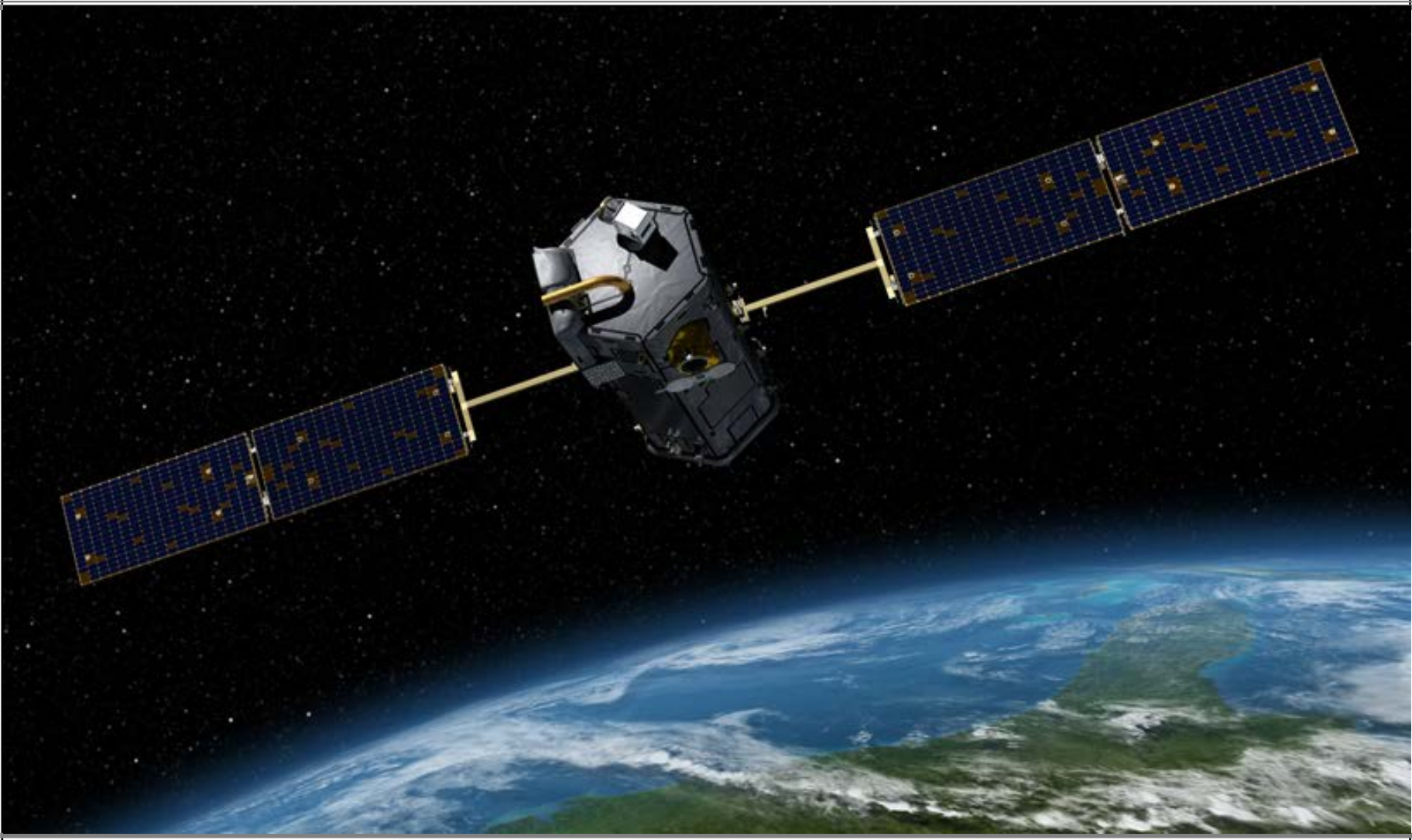
Logistics

- If you have a car, please send Annmarie and I a quick note stating this, and telling us where you will be staying. We will try to coordinate rides to and from the hotel and to the dinner.
  - David.Crisp at jpl.nasa.gov
  - Annmarie.Eldering at jpl.nasa.gov

- If you wish to show 1 or 2 slides for your 2-minute speed talk, please send them to oco2alg@gmail.com no later than Monday Oct 24.
  - Please label your presentation [FirstName_LastName_Speedtalk.ppt]
  - PPT is preferred
  - PDF is also acceptable

- The poster boards are 6' high and 4' wide, but please limit posters to 4 feet by 4 feet, so people can see all of the material.

Opportunity for a Special Issue in Science



Special Collection in Science

David Schimel has negotiated an opportunity to submit a series of papers on OCO-2 to a "Special Collection" in Science

- Papers in JGR journals can also be cross listed in this collection

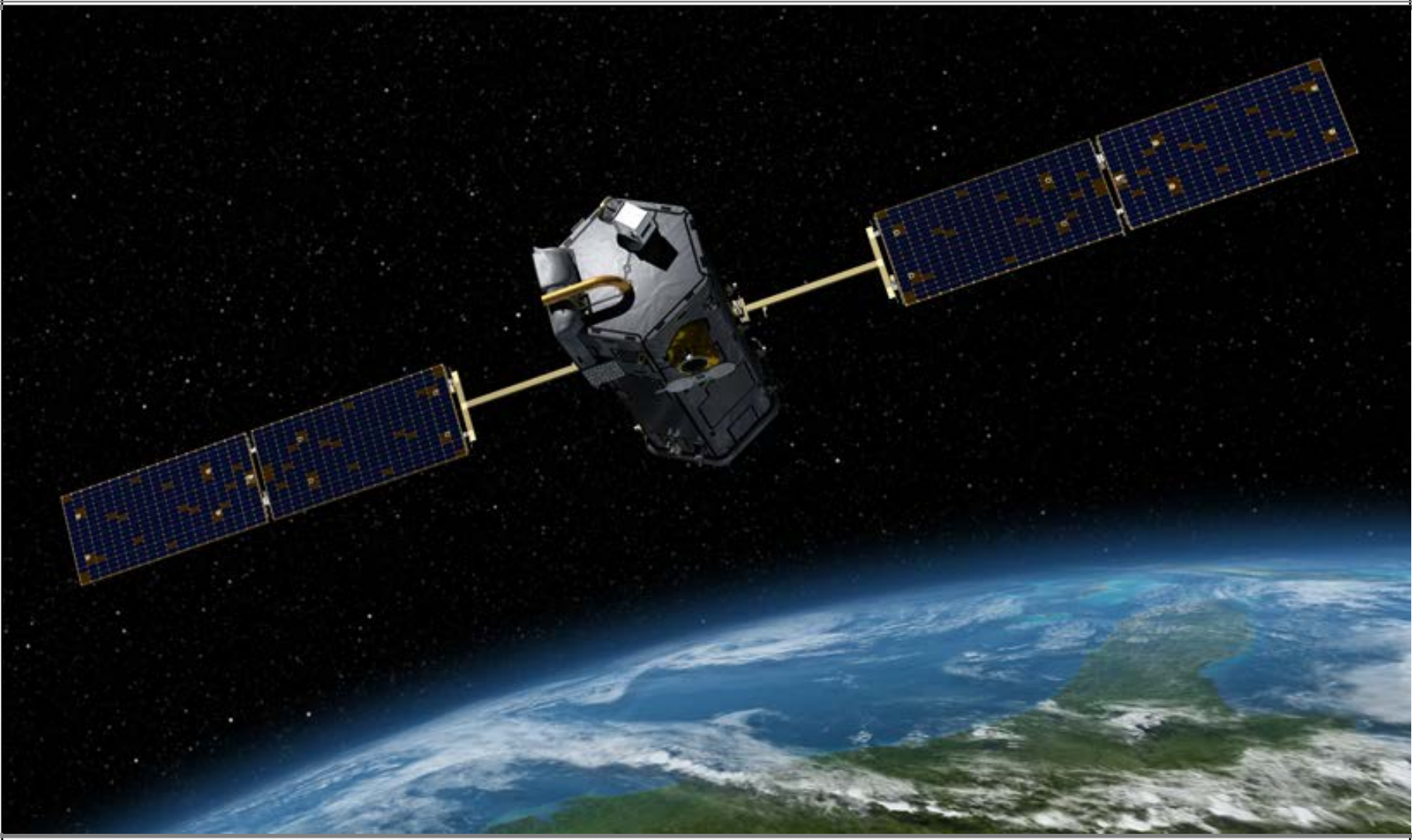
A few of us have been asked to supply 200-word abstracts

- Crisp/Eldering et al. - overview
- Chatterjee et al., El Niño
- Liu, et al., Fluxes/precipitation/El Niño
- Bloom et al., fires in Africa
- Schwandner et al., point sources

- The time scale for submission is 4-6 weeks

- Additional contributions are being solicited
  - What have you got?
  - When will it be ready?

Status of Other Publications



2016 Publications (1 of 2)

- Taylor et al., Orbiting Carbon Observatory-2 (OCO-2) cloud screening algorithms: validation against collocated MODIS and CALIOP data, Atmos. Meas. Tech., 9, 973–989, 2016.
- Zhang et al., XCO2 Retrieval Error over Deserts near Critical Surface Albedo, Earth And Space Science, 3, 36-45, DOI: 10.1002/2015EA000143, 2016.
- Tadic, J.M., Michalak, A.M., On the effect of spatial variability and support on validation of remote sensing observations of CO2, ATMOSPHERIC ENVIRONMENT, 132, 309-316, DOI: 10.1016/j.atmosenv.2016.03.014, 2016
- Devi, V.M., et al., Line parameters including temperature dependences of self- and air-broadened line shapes of (CO2)-C-12-O-16: 1.6-mu m region, J. Quant. Spect. Radiative Trans., 17, 117-144, DOI: 10.1016/j.jqsrt.2015.12.020, 2016
- Benner, C., et al., Line parameters including temperature dependences of air- and self-broadened line shapes of (CO2)-C-12-O-16: 2.06-mu m region, J. Quant. Spect. Radiative Trans., 326, 21-47, DOI: 10.1016/j.jms.2016.02.012, 2016
- Connor, B., et al., Quantification of uncertainties in the OCO-2 measurements of XCO2: simulations and linear error analysis, Atmospheric Measurement Techniques Discussions, doi:10.5194/amt-2016-128, 2016
- Worden, J., et al., Evaluation, validation and attribution of OCO-2 XCO2 uncertainties, Atmospheric Measurement Techniques Discussions, 2016
- Wunch, D., et al., Comparisons of the Orbiting Carbon Observatory-2 (OCO-2) XCO2 measurements with TCCON, Atmospheric Measurement Techniques Discussions, 2016
- Eldering, A., et al., The Orbiting Carbon Observatory-2: First 18 months of Science Data Products, Atmospheric Measurement Techniques Discussions, 2016

2016 Publications (1 of 2)

- Crisp, D., et al., The On-Orbit Performance of the Orbiting Carbon Observatory-2 (OCO-2) Instrument and it Radiometrically Calibrated Products, Atmospheric Measurement Techniques Discussions, 2016
- Cressie, N., et al., Statistical bias and variance for the regularized inverse problem: Application to space-based atmospheric CO2 retrievals, J. Geophys. Res. Atmos., 121, 5526–5537, doi:10.1002/2015JD024353, 2016
- Michalak, A. M., et al., Diagnostic methods for atmospheric inversions of long-lived greenhouse gases, Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-800, 2016
- Yin, Y., et al., Variability of fire carbon emissions in equatorial Asia and its nonlinear sensitivity to El Niño, Geophysical Research Letters, 10.1002/2016GL070971, 2016
- Drouin, Brian, et al.: Multispectrum analysis of the Oxygen A-band, Journal Quantitative Spectroscopy and Radiative Transfer, , doi:10.1016/j.jqsrt.2016.03.037, 2016.

Papers in Review 2016

- Rosenberg, Rob, et al.: Preflight radiometric calibration of Orbiting Carbon Observatory 2, IEEE Transaction on Geoscience and Remote Sensing
- Lee, Richard , et al.: Preflight spectral calibration of the Orbiting Carbon Observatory 2, IEEE Transaction on Geoscience and Remote Sensing
- Bloom, Anthony, et al.: OCO-2 detection of southern Africa fire CO2 emission
- Hobbs, Jonathan, et al.: Uncertainty quantification for remote sensing retrievals, Journal on Uncertainty Quantification
- Bohai Zhang, et al.: Statistical properties of atmospheric greenhouse gas measurements: looking down from space and looking up from the ground, Elsevier Science
- J. Heymann et al.: CO2 emission of Indonesian fires in 2015 estimated from satellite-derived atmospheric CO2 concentrations, GRL
- Hai Nguyen, et al.: Multivariate Spatial Data Fusion for Very Large Remote Sensing Datasets, Remote Sensing
- Nelson, Robert, et al.: High-accuracy measurements of total column water vapor from the Orbiting Carbon Observatory-2, GRL
- Patra, Pabrir et al., Orbiting carbon observatory (OCO-2) tracks 2-3 peta-grams increase of carbon release to the atmosphere during the 2014-2016 El Niño, Nature Scientific Reports
- Kang Sun, et al.: Characterization of the OCO-2 instrument line shape functions using on-orbit solar measurements, AMT

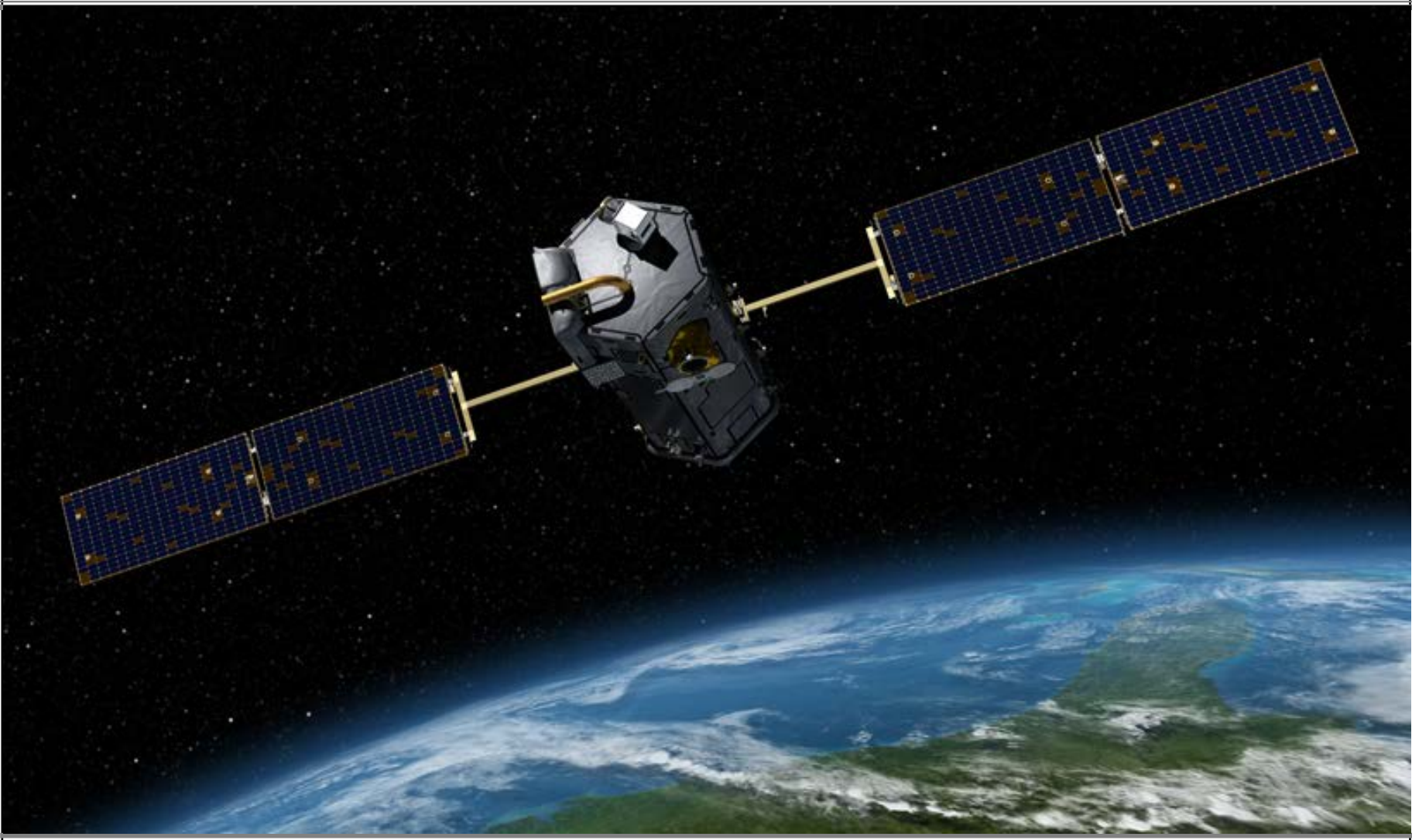
Papers in Preparation 2016

- O'Dell, Chris, et al.: First retrievals of carbon dioxide from the Orbiting Carbon Observatory-2, AMT
- Chatterjee, A., et al.: Influence of El Nino on atmospheric CO2: Findings from the Orbiting Carbon Observatory-2, Science (TBC)
- Hakkarainen et al.: Direct space-based observations of anthropogenic CO2 emission areas from OCO-2, GRL
- Frankenberg, Christian, et al.: OCO-2 on-orbit SIF, TBD
- Mandrake, Lukas, et al.: OCO-2 warn levels, TBD
- Schwandner, Florian, et al.: Urban Greenhouse Gas Tomography from Space, Science (TBC)
- Schwandner, Florian, et al.: Space-borne detection of volcanic CO2 plumes with OCO-2, Science or GRL (TBC)
- Liu, Junjie, et al.: Warmer and drier climate lead to more carbon release in tropical terrestrial biosphere in 2015 El Niño, Science TBD
- Massie, Steven, et al.: Observational Evidence of 3D Cloud Effects in OCO2 CO2 Retrievals, AMT
- Schmidt, Sebastian, et al.: Understanding 3D cloud effects in OCO-2 observations using the 3D OCO-2 radiance simulator, AMT
- Crisp, David, et al.: Retrieving Surface pressure from OCO-2, AMT
- Bruegel, Carol, et al.: OCO–2 Vicarious Radiometric Calibration, AMT (TBC)
- Bruegel, Carol, et al.: Validation of the OCO-2 automated calibration facility at Railroad Valley, Nevada, AMT (TBC)
- Ye, Xinxin, Lauvaux, T. et al., Constraining fossil fuel CO2 emissions from urban areas using OCO-2 observations of total column CO2, ACP

2016 ACOS/GOSAT Publications

- Feng, L. et al. Estimates of European uptake of CO2 inferred from GOSAT XCO2 retrievals: sensitivity to measurement bias inside and outside Europe, Atmos. Chem. Phys., 16, 1289–1302, 2016.
- Deng, F., et al., Combining GOSAT XCO2 observations over land and ocean to improve regional CO2 flux estimates, J. Geophys. Res. Atmos., 121, 1896–1913, doi:10.1002/2015JD024157, 2016.
- Nelson, R., et al., The potential of clear-sky carbon dioxide satellite retrievals, Atmos. Chem. Phys., 15, 13023–13040, doi:10.5194/amt-9-1671-2016, 2016.
- Jiang, X.,*, D. Crisp., E. T. Olsen., S. S. Kulawik, C. E. Miller, T. S. Pagano, M. Liang, and Y. L. Yung, CO2 Annual and Semiannual Cycles From Multiple Satellite Retrievals and Models, Earth and Space Sci., 3, 2016, doi:10.1002/2014EA000045.
- Kulawik, S. et al., Consistent evaluation of GOSAT, SCIAMACHY, CarbonTracker, and MACC through comparisons to TCCON, Atmos. Meas. Tech., 9, 683–709, 2016, www.atmos-meas-tech.net/9/683/2016/ doi:10.5194/amt-9-683-2016
- Frankenberg et al. Using airborne HIAPER Pole-to-Pole Observations (HIPPO) to evaluate model and remote sensing estimates of atmospheric carbon dioxide, Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2015-961, 2016.
- Zhao, M., et al., Validation of TANSO-FTS/GOSAT XCO2 and XCH4 glint mode retrievals using TCCON data from near-ocean sites, Atmos. Meas. Tech., 9, 1415-1430, 2016.
- Kulawik, S., et al. Lower-tropospheric CO2 from near-infrared ACOS-GOSAT observations, Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-720, in review, 2016.

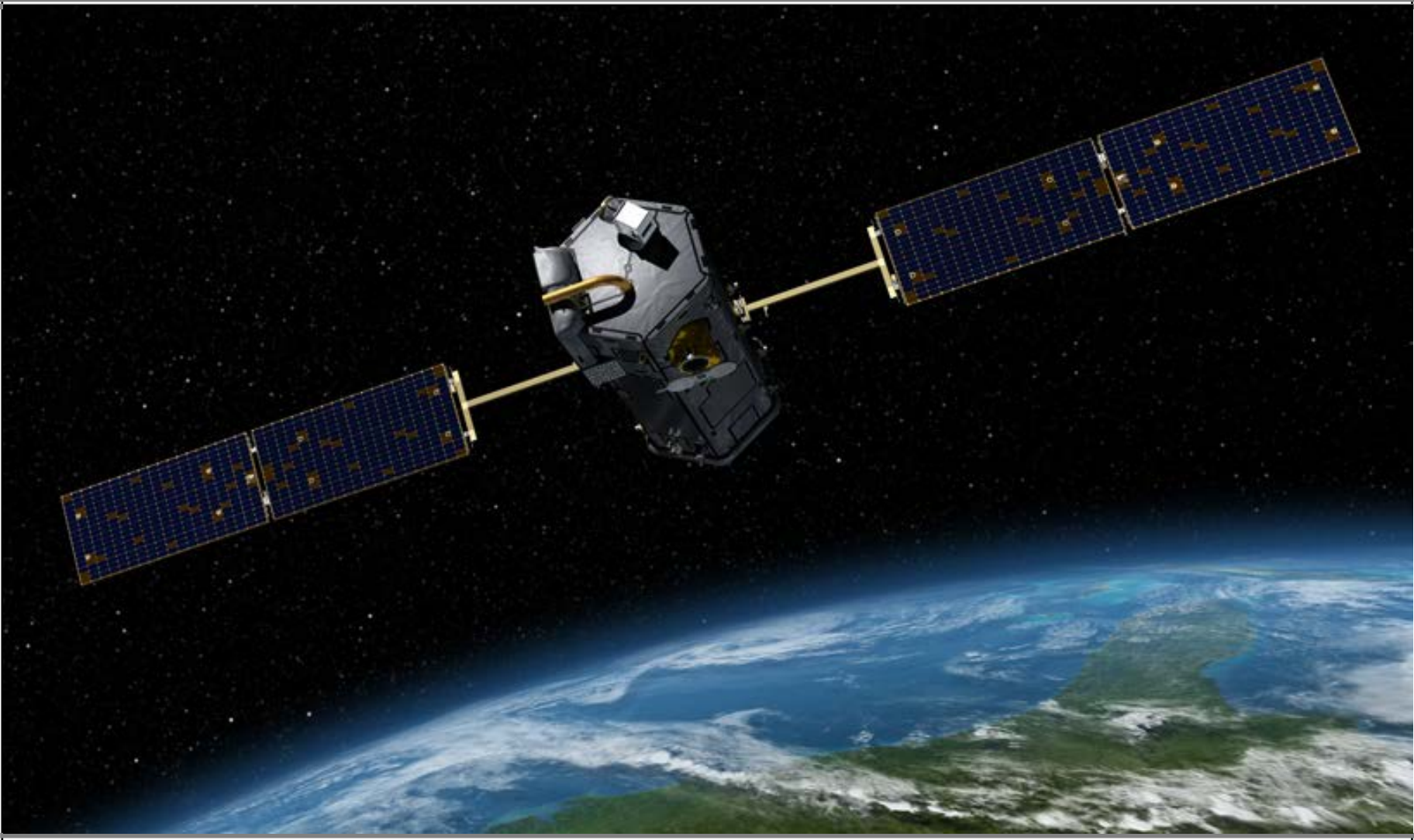
Meetings



Upcoming Meetings

- AGU, San Francisco
  - Monday
  - Tuesday
  - Wednesday
  - Thursday
  - Friday
- GOSAT/OCO-2 TIM at AGU
  - Thursday afternoon 2 – 5 PM, location TBD
- AMS, Seattle
- NACP/Ameiflux PI Meeting
  - Opportunity for Breakout Session

Breakout Sessions for the 2017 Joint NACP and AmeriFlux Principal Investigators Meeting



NACP Breakout Sessions

The 2017 Joint NACP and AmeriFlux Principal Investigators Meeting (PIM), will be held on 27th through 30th of March 2017 at the Bethesda North Marriott in North Bethesda, Maryland

Deadline extended! Breakout Topic Proposals now due October 16

- Keppel-Aleks, Kiang, et al: How OCO-2 observations can facilitate evaluation of prognostic biospheric models
- Ken Davis: The state of the art in inverse flux estimates
- Dave Schimel: Use of OCO-2 and OCO-3 data for regional flux studies
- Other Ideas?