Agenda of the EOS Aura Science Team Meeting
30 August – 1 September 2016
Rotterdam, The Netherlands

Monday, 29 August 2016

16:30 – 18:00 *Registration*

Tuesday, 30 August 2016

8:30 – 9:00 *Registration*

Session Chair: ***Anne Douglass***

9:00 – 9:15 Welcome, Logistics, News, and Project Science
Opening (Ger Nieuwpoort, NSO)
Welcome (Wynand Dassen, Rotterdam Resilience Team)

9:15 – 9:30 Update from NASA Headquarters (Ken Jucks)

9:30 – 11:00 Aura Instruments Overview and Status (30 minutes each)
MLS *Nathaniel Livesey*
OMI *Pieternel Levelt*
TES *Kevin Bowman*

11:00 – 11:30 *Break*

11:30 – 11:45 **Recent activities of the U.S. OMI core team** (*Joanna Joiner (NASA Goddard Space Flight Center; joanna.joiner@nasa.gov), D. Haffner, P.K. Bhartia, S. Marchenko, A. Vasilkov, W. Qin, N. Krotkov, B. Fisher, R. Spurr, C.-W. Ahn, E.-S. Yang, S. Choi, and Y. Yoshida)*

11:45 – 12:00 **What solar measurements can tell about instrument transfer function—Lessons learned from OMI and OCO-2 (***Kang Sun (Harvard-Smithsonian Center for Astrophysics; kang.sun@cfa.harvard.edu), X. Liu, G. González Abad, Z. Cai, C. Nowlan, K. Yang, and K. Chance)*

12:00 – 13:30 *Lunch*

13:30 – 16:00 Data Systems and Preservation Working Group meeting (Room 7)

13:30 – 17:30 Plenary session

Session Chair: ***Pieternel Levelt***

13:30 – 13:45 **New-generation Aura OMI volcanic SO_2 product: Algorithm description, initial results, and data continuation with S-NPP OMPS** (*Can Li (University of Maryland/ESSIC and NASA Goddard Space Flight Center; can.li@nasa.gov), N. A. Krotkov (presenting author, NASA Goddard Space Flight Center, Nickolay.A.Krotkov@nasa.gov), S. Carn, Y. Zhang, R. Spurr, and J. Joiner)*

13:45 – 14:00 **Effects of daily meteorology on satellite *a priori* and implications for constraint of NO_x chemistry from space** (*Josh L. Laughner (University of California, Berkeley; jlaughner@berkeley.edu), A. H. Zare, and R. C. Cohen)*

14:00 – 14:15 **Observing atmospheric formaldehyde from OMI: Validation, intercomparison, trend analysis, and public health implications (***Lei Zhu (Harvard University; leizhu@fas.harvard.edu), D. J. Jacob, P. S. Kim, J. A. Fisher, K. Yu, K. R. Travis, L. J. Mickley, R. M. Yantosca, M. P. Sulprizio, I. De Smedt, G. González Abad, K. Chance, C. Li, R. Ferrare, A. Fried, J. W. Hair, T. F. Hanisco, D. Richter, A. J. Scarino, J. Walega, P. Weibring, and G. M. Wolfe)*

Tuesday, 30 August 2016 (continued)

14:15 – 14:30	**Quality assurance for NASA, KNMI, and QA4ECV spectral fitting algorithms for OMI NO_2 Slant Columns** (*Marina Zara (KNMI; marina.zara@knmi.nl), K. F. Boersma, J. van Geffen, H. J. Eskes, J. P. Veefkind, M. Sneep, I. De Smedt, M. van Roozendael, A. Richter, E. Peters, T. Wagner, S. Beirle, S. Marchenko, N. Krotkov, E. Celarier, and L. Lamsal)*
14:30 – 14:45	**ILMA: Applications of satellite observations of tropospheric NO_2 at high latitudes for monitoring air quality (***Iolanda Ialongo (Finnish Meteorological Institute; iolanda.ialongo@fmi.fi) and J. Tamminen)*
14:45 – 15:00	**Aura's ozone garden: Despite 44% decrease in OMI NO_2, ozone–induced injury to sensitive plants is still very evident (***Bryan N. Duncan (NASA Goddard Space Flight Center; Bryan.N.Duncan@nasa.gov), J. M. Skelly, and G. J. Butcher)*
15:00 – 15:30	*Break*
Session Chair:	***Joanna Joiner***
15:30 – 15:45	**Pollution over megacity regions from the Tropospheric Emission Spectrometer (TES)** *(Karen Cady-Pereira (AER; kcadyper@aer.com), J. Neu, V. Payne, J. Hegarty, M. Luo, and K. Bowman)*
15:45 – 16:00	**Exploring relationships between land conditions and air quality using models, satellite and aircraft observations** (*Min Huang (George Mason University/now visiting University of Maryland; minhuang@umd.edu), and many from the Aura, ARCTAS, and recent NASA NCA and SUSMAP projects)*
16:00 – 16:15	**Upper tropospheric water vapor simulated in CMIP5 models: From present-day variations to long-term change under global warming** (*Hui Su (JPL; Hui.Su@jpl.nasa.gov), H. Takahashi, and J. H. Jiang)*
16:15 – 16:30	**Emergent constraints in chemistry-climate interactions: A Bayesian approach** (*Kevin Bowman (JPL; Kevin.Bowman@jpl.nasa.gov), N. Cressie, L. Kuai, H. Worden, and J. Jewell)*
16:30 – 16:45	**The impact of gravity waves and cloud nucleation threshold on stratospheric water and tropical tropospheric cloud fraction** (*Mark Schoeberl (STC; mark.schoeberl@mac.com), A. Dessler, H. Ye, T. Wang, M. Avery, and E. Jensen)*
16:45 – 17:00	**Observational metrics for CMIP6 climate model assessments** (*Jonathan H. Jiang (JPL/Caltech; Jonathan.H.jiang@jpl.nasa.gov))*
17:00 – 17:15	**Quick look at the NASA ATom mission profiling and model-measurement analysis** (*Michael J. Prather (University of California, Irvine; mprather@uci.edu))*
17:15 – 17:30	**Understanding the hydrological controls on the tropospheric ozone greenhouse gas effect using AURA TES observations** (*Le Kuai (UCLA-Joint Institute for Regional Earth System Science and Engineering (JIFRESSE); lkuai@g.ucla.edu), K. Bowman, H. Worden, R. Herman, and S. Kulawik)*
18:00-	*Icebreaker – Fenix Warehouse (http://fenixfoodfactory.nl)*

Wednesday, 31 August 2016

Session Chair:	***Bryan Duncan***
8:30 – 8:45	**In-flight performance of the Ozone Monitoring Instrument** (*V. M. Erik Schenkeveld (KNMI; Erik.Schenkeveld@knmi.nl), G. Jaross, S. Marchenko, and D. Haffner)*
8:45 – 9:00	**Temperature-dependence of aerosol optical depth over the southeastern U.S.** (*Tero Mielonen (Finnish Meteorological Institute; tero.mielonen@fmi.fi), A. Hienola, T. Kühn, J. Merikanto, A. Lipponen, T. Bergman, H. Korhonen, P. Kolmonen, L. Sogacheva, D. Ghent, A. Arola, G. de Leeuw, and H. Kokkola)*
9:00 – 9:15	**Solar spectral irradiance variability in Cycle 24: Model predictions and OMI observations** (*Sergey V. Marchenko (SSAI; sergey_marchenko@ssaihq.com), M. DeLand, and J. Lean)*
9:15 – 9:30	**Processes influencing global tropospheric ozone: Insights from OMI ozone observations** *(Lu Hu (Harvard University; luhu@seas.harvard.edu), D. Jacob. X. Liu, P. Kim, and L. Zhang)*
9:30 – 9:45	**Peroxyacetyl nitrate (PAN) from TES: A new view into ozone chemistry** (*Vivienne Payne (JPL/Caltech; vivienne.h.payne@jpl.nasa.gov), E. Fischer, Z. Jiang, L. Zhu, S. Kulawik, J. Worden, and K. Cady-Pereira)*
9:45 – 10:00	**Quantifying and attributing changes in tropospheric ozone over the past decade: The view from Aura** (*Jessica L. Neu (JPL; jessica.l.neu@jpl.nasa.gov), S. Glanville, D. Kinnison, H. Oetjen, W. Verstraeten, N. Krotkov, L. Lamsal, N. Livesey, G. Manney, M. Santee, K. Bowman, and J. Worden)*
10:00 – 10:30	*Break*
Session Chair:	***Kevin Bowman***
10:30 – 10:45	**A method to account for surface BRDF effects on satellite UV/VIS algorithms** (*Wenhan Qin (SSAI; wenhan.qin@ssaihq.com), A. Vasilkov, N. Krotkov, L. Lamsal, R. Spurr, D. Haffner, and J. Joiner)*
10:45 – 11:00	**Aerosol retrievals from the OMI 477-nm O_2-O_2 band: Focus over large urban area and cloud-free scenes** (*Julien Chimot (Geoscience and Remote Sensing Department / Delft University of Technology; J.J.Chimot@tudelft.nl), P. Veefkind, T. Vlemmix, and P. Levelt*)
11:00 – 11:15	**Structural uncertainty in air mass factor calculation process for NO_2 and HCHO satellite retrievals** (*Alba Lorente (Wageningen University; alba.lorentedelgado@wur.nl), F. Boersma, H. Yu, S. Dörner, A. Hilboll, L. Lamsal, M. Liu, M. Barkley, A. Richter, I. De Smedt, M. Van Roozendael, T. Wagner, and J.-T. Lin)*
11:15 – 11:30	**Effects of surface BRDF on OMI cloud and NO_2 retrievals** (*Alexander Vasilkov (SSAI; alexander.vasilkov@ssaihq.com), W. Qin, N. Krotkov, L. Lamsal, R. Spurr, D. Haffner, J. Joiner, E.-S. Yang, and S. Marchenko)*
11:30 – 11:45	**MUlti-SpEctral, MUlti-SpEcies, MUlti-SatEllite (MUSES) retrieval algorithm for "A Train," Suomi-NPP, and TROPOMI satellites** *(Dejian Fu (JPL/Caltech; dejian.fu@jpl.nasa.gov), K. Bowman (presenting author, JPL, Kevin.Bowman@jpl.nasa.gov), S. Kulawik, J. Worden, H. Worden, L. Kuai, V. Payne, J. Neu, M. Luo, V. Natraj, P. Veefkind, I. Aben, J. Landgraf, X. Liu, L. Flynn, H. Yong, and L. Strow)*
11:45 – 12:00	**Validation of 10-year SAO OMI Ozone Profile (PROFOZ) product using ozonesonde and Microwave Limb Souder (MLS) observations** (*Guanyu Huang (Harvard-Smithsonian Center for Astrophysics; guanyu.huang@cfa.harvard.edu), X. Liu, K. Chance, K. Yang, P.K. Bhartia, and Z. Cai)*
12:00 - 13:30	*Lunch*

Wednesday, 31 August 2016 (continued)

13:30 – 16:00 Mission Operations Working Group meeting (Room 7)

13:30 – 15:00 Plenary session

Session Chair: ***Lucien Froidevaux***

13:30 – 13:45 **TES participation in the IGAC/TOAR (Tropospheric Ozone Assessment Report)** *(Helen Worden (NCAR; hmw@ucar.edu), J. Neu, S. Kulawik, C. Wespes, and K. Bowman)*

13:45 – 14:00 **Validation of OMI and GOME-2A and GOME-2B tropospheric NO_2, SO_2, and HCHO products using MAX-DOAS observations in Wuxi, China: Effects of coincidence criteria, clouds, and *a priori* profiles** (*Yang Wang (Max Planck Institute for Chemistry; y.wang@mpic.de), S. Beirle, J. Lampel, M. Koukouli, I. De Smedt, N. Theys, P. Xie, M. Van Roozendael, and T. Wagner)*

14:00 – 14:15 **First satellite observations of lightning-generated NO_x in volcanic eruption clouds** (*Simon Carn (Michigan Technological University; scarn@mtu.edu), N. Krotkov, K. Pickering, D. Allen, and E. Bucsela)*

14:15 – 14:30 **Top-down constraints on wetland CH_4 emission variability from TES, SCIAMACHY, GOSAT, and surface CH_4 measurements** (*A. Anthony Bloom (JPL/Caltech; abloom@jpl.nasa.gov), J. Worden, K. Bowman, and M. Lee)*

14:30 – 14:45 **Improved space-based NO_x emissions over remote regions** (*Jieying Ding (KNMI / Delft University of Technology; ding@knmi.nl), R. van der A, B. Mijling, and P. Levelt)*

14:45 – 15:00 **Land cover and seasonality effects on biomass burning emissions observed from satellites** (*Peter Zoogman (Harvard-Smithsonian Center for Astrophysics; pzoogman@cfa.harvard.edu), A. Hoffman, G. González Abad, C. Chan Miller, C. Nowlan, G. Huang, X. Liu, and K. Chance)*

15:00 – 17:00 *Poster session (see poster list below)*

18:00- *Conference banquet – NY Basement at Hotel New York (http://nybasement.nl/en/)*

Thursday, 1 September 2016

Session Chair: ***Michelle Santee***

8:45 – 9:00 **Data Systems and Preservation Working Group report** *(Paul A. Wagner (JPL; Paul.A.Wagner@jpl.nasa.gov))*

9:00 – 9:15 **EOS Aura data in GMAO's MERRA-2 reanalysis** (*Krzysztof Wargan (SSAI at NASA Goddard Space Flight Center; Krzysztof.Wargan-1@nasa.gov), S. Frith, G. Labow, S. Pawson, G. Partyka, L. Coy, J. Jin, and N. Livesey)*

9:15 – 9:30 **Recent results from and mission status of the Atmospheric Chemistry Experiment (ACE)** (*Kaley A. Walker (University of Toronto; kaley.walker@utoronto.ca), P. Sheese, P. Bernath, C. Boone, and T. McElroy)*

9:30 – 9:45 **Interannual variability in MLS trace-gas observations in the Antarctic polar vortex: Issues in detection and attribution of trends** (*Michael J. Schwartz (JPL/Cal Tech; michael.j.schwartz@jpl.nasa.gov), M. Santee, N. Livesey, and G. Manney)*

9:45 – 10:00 **What's NEW at the GES DISC: Evolution of data management and services for Aura mission and beyond** (*Jennifer Wei (NASA GES DISC / Adnet; jennifer.c.wei@nasa.gov), J. Johnson, I. Gerasimov, B. Vollmer, and S. Kempler)*

10:00 – 10:30 *Break*

Thursday, 1 September 2016 (continued)

Session Chair:	***Jessica Neu***
10:30 – 10:45	**Mission Operations Working Group Report**
10:45 – 11:00	**Improved retrievals of NO_2 from space: Community best practices and quality assurance from the QA4ECV project** (*K. Folkert Boersma (KNMI / Wageningen University; boersma@knmi.nl), H. Eskes, J. van Geffen, I. De Smedt, E. Peters, S. Beirle, M. Zara, J. Maasakkers, J. Williams, H. Yu, M. Van Roozendael, A. Richter, A. Hilboll, T. Boesch, T. Wagner, S. Dörner, and A. Lorente)*
11:00 – 11:15	**New Aura OMI NO_2 standard product (Version 3) (***Nickolay A. Krotkov (NASA Goddard Space Flight Center; Nickolay.A.Krotkov@nasa.gov), E. Celarier, W. Swartz, S. Marchenko, L. Lamsal, and E. Bucsela)*
11:15 – 11:30	**Recent reduction in NO_x emissions over China: Synthesis of satellite observations and emission inventories** (*Fei Liu (KNMI; liu@knmi.nl), Q, Zhang, R. van der A, B. Zheng, D. Tong, L. Yan, Y. Zheng, and K. He)*
11:30 – 11:45	**NO_x emissions over European cities revisited: A top-down approach** (*Willem Verstraeten (Royal Meteorological Institute of Belgium; willem.verstraeten@meteo.be), F. Boersma, J. Ndouros, J. Williams, H. Eskes, and A. Delcloo)*
11:45 – 12:00	**Estimates of lightning NO_x production from OMI NO_2 observations: A pilot study over the Gulf of Mexico and a mid-latitude continental analysis** (*Kenneth Pickering (NASA Goddard Space Flight Center; Kenneth.E.Pickering@nasa.gov), D. Allen, E. Bucsela, A. Ring, R. Holzworth, and N. Krotkov)*
12:00 – 13:30	*Lunch*
Session Chair:	***Nathaniel Livesey***
13:30 – 13:45	**Comparisons of ACE-FTS and MLS v4.2 atmospheric profiles and drift analysis (***Patrick E. Sheese (University of Toronto; psheese@atmosp.physics.utoronto.ca), K. Walker, C. Boone, and J. Zou)*
13:45 – 14:00	**WACCM-D: Modelling mesospheric ion chemistry for particle precipitation studies** *(Monika Andersson (Finnish Meteorological Institute; monika.andersson@fmi.fi), P. Verronen, D. Marsh, J. Plane, T. Kovacs, and W. Feng)*
14:00 – 14:15	**Ozone variability and tendencies in the upper troposphere and lower stratosphere based on Aura MLS and sonde data** (*Lucien Froidevaux (JPL; lucienf@jpl.nasa.gov), M. Schwartz, W. Read, N. Livesey, and A. Thompson)*
14:15– 14:30	**Composition of the Asian summer monsoon anticyclone: Climatology and variability from 10 years of Aura Microwave Limb Sounder measurements** (*Michelle L. Santee (JPL; Michelle.L.Santee@jpl.nasa.gov), G. Manney, N. Livesey, J. Neu, M. Schwartz, and W. Read)*
14:30 – 14:45	**Natural and anthropogenic aerosols in the UTLS: Sources and the role of monsoon transport (***Mian Chin (NASA Goddard Space Flight Center; mian.chin@nasa.gov), T. Kucsera, T. Diehl, H. Bian, V. Aquila, Q. Tan, P. Colarco, J. Burrows, A. Bourassa, L. Rieger, D. Degenstein, J.-P. Vernier, and B. Martinsson)*
14:45 – 15:00	**Contribution of fires to the global methane budget (***John Worden (JPL; john.r.worden@jpl.nasa.gov), A. Bloom, Z. Jiang, and H. Worden)*
15:00– 15:30	*Break*

Thursday, 1 September 2016 (continued)

Session Chair: ***Johanna Tamminen***

15:30– 15:45 **Proposal for a new parameterisation of the instrumental spectral response function in DOAS retrievals and application to satellite measurements** (*Steffen Beirle (Max Planck Institute for Chemistry Mainz; steffen.beirle@mpic.de), J. Lampel, C. Lerot, and T. Wagner)*

15:45 – 16:00 **Using OMI NO_2 as top-down constraint on U.S. NO_x emissions: Complication from the upper troposphere (***Katherine Travis (Harvard; ktravis@fas.harvard.edu), D. Jacob (presenting author, Harvard; djacob@fas.harvard.edu), R. Cohen, and T. Ryerson)*

16:00 – 16:15 **Latest advancements of Smithsonian Astrophysical Observatory OMI trace-gas retrievals (***Gonzalo González Abad (Harvard-Smithsonian Center for Astrophysics; ggonzalezabad@cfa.harvard.edu), K. Chance, X. Liu, H. Wang, C. Chan Miller, P. Zoogman, S. Duffy, and A. Saiz-Lopez)*

16:15 – 16:30 **TROPOMI on Sentinel 5 Precursor: Ready for launch** (*J. Pepijn Veefkind (KNMI / Delft University of Technology; veefkind@knmi.nl), Q. Kleipool, A. Ludewig, I. Aben, P. Levelt, and the TROPOMI team)*

Posters

1. **Stratospheric ozone loss over the U.S. in summer: Recent advances in Observations of temperatures, convective injection of condensed phase water, and analyses of volcanic injections that are used to inform model calculations of catalytic mechanisms that control the response of O_3** *(James G. Anderson (Harvard University; anderson@huarp.harvard.edu)), D. Wilmouth, D.Weisenstein, J. Smith, D. Sayres, J. Klobas, S. Leroy, J. Dykema, C. Homeyer, K. Bowman, and S.Wofsy)*

2. **Cloud-top pressure retrieval from OMI ultraviolet measurements using the optimal estimation approach** (*Zhaonan Cai (Harvard-Smithsonian Center for Astrophysics; zhaonan.cai@cfa.harvard.edu), X. Liu, K. Yang, and K. Chance)*

3. **Glyoxal measured from space as proxy for isoprene emission: Chemical mechanism, constraints from aircraft observations, and relationship to formaldehyde (***Christopher Chan Miller (Harvard University; cmiller@fas.harvard.edu), K. Chance, G. González-Abad, J. Kaiser, F. Keutsch, and D.Jacob)*

4. **Toward a reanalysis of MLS Stratospheric Chemical Observations (***Quentin Errera (Royal Belgian Institute for Space Aeronomy (BIRA-IASB); quentin@oma.be), G. Braathen, Y. Christophe, S.Charbrillat, and S. Skachko)*

5. **Nitrogen dioxide from OMI: Air-mass factors, *a priori* model profiles, and stratospheric NO_2 assimilation results** (*H. J. Eskes (KNMI; eskes@knmi.nl), F. Boersma, J. van Geffen, M. Zara, A. Lorente, J. Maasakkers, and J. Williams)*

6. **The co-location of Aqua/MODIS observations and GEOS5 assimilated data onto the Aura/OMI pixel: A new suite of OMI data products for the science community** (*Brad Fisher (SSAI at NASA Goddard Space Flight Center; bradford.fisher@ssaihq.com), J. Joiner, A. Vasilkov, P. Veefkind, G. Wind, D. Haffner, S. Gasso, O. Torres, S. Platnick, R. Tiruchirpalli, and Z. Fasnacht)*

7. **Summertime free tropospheric PAN over the U.S. as observed by TES and simulated by GEOS-Chem** (*Emily V. Fischer (Colorado State University; evf@rams.colostate.edu), L. Zhu, V. Payne (presenting author, JPL, Vivienne.H.Payne@jpl.nasa.gov), J. Worden, Z. Jiang, S. Kulawik, and S.Brey)*

8. **Discrete wavelength techniques for OMI total ozone retrieval in TOMS V9** *(David P. Haffner (SSAI; david.haffner@ssaihq.com) and P. K. Bhartia)*

9. **Aura TES ozone (v007) validation comparisons, 2004-2015 (***Robert Herman (JPL; robert.l.herman@jpl.nasa.gov), P. Saha, S. Kulawik, M. Luo, V. Payne, K. Bowman, and B. Johnson)*

10. **Evaluation of UTLS carbon monoxide simulations in GMI and GEOS-Chem chemical transport models using Aura MLS observations** *(Lei Huang (JPL/UCLA; Lei.Huang@jpl.nasa.gov), J. Jiang, L. Murray, M. Damon, H. Su, and N. Livesey)*

11. **Seasonal variation of tropospheric bromine monoxide over the Rann of Kutch salt marsh seen from space** (*Christoph Hörmann (Max Planck Institute for Chemistry Mainz; c.hoermann@mpic.de), H. Sihler, S. Beirle, M. Penning de Vries, U. Platt, and T. Wagner)*

12. **The importance of data preservation of Aura mission data sets** (*James Johnson (NASA GES DISC; james.johnson@nasa.gov), J. Wei, I. Gerasimov, and S. Kempler)*

13. **Remotely-sensed total-column OMI and Pandora observations over terrestrial and marine environments and their use for estimating surface nitrogen dioxide (***Debra E. Kollonige (University of Maryland / ESSIC; dewk13@umd.edu), A. Thompson, M. Josipovic, M. Tzortziou, J. Beukes, R. Burger, D. Martins, P. van Zyl, V. Vakkari, and L. Laakso)*

14. **Acetone and hydrogen cyanide from Aura-TES (***Susan S. Kulawik (BAERI and NASA Ames Research Center; Susan.S.Kulawik@nasa.gov), V. Payne, E. Fischer, and D. Fu)*

15. **Using Microwave Limb Sounder observations and the Match technique to assess the validity of analysis winds and heating rates** (*Nathaniel Livesey (JPL; Nathaniel.J.Livesey@jpl.nasa.gov), M. Santee, and G. Manney)*

16. **Aura CO and ozone profiles retrieved from combined TES and MLS measurements: Algorithm, data, and applications** (*M. Luo (JPL; Ming.Luo@jpl.nasa.gov), W. Read, P. Wagner, R. Field, M. Schwartz, S. Kulawik, R. Herman, and the TES and MLS teams)*

17. **OMI, emissions inventories, and detection of missing sources** *(Chris McLinden (Environment and Climate Change Canada; chris.mclinden@canada.ca), Vitali Fioletov, Mark Shephard, Nick Krotkovv (presenting author, NASA Goddard Space Flight Center, Nickolay.A.Krotkov@nasa.gov), Can Li, and Joanna Joiner*

18. **OMI ozone and the transition to NPP OMPS** (*Richard McPeters (NASA Goddard Space Flight Center; Richard.D.McPeters@nasa.gov), D. Haffner, and G. Labow)*

19. **Recent developments in the operational aerosol layer height retrieval algorithm for the Sentinel-4 mission (***Swadhin Nanda (KNMI; nanda@knmi.nl), B. Sanders, and P. Veefkind)*

20. **Evaluation and scientific uses of the TES/OMI multispectral ozone product** (*Jessica L. Neu (JPL; jessica.l.neu@jpl.nasa.gov), D. Fu, G. Osterman, K. Bowman, V. Payne, and A. Eldering)*

21. **Chemistry simulations using MERRA-2 reanalysis with the GMI CTM and replay in support of the atmospheric composition community** *(Luke Oman (NASA Goddard Space Flight Center; luke.d.oman@nasa.gov), S. Strahan, and A. Douglass (presenting author, NASA Goddard Space Flight Center; Anne.R.Douglass@nasa.gov)*

22. **The 2015–2016 Arctic winter: Perspectives on extremes in polar processing and meteorological variability from the 12-year record of Aura Microwave Limb Sounder measurements** *(Michelle L. Santee (JPL; Michelle.L.Santee@jpl.nasa.gov), G. Manney, N. Livesey, and A. Lambert)*

23. **The Sentinel 5 Precursor cloud support product (FRESCO)** (*Maarten Sneep (KNMI; sneep@knmi.nl), P. Wang, P. Stammes, and P. Veefkind)*

24. **Using DISCOVER-AQ and KNMI NO_2-sonde data for OMI Validation** (*Deborah Stein Zweers (KNMI; stein@knmi.nl) and M. den Hoed)*

25. **SHADOZ (Southern Hemisphere Additional Ozonesondes) network report: Updates and station activities** (*Anne M. Thompson (NASA Goddard Space Flight Center; Anne.M.Thompson@nasa.gov), J. Witte, and the SHADOZ Team)*

26. **Convective influence on the lower stratospheric water vapor in the boreal summer Asian monsoon region (***Rei Ueyama (NASA Ames Research Center; rei.ueyama@nasa.gov), E. Jensen, and L. Pfister (Mark Schoeberl presenting))*

27. **Effectiveness of air quality policy for SO_2 and NO_x emissions in China (***Ronald J. van der A (KNMI; avander@knmi.nl), B. Mijling, J. Ding, M. Elissavet Koukouli, F. Liu, Q. Li, H. Mao, and N. Theys)*

28. **Rapid increases in tropospheric ozone production and export from China: A view from Aura** (*Willem Verstraeten (KNMI; willem.verstraeten@meteo.be), J. Neu, J. Williams, K. Bowman, J. Worden, and F. Boersma)*

29. **A re-processed SHADOZ dataset: Impacts of station bias and agreement with satellites** (*Jacquelyn Witte (SSAI at NASA Goddard Space Flight Center; Jacquelyn.Witte@nasa.gov), A. Thompson, G. Coetzee, M. Fujiwara, M. Mohammed, Z. Zainel, F. Raimundo da Silva, B. Johnson, C. Sterling, P. Cullis, C. Ashburn, and T. Northam)*

30. **Quantifying lower tropospheric methane concentrations using GOSAT near-IR and TES thermal IR measurements** *(John R. Worden (JPL; john.worden@jpl.nasa.gov), A. Turner, A. Bloom, S. Kulawik, R. Parker, and V. Payne)*

31. **PAN in the Eastern Pacific free troposphere: A satellite view of the sources, seasonality, interannual variability, and timeline for trend detection** (*Liye Zhu (Colorado State University; liyezhu@rams.colostate.edu), E. Fischer, V. Payne, T. Walker, J. Worden, Z. Jiang, and S. Kulawik)*

32. **Air pollution in crisis: How the Greek economic collapse impacted space-borne formaldehyde levels** *(Irene Zyrichidou (Aristotle University of Thessaloniki, Thessaloniki; ezyrichi@auth.gr), D. Balis, N. Liora, A. Poupkou, C. Giannaros, D. Melas, M. Elissavet Koukouli, I. De Smedt, M. van Roozendael, and R. van der A)*
