

Composition and Transport in the Tropical Troposphere and Lower Stratosphere Meeting
20 - 23 June 2015
Boulder, Colorado, USA

Monday, July 20, 2015

Welcome

830 Welcome/introduction	E. Jensen, N. Harris, T. Thornberry
845 Program manager comments	K. Jucks
900 SPARC perspective	J. Alexander, N. Harris
910 Some reflections on the history of key scientific advances and current challenges in understanding the tropical UTLS	S. Solomon

Upper troposphere/lower stratosphere composition (chair: N. Livesey)

940 Composition and physical properties of the Asian Tropopause Aerosol Layer and the North American Tropospheric Aerosol Layer	P. Yu
1000 Aerosol Composition and Volatility in TTL - In situ Balloon Borne Measurements and sampling over Biak Indonesia -	M. Hayashi
1020 Break	
1050 Correcting the record of volcanic stratospheric aerosol impact: Nabro and Sarychev Peak	M. Fromm
1110 Composition and sources of aerosol in the upper troposphere/lowermost stratosphere	V. Aquila
1130 Trace gas sources and distributions in the tropical troposphere and TTL	E. Atlas
1150 Science questions and measurement strategies within the European research project StratoClim	M. Rex
1210 Lunch	
1330 Strateole 2: A Unique Super Pressure Balloon Campaign For Long Duration, Quasi-Lagrangian, Chemical And Dynamical Measurements In The Tropical Tropopause Layer.	L. Kalnajs
1350 Equatorial middle atmospheric chemical composition changes during sudden stratospheric warming events	O. Nath
1410 Ozone in the Tropical Tropopause Layer (TTL) over the Western Pacific	E. Hintsa

Upper troposphere/lower stratosphere dynamics and transport (chair: L. Pfister)

1430 Vertical and quasi-isentropic transport pathways through the Asian monsoon anticyclonic circulation into the lowermost stratosphere	R. Mueller
1450 Trajectory dispersion due to uncertainties in analysis wind fields and the inherent limitations of transport calculations in the upper tropical troposphere	J. Bergman
1510 Break	
1540 Transport Rates and Age of Air in the TTL during Boreal Winter	J. Pittman
1600 Evaluating and Diagnosing the Transport of Trace Gases to the Upper Troposphere / Lower Stratosphere in the CAM-Chem Model using Aura Microwave Limb Sounder Measurements	J. Neu
1620 A Modeling Study of STE Near Tropical Cyclones Talas and Ita	M. Hitchman
1640 Vertical and Horizontal Mixing in the Tropical Tropopause Layer	S. Glanville
1700 Research Collaborations on Stratosphere-Troposphere Dynamical Coupling in the Tropics in Association with the Project of Years of the Maritime Continent (YMC) for 2017-2019	S. Yoden
1720 Adjourn	

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Upper troposphere/lower stratosphere dynamics and transport (continued)

830 QBO dynamics in a 7-km global climate simulation	L. Holt
850 Characteristics of Waves in the Tropical Tropopause Layer	J.-E. Kim
910 Cirrus and Wave-induced Temperature Anomaly Relationships in ATTREX Measurements	J. Alexander

Impact of deep convection on tropical tropospheric and stratospheric composition (chair: J. Alexander)

930 An upper tropospheric cloud-convection (UTCC) process study	G. Stephens
1000 Tropical tropopause layer variability associated with the Madden-Julian Oscillation during DYNAMO	T. Birner
1020 Break	
1050 Transport across the TTL and convective sources	B. Legras
1110 Convective transport of NMHCs and VSLS from the surface to the upper troposphere and lower stratosphere	Q. Liang
1130 Convective impacts on trace gases in the Tropical Tropopause Layer during Boreal Winter as seen during ATTREX	L. Pfister
1150 Efforts Toward Development Of A High Resolution Global Climatology Of Overshooting Cloud Top Detections Using MODIS and Geostationary Satellite Imager Data	K. Bedka
1210 Lunch	
1330 Impact of Overshooting Deep Convection on the Stratospheric Water Vapor: an A-Train Satellite View	H. Su
1350 Survey of global distribution of convection overshooting tropopause using first year of GPM observations	C Liu

Use of ground-based, airborne, and satellite measurements for evaluation of global models (chair: R. Müller)

1410 The OMPS Limb Profiler Stratospheric Aerosol Products and Comparisons to the GEOS-5 Chemistry-Climate Model	P. Colarco
1430 An assessment of upper-troposphere and lower-stratosphere water vapor in GEOS5, MERRA, and ECMWF analysis and reanalyses using Aura MLS observations	J. Jiang
1450 An assessment of the CAMS/CARMA model: TTL cirrus cloud representation through comparisons with ATTREX 3 and CALIPSO observations	C. Maloney
1510 Comparison of WRF simulated mass fluxes with those derived from radar observations for the Tropical Western Pacific	R. Schofield
1530 Break	

Halogen budgets/partitioning/sources/transport/etc. (chair: E. Atlas)

1600 Growth in the stratospheric loading of halogenated very short-lived substances and their impact on ozone and climate	M. Chipperfield
1620 Halocarbons in the TTL: the roles of oceanic emissions and atmospheric transport	S. Tegtmeier
1640 Tropical tropospheric bromine and stratospheric injection of Br ₂ from VSL compounds inferred from CONTRAST	R. Salawitch
1700 Measurements of bromine monoxide and iodine monoxide in the lower stratosphere: constraints on total inorganic bromine and iodine	T. Koenig
1720 Measurement and simulation of CH ₄ , O ₃ , NO ₂ , BrO, and major brominated source gases during the NASA-ATTREX Global Hawk deployments in 2013: Implications for the photochemistry and total amount of bromine in the TTL and stratosphere	K. Pfeilsticker
1740 Adjourn	

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Halogen budgets/partitioning/sources/transport/etc. (continued)

830 NAME modelling activities for ATTREX-CONTRAST VLSL measurements	M. Filus
850 Enhanced ozone loss by active inorganic bromine chemistry in the tropical troposphere	C. Percival
910 Transport of halogenated VLSL from the Indian Ocean to the stratosphere through the Asian monsoon circulation	A. Fiehn

Chemical and dynamical processes controlling ozone concentrations from the surface to the stratosphere (chair: R. Salawitch)

930 Bi-modal Distribution of Tropical Tropospheric Ozone over the Western Pacific from CONTRAST Observations	L. Pan
950 A Tropical Tropospheric Source of High Ozone/Low Water Filaments in the Western Pacific	D. Anderson
1010 Break	
1040 Modelling Manus ozone using WRF	R. Newton
1100 Sources of Seasonal Variability in Tropical UT/LS Water Vapor and Ozone: Inferences from the Ticosonde Dataset	H. Selkirk
1120 Near-tropopause Ozone Variability at Tropical and Subtropical Ozonesonde Sites Revealed from Self-Organizing Map Clustering	R. Stauffer
1140 The impact of upper tropospheric and lower stratospheric ozone changes on global warming projections	P. Nowack
1200 Lunch and Poster session	
Air mass source regions and their influence on the distribution of organic and inorganic brominated species. AMAX-DOAS profiles of BrO and IO in the tropical UTLS: comparison of optimal estimation and parameterization methods	M. Navarro B. Dix
COMPARATIVE STUDY OF VARIABILITY OF ORGANIC ACID IN AIR OF THE ATMOSPHERE IN THE HUMID SAVANNAH OF LAMTO IN CIVOIRE AND DJOUGOU IN BENIN	P. Toure
Water Vapor Measurement Biases in the TTL: MLS vs Frost Point Hygrometers	D. Hurst
The relationship between tropical lower stratospheric upwelling and global temperature change in chemistry-climate models	A. Maycock
Representation of the Bi-modal Distribution of Tropical Free Tropospheric Ozone over the Western Pacific and Associated Controlling Mechanisms in CAM- α CH ₂	S. Honomichl
Verification of the CAST ozonesonde measurements from Manus	R. Newton
O ₃ variability in the troposphere and the stratosphere from IASI observations in 2008-2014	C. Wespes
New measurements of CH ₃ OH in the TTL from the Aura Microwave Limb Sounder	M. Santee
MLS Version 4: Improved Products for TTL Studies	M. Schwartz
Gas phase kinetic of unsaturated carbonyl compounds with OH radicals at 298K and atmospheric pressure	E. Gaona Colmán
Tropospheric Transport over southeast Asia/western Pacific region	Y. Inai
On the Influence of the Antarctic Ozone Hole on Tropical Lower Stratospheric Temperature Trends	D. Ivy
Rapid Transport of Carbon Monoxide from Troposphere to Stratosphere via Tropical Convection During Stratospheric Sudden Warming in January 2010	N. Eguchi
Structure of the convectively-driven cold layer and its influences on moisture in the TTL	J. Kim
The Effects of Ice Crystal Shape on the Evolution of Optically Thin Cirrus Clouds in the Tropics	R. Russotto
Observations of the ice water content, extinction relationship in TTL cirrus during ATTREX 2014	T. Thornberry
Ice nucleation in the Tropical Tropopause Layer characterized by ice cloud parameters observed by ATTREX 2011	S. Mimura
Overview of the Airborne Tropical Tropopause Experiment (ATTREX)	E. Jensen

Introducing a new light scattering instrument in the Small Ice Detector family: AIITS, with preliminary data from particles in the Tropical Tropopause Layer during the CAST campaign	C. Stopford
Effect of gravity wave temperature fluctuations on homogeneous ice nucleation in the tropical tropopause layer	T. Dinh
Vertical and horizontal transport of water vapour and aerosol in the tropical stratosphere from high-resolution balloon-borne observations	S. Khaykin
A Match approach to quantifying processes affecting TTL humidity based on MLS observations	N. Livesey
Two decades of water vapor measurements with the FISH fluorescence hygrometer: A review with special emphasis on TTL water vapor	C. Rolf
WB-57 platform Upgrades and opportunities for supporting Earth Science	A. Roberts
Gulfstream-III Platform, Supporting Airborne Science	D. Rutovic
High Resolution Modeling of the Indian Summer Monsoon with the UM-UKCA Chemistry-Climate Model	J. Keeble
A Reevaluation of the Contribution of VSL Bromocarbons to Stratospheric Bry Loading	P. Wales
Constraining convective detrainment contribution to UTLS water and cirrus production with water isotopic measurements	L. Moyer
Solar Occultation Constellation for Retrieving Aerosols and Trace Element Species (SOCRATES) Mission Concept	R. Bevilaqua
Reexamining the tropical stratospheric ozone response to the 11-year solar cycle	K.-F. Li
Trajectory and microphysical modeling of H ₂ O and Clouds in the Tropical Tropopause Layer	R. Ueyama

Chemical and dynamical processes controlling ozone concentrations from the surface to the stratosphere (continued)

1530 OH in the TWP: An In-Depth Comparison of CONTRAST and CAM-Chem OH Precursors and Implications for the Oxidative Capacity of the Troposphere	J. Nicely
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Processes controlling UTLS water vapor (chair: Eric Jensen)

1550 Understanding the long-term trend in stratospheric water vapor	A. Dessler
1610 A solar signal in lower stratospheric water vapour?	S. Lossow
1630 Revisiting water vapor seasonal cycle observed in tropical lower stratosphere: Role of BDC, convective activity and ozone	S. Jain
1650 Impact of Sudden Stratospheric Warming Event on the TTL and Deep Convective Activity	K. Kodera
1710 Role of saturation in the water vapor diurnal cycle in the South American Tropical Tropopause Layer	F. Carminati
1730 Adjourn	

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Processes controlling UTLS water vapor (continued)

830 The Radiative Effects of Tropical Tropopause Layer Water Vapor and Ozone on Tropical Cyclone Potential Intensity	D. Gilford
850 A Lagrangian Description on the Troposphere - Stratosphere Transport Changes Associated with the Stratospheric Water Drop Around the Year 2000	F. Hasebe
910 TTL cooling and drying during the January 2013 Stratospheric Sudden Warming	S. Evan
930 Dynamical processes and transport influencing the water vapour budget in the upper troposphere / lower stratosphere (UTLS)	M. Riese
950 TTL dehydration efficiency evaluated using in-situ data and back-trajectories	A. Rollins
1010 Break	
1040 Gravity Waves Amplify Upper Tropospheric Dehydration by Clouds	M. Schoeberl
1100 Saturation at the tropical tropopause	H. Voemel
1120 Moist phase in the SH extratropical lower stratosphere: a view of transport from the tropics	K. Zhang
1140 A Quick Report on the LAPANCRYO-SOWER 2015 Biak Campaign	Y. Inai
1200 Anomalous dehydration of the TTL during January 2013: evidence from balloon, aircraft and satellite observations	S. Khaykin
1220 Lunch	

Cirrus formation, properties, and effects

1330 Microphysical Properties of Tropical Tropopause Layer Cirrus	S. Woods
1350 Comparisons of cirrus cloud properties between polluted and pristine air based on in-situ observations from the NASA ATTREX, NSF HIPPO and EU INCA campaigns	M. Diao
1410 Distribution of Cirrus Cloud Ice in the Tropical Tropopause Layer as Indicator of Regional Cloud Formation Processes and Climate Cycles	M. Avery
1430 Variability of Ice Supersaturation, Nucleation, and Cirrus in TTL Vertical Layers	J. DiGangi
1450 Using ATTREX Data to Improve the Representation of TTL Cirrus in CAM5	C. Bardeen
1510 Break	
1540 On the Susceptibility of Cold Tropical Cirrus to Ice Nuclei Abundance	E. Jensen
1600 Microphysical, radiative and dynamical impacts of thin cirrus clouds on humidity in the tropical tropopause layer and lower stratosphere	T. Dinh
1620 A modeling case-study of a tropical tropopause layer cirrus : roles of dynamics and microphysics and cirrus impacts	A. Podglajen
1640 What Controls the Low Ice Number Concentration in the Upper Tropical Troposphere?	C. Zhou
1700 Wrapup	