

International Symposium on the Whole Atmosphere (ISWA)

Date : 14-16 September 2016

Venue: Ito Hall, The University of Tokyo, Tokyo, Japan

Program

[\(PDF\)](#)

Keynote talks: 30min (including 5min for discussion)

Invited talks: 15min (including 3min for discussion)

Contributed talks: 15min (including 3min for discussion)

Wednesday, September 14

10:30-10:45 Opening remarks (K. Sato)

10:45-12:15 Oral presentations **chair: W. E. Ward**

Keynote 1 (10:45-11:15)

[K. Hamilton: Propagation of the S2 tide throughout the whole atmosphere: The remarkable information in a simple barometric record](#)

Session 1: Planetary/Rossby waves and tides I

[J. M. Forbes: Planetary wave-tide interactions and consequences in the middle and upper atmosphere \(invited\)](#)

[J. Oberheide: Short-term tidal variability in the ionospheric dynamo region over one solar cycle \(invited\)](#)

[R. R. Garcia: Seasonal and interannual variability of the diurnal tides observed by SABER \(invited\)](#)

[L. Chang: Coherent seasonal, annual, and quasi-biennial variations in ionospheric tidal/SPW amplitudes: Observations and Modeling](#)

12:15-13:30 Lunch

13:30-15:15 Oral presentations **chair: E. Manzini**

Session 2: Planetary/Rossby waves and tides II

[R. S. Lieberman: Observational and theoretical studies of tide-planetary wave interaction in the middle atmosphere \(invited\)](#)

[A. K. Smith: The QBO impacts on tides and the SAO \(invited\)](#)

[V. Wirth: Diagnosing long-range propagation of upper tropospheric Rossby wave packets \(invited\)](#)

Session 3: Middle atmosphere climate

[D. R. Marsh: Are stratospheric ozone chemistry feedbacks critical for the determination of climate sensitivity? \(invited\)](#)

[K. Matthes: Decadal variability and its relation to the solar cycle and internal variability \(invited\)](#)

[B. Funke: Mesosphere-stratosphere coupling by polar winter descent of odd nitrogen \(invited\)](#)

[Y. Tomikawa: Dynamical response of the SH middle atmosphere to energetic particle precipitations in the latest reanalysis data](#)

15:15-15:45 Coffee break

15:45-17:45 Oral presentations chair: Y. Tomikawa

Session 4: Sudden stratospheric warming and SSW-initiated global coupling

[R. A. Vincent: Stratospheric warmings in the southern hemisphere and coupling to the mesosphere \(invited\)](#)

[T. Birner: Sudden stratospheric warmings and anomalous upward wave activity flux \(invited\)](#)

[T. Hirooka: Modulation of the semiannual oscillation induced by sudden stratospheric warming events \(invited\)](#)

[Y. J. Orsolini: Role of planetary waves, gravity waves and tides in the downward transport of nitrogen oxides during elevated stratopause events](#)

[S. Noguchi: Predictability of the stratospheric polar vortex breakdown: An ensemble reforecast experiment for the splitting event in January 2009](#)

[C. Zülicke: Relation of low-latitude mesospheric wind anomalies to SAO, QBO and SSW](#)

[F. I. Laskar: Interhemispheric coupling during sudden stratospheric warmings and at different phases of Quasi-Biennial Oscillation](#)

[K. Sato: Interhemispheric Coupling Study by Observations and Modelling \(ICSOM\)](#)

ICSOM meeting (members only) (18:00-19:30)

Thursday, September 15

9:30-10:45 Oral presentations chair: S.-W. Son

Keynote 2 (9:30-10:00)

[W. Randel: Satellite observations and coupling of the whole atmosphere](#)

Session 5: Stratosphere-troposphere coupling I

[M. A. Geller: Baroclinic mixing of potential vorticity as the principal sharpening mechanism for the tropopause inversion layer \(invited\)](#)

[M. H. Hitchman: On the role of inertial instability in cyclones: Stratosphere-troposphere exchange, jet acceleration, and PV dipoles \(invited\)](#)

[K. Nishii: Decay processes of short and long extreme stratospheric polar vortex events](#)

10:45-11:00 Coffee break

11:00-12:15 Oral presentations chair: T. Birner

Session 6: Stratosphere-troposphere coupling II

[T. Iwasaki: Impacts of low-level polar cold air outbreaks on Brewer-Dobson circulations \(invited\)](#)

[S.-W. Son: Modulation of the organized tropical deep convections by the stratospheric Quasi-Biennial Oscillation \(invited\)](#)

[E. Nishimoto: Influence of the stratospheric Quasi-Biennial Oscillation on the Madden-Julian Oscillation during austral summer](#)

[M. P. Baldwin: How does stratospheric polar vortex variability affect surface weather? \(invited\)](#)

[M. Abalos: Phase-speed spectra of tracer eddy fluxes linked to isentropic stirring in the UTLS](#)

12:15-13:30 Lunch

13:30-15:30 Poster presentations

15:30-16:00 Coffee break

16:00-17:45 Oral presentations chair: M. J. Alexander

Session 7: Gravity waves I

[H.-Y. Chun: Convective gravity waves and their interaction with QBO \(invited\)](#)

[S. L. Vadas: The vertical coupling of the lower to upper atmosphere via atmospheric gravity waves \(invited\)](#)

[A. Hertzog: Gravity waves: Long-duration balloon observations and parameterization in climate models \(invited\)](#)

[P. Preusse: Global gravity wave distributions from limb-sounding satellites, ECMWF and ray-tracing modelling \(invited\)](#)

[I. Krisch: 3D tomographic measurements of gravity waves with the IR limb imager GLORIA during GW-LCYCLE](#)

[D. J. Murphy: Gravity waves in models and observations over Antarctica and the Southern Ocean \(invited\)](#)

[R. Shibuya: Inertia-gravity waves with a wave period of quasi-12 h in the mesosphere observed by the PANSY radar](#)

19:00-21:00 Banquet (Registration and payment are necessary by August 15, 2016)

Friday, September 16

9:30-10:45 Oral presentations chair: T. Nakamura

Keynote 3 (9:30-10:00)

[W. E. Ward: Effects of dynamical variability in the mesosphere and lower thermosphere on energetics and constituents](#)

Session 8: Vertical coupling I

[Huixin Liu: Thermospheric inter-annual variability: Implications for effects of ENSO and QBO \(invited\)](#)

[K. Shiokawa: Horizontal and vertical coupling of the middle and upper atmosphere observed by airglow imagers \(invited\)](#)

[J. Yue: Quasi-two-day wave coupling of the middle atmosphere and ionosphere-thermosphere \(invited\)](#)

10:45-11:00 Coffee break

11:00-12:15 Oral presentations chair: Huixin Liu

Session 9: Vertical coupling II

[X. Chu: Thermospheric Fe layers up to ~200 km in Antarctica and their coupling with the atmosphere, ionosphere and magnetosphere \(invited\)](#)

[Y. Miyoshi: Vertical propagation of gravity waves in the thermosphere simulated by GAIA \(invited\)](#)

[H. Schmidt: What determines the downward transport of nitrogen oxides from the lower thermosphere to the stratosphere? \(invited\)](#)

[R. Yasui: An analysis on the momentum budget in the MLT region based on satellite and whole atmosphere model data](#)

[A. de la Camara: The impact of source-related nonorographic gravity wave parameterizations on the circulation of the middle atmosphere](#)

12:15-13:30 Lunch

13:30-15:30 Oral presentations chair: A. Saito

Session 10: Observations and technology of the middle and upper atmosphere

[I. M. Reid: Meteor radar and airglow observations at middle and high latitudes \(invited\)](#)

[M. Yamamoto: Study of ionospheric irregularities over Japan and Indonesia with radars and other instruments \(invited\)](#)

[J. L. Chau: MMARIA: A multi-static, multi-frequency meteor radar approach to improve the MLT wind field measurements \(invited\)](#)

[M. Tsutsumi: Characteristics of mesosphere echoes over Antarctica obtained using PANSY and MF radars](#)

[K. Nishimura: Technical development for MST radar; Pulse coding, signal processing and spectrum estimation](#)

Session 11: Gravity waves II

[M. Rapp and *P. Preusse: Initial results of the GW-LCYCLE campaign 2015/16 - results on the life cycle of gravity waves from combined airborne and ground based observations \(invited\)](#)

[T. Moffat-Griffin: Measuring mesospheric gravity waves from above the oceans: a ship-borne imager](#)

[X. Lu: Statistical characterization of high-to-medium frequency gravity waves in vertical winds and temperatures in the MLT](#)

15:30-16:00 Coffee break

16:00-17:30 Oral presentations **chair: K. Sato**

Session 12: Gravity waves III

[T. Nakamura: Gravity waves in the middle atmosphere over Syowa Station, the Antarctic \(69S, 40E\), observed with ground-based optical observations](#)

[I.-S. Song: Numerical simulation of mesoscale gravity waves observed near the mesopause region](#)

Session 13: High-resolution GCM

[M. J. Alexander: Gravity waves and precipitation in high-resolution models and observations \(invited\)](#)

[E. Manzini: Towards a high resolution stratosphere in ICON \(invited\)](#)

[E. Becker: Explicit simulation of gravity waves up to the lower thermosphere using a global circulation model \(invited\)](#)

[Hanli Liu: Gravity Wave Variation from the Stratosphere to the Lower Thermosphere During Stratospheric Sudden Warming Events \(invited\)](#)

17:30-17:35 Closing remarks (K. Sato)

Saturday, September 17

Excursion (Registration and payment are necessary by August 15, 2016)

List of poster presentations (Thursday, September 15)

Planetary/Rosby waves and tides

A01 [X. Lu: Vertical coupling of eastward travelling planetary waves from the stratosphere to the lower thermosphere in Antarctica using lidar, satellite, and modeling](#)

A02 [S. Nozawa: Changes of temperature and semidiurnal tide in the polar lower thermosphere and upper mesosphere related to sudden stratospheric warmings above Tromsø, Norway](#)

Middle atmosphere climate

B01 [A. Kuchar: A mid-latitude stratosphere dynamical index for attribution of stratospheric variability and improved ozone and temperature trend analysis - dynamics discussion](#)

B02 [H. Naoe: Future changes in ozone Quasi-Biennial Oscillation with increasing GHGs and ozone recovery in CCM1 simulation](#)

B03 [M. Lopez-Puertas: Variability of temperature and cooling rates in the mesosphere and lower thermosphere](#)

Sudden stratospheric warming and SSW-initiated global coupling

C01 [A. de la Camara: On the sensitivity of sudden stratospheric warmings to previous stratospheric conditions](#)

Stratosphere-troposphere coupling

D01 [Sandhya M.: Convective response due to a potential vorticity intrusion in tropical latitudes](#)

D02 [Sandhya M.: Tropical upper tropospheric humidity variations and tropical plumes due to potential vorticity intrusions over Indian sector](#)

D03 [D. Domeisen: A blocking view of stratosphere - troposphere coupling](#)

D04 [T. Yamanouchi: Importance of stratosphere-troposphere coupling in polar atmosphere and climate](#)

D07 [J. Suzuki: Interannual variability of equatorial Kelvin waves around the tropical tropopause influenced by the background wind](#)

D08 [S. Hirano: A three-dimensional analysis on the role of atmospheric waves in the climatology and interannual variability of stratospheric final warming in the Southern Hemisphere](#)

D10 [H. H. Bui: Nudging experiment with a minimal model of QBO-like oscillation to understand the downward influence to convection](#)

Gravity waves

- E01 [B.-G. Song: Sources of gravity waves in the upper mesosphere at King Sejong Station, Antarctica \(62.22°S, 58.78°W\)](#)
- E02 [Pramitha M.: Identification of gravity wave sources over tropical latitudes using reverse ray tracing technique](#)
- E03 [M. Kogure: Seasonal and height variations of gravity wave activities in the middle atmosphere \(15-70 km\) over Syowa Station \(69S, 40E\) in the Antarctic using Rayleigh/Raman lidar](#)
- E04 [Y. Minamihara: Characteristics of vertical wind fluctuations in the lower troposphere at Syowa Station in the Antarctic revealed by the PANSY radar](#)
- E05 [D. Takeo: Long-term variation of horizontal phase velocity spectra of atmospheric gravity waves observed by an airglow imager at Shigaraki: Comparison between mesopause region and thermosphere](#)
- E06 [S. Perwitasari: 3-years of concentric gravity wave variability in the mesopause as observed by IMAP/VISI](#)
- E08 [J. Zhao: Characterization of gravity waves in the stratosphere and lower mesosphere at McMurdo, Antarctica](#)
- E09 [T. S. Matsuda: New applications of horizontal phase velocity spectrum derived from airglow imaging observation at Syowa](#)
- E10 [C. J. Heale: Interaction of finite amplitude gravity waves in the mesosphere and lower thermosphere](#)
- E11 [C. Chen: Lidar observations and automated extraction of persistent gravity waves with periods of 3-10 h at McMurdo \(77.83°S, 166.67°E\) utilizing two-dimensional Morlet wavelet transform](#)

Vertical coupling

- F01 [A. Saito: ISS-IMAP observation of the airglow structures in the MLT region](#)
- F02 [N. Eguchi: Sudden tropical stratospheric warming by subtropical jet variation in the middle atmosphere](#)
- F03 [V. Matthias: QBO modulation of the southern polar mesopause region](#)

Observations and technology of the middle and upper atmosphere

- G01 [M. K. Ejiri: Observed fine-structures in sporadic Ca⁺ ion layers by a frequency-tunable resonance scattering lidar in the midlatitude](#)
- G02 [P. Baron: Study for measuring middle and upper atmospheric wind and temperature with sub-millimeter and TeraHertz limb sounders](#)
- G03 [T. Hashimoto: Automatic diagonal-loading scheme for robust adaptive beamforming on atmospheric radars](#)
- G04 [J. Gumbel: The MATS satellite mission - tomography of structures and waves in the upper mesosphere and lower thermosphere](#)
- G05 [Y. Guo: Measuring turbulence and eddy flux with a Na lidar](#)
- G06 [H. Hashiguchi: Development of MU radar real-time processing system with adaptive clutter rejection](#)
- G07 [S. Ochiai: A plan of submillimeter limb sounder for measurement of the middle atmosphere](#)

Wave-mean flow interaction

- H01 [Y. Hayashi: Formation of two dimensional and three dimensional circulation responding to unsteady wave forcing in the middle atmosphere](#)
- H02 [T. Kinoshita: A study of three dimensional structure of stratospheric material transport](#)
- H03 [Y. Kanno: Mean meridional circulations expressed by mass-weighted isentropic time means](#)

Solar effects on the neutral atmosphere

- I01 [K. Kodera: Solar influence on the tropical troposphere from the middle atmosphere](#)
- I02 [K. Imai: SMILES observations of mesospheric ozone during the solar eclipse](#)
- I03 [T. Nishiyama: Comparison study between polar mesosphere winter echo, CNA and electron density in the mesosphere based on the PANSY radar](#)

Last update: September 20, 2016