International Symposium on the Whole Atmosphere (ISWA)

Date: 14-16 September 2016
Venue: Ito Hall, The University of Tokyo, Tokyo, Japan

Program

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)**

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**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

J. 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/Rossby 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 CCMI 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. Yamamoto: 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 (69.2°S, 40°E) 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