APARC Gravity Waves (GWs) and FIne-Scale Atmospheric Processes and Structures (FISAPS) Symposium

Schedule

9-13 June 2025

Yonsei University, Seoul, Republic of Korea

Day-1 (June 9) (Sci Bld B102)		
08:00 – 08:30	Check-In	
08:30 – 08:45	**Opening**: Riwal Plougonven on behalf of the GW and FISAPS co-chairs **Welcome Remarks**: (1) Vice President for Research of Yonsei University (Prof. W.-Y. Lee) (2) Dean of College of Science of Yonsei University (Prof. H.-Y. Chun)	
08:45 – 10:00	Session 1 [Chair: Aurelien Podglajen, Felix Jochum]	
	Contributed 08:45 – 09:00	**Ju Heon Lee** (Seoul National University) Generation Mechanisms of Near-Cloud Turbulence between Mid-Latitude Jet and Northward Moving Typhoon in East Asia
	Invited 09:00 – 09:30	**Soo-Hyun Kim** (NASA Ames Research Center) Analysis of Atmospheric Turbulence in the UTLS from Airborne Observations during the DCOTSS Field Campaign
	Contributed 09:30 – 09:45	**Sung-Ho Baek** (Seoul National University) Characteristics of CIT and NCT using satellite and in situ aircraft data in East Asia
	Contributed 09:45 – 10:00	**Ajil Kottayil** (Cochin University of Science and Technology) High-Frequency Gravity Waves and Kelvin-Helmholtz Billows in the Tropical UTLS from Radar Observations of Vertical Wind
Break (10:00 – 10:30)		
10:30 – 12:00	Session 2 [Chair: Shingo Watanabe, Phoebe Noble]	
	Contributed (O) 10:30 – 10:45	**Marvin A. Geller** (Stony Brook University, online) A New Method for Obtaining Turbulence Information from High Vertical-Resolution Radiosondes
	Invited 10:45 – 11:15	**Tyler Mixa** (GATS Boulder) Gravity Wave Modulation of KHI in the MLT

	Invited(O) 11:15 – 11:45	**Abhiram Doddi** (University of Colorado at Boulder) Evaluating distinct methods of estimating turbulent kinetic energy dissipation rate using synthetic in-situ observations in Direct Numerical Simulation data
	Contributed 11:45 – 12:00	**Richard Wilson** (Sorbonne Université) Properties of Atmospheric Turbulence Detected high vertical-resolution radiosondes
Lunch (12:00 – 13:30)		
13:30 – 15:00	Session 3 [Chair: Richard Wilson, Milena Corcos]	
	Contributed 13:30 – 13:45	**Hye-Yeong Chun** (Yonsei University) Atmospheric Turbulence in the Free Atmosphere Estimated Using HVRRD : recent results and some issues
	Contributed 13:45 – 14:00	**Masashi Kohma** (The University of Tokyo) Estimation of energy dissipation rates from radiosonde observations based on machine learning approach
	Invited 14:00 – 14:30	**Han-Chang Ko** (Yonsei University) A New Estimation of Atmospheric Turbulence Using Global High Vertical-Resolution Radiosonde Data
	Invited 14:30 – 15:00	**Thorsten Kaluza** (University of Reading) Diagnosing Turbulence on the Mesoscale: The Good, the Bad, and the Unknown
Break (15:00 – 15:30)		
15:30 – 17:00	Session 4 [Chair: Ajil Kottayil, Hye-Yeong Chun]	
	Contributed 15:30 – 15:45	**Joon Hee Kim** (Seoul National University) Two Way Interaction between Long-Haul Flight Routes and Wind/Turbulence in Response to Climate Change
	Contributed 15:45 – 16:00	**Yoonjin Lee** (Seoul National University) Machine learning-based turbulence intensity estimation over Korea using satellite observations
	Invited 16:00 – 16:30	**Jianping Guo** (Chinese Academy of Meteorological Sciences) Spatio-Temporal Characteristics of Low-level Turbulence Characteristics Across China: Insights from a Nationwide Radar Wind Profiler Network
	Contributed 16:30 – 16:45	**Jeonghoe Kim** (Seoul National University) Role of Turbulence in Marine Atmospheric Boundary Layer during the Sea Fog Events in the Yellow Sea: Mesoscale and Large Eddy Simulations
	Contributed 16:45 – 17:00	**Ye-Seul Lee** (Yonsei University) Characterization of Wind and Stability in the Lower Troposphere Using High-Resolution Radiosonde Data in South Korea

Day-2 (June 10) (Sci Bld B102)		
08:30 – 10:00	Session 5 [Chair: Neil Hindley, So Young Kim]	
	Contributed 08:30 – 08:45	**Riwal Plougonven** (Ecole Polytechnique) Estimating observed gravity wave momentum fluxes from the large-scale flow using machine learning
	Contributed(O) 08:45 – 09:00	**Jie Gong** (NASA Goddard Space Flight Center, online) Identification and Source Mechanism Investigation of Eclipse Generated Gravity Waves in the Lower Atmosphere using the Nationwide Eclipse Ballooning Project (NEBP) Observations and Ray-tracing Simulations
	Invited(O) 09:00 – 09:30	**M. Joan Alexander** (NorthWest Research Associates, online) Towards a more physical representation of convection-generated gravity waves and the QBO in GFDL global atmosphere models
	Contributed 09:30 – 09:45	**Yufang Tian** (Chinese Academy of Sciences) The characteristics of the gravity waves, turbulence parameters, and tropopause height revealed by the combination of the MST radar and radiosonde observations
	Contributed(O) 09:45 – 10:00	**Chihoko Cullens** (University of Colorado at Boulder, online) Importance of Typhoon Strength and Propagation Conditions on Gravity Wave Variability
Break (10:00 – 10:30)		
10:30 – 12:15	Session 6 [Chair: Jianping Guo, Ajil Kottayil]	
	Invited 10:30 – 11:00	**Irmgard Knop** (Goethe University Frankfurt) Impact of Small-Scale Gravity Waves on Tracer Transport
	Invited 11:00 – 11:30	**Young-Ha Kim** (Seoul National University) Mechanism driving cycle-to-cycle variations in the quasi-biennial oscillation period
	Contributed 11:30 – 11:45	**Flore Juge** (LATMOS) Turbulent fractions in the Tropical Tropopause Layer using STRATEOLE-2 long-duration balloon measurements

	Invited(O) 11:45 – 12:15	**Martina Bramberger** (NSF NCAR, online) Representation of Tropical Gravity Waves in very-high-vertical resolution Global Simulations
Lunch (12:15 – 13:45)		
13:45 – 15:00	Session 7 [Chair: Thorsten Kaluza, Aurelien Podglajen]	
	Contributed 13:45 – 14:00	**Madhuri Umbarkar** (Johannes Gutenberg University Mainz) Unveiling the contribution of gravity waves to vertical shear and mixing in the lower stratosphere
	Contributed 14:00 – 14:15	**Tridib Banerjee** (Goethe University Frankfurt) Tracer Mixing Due To Gravity Waves & Turbulence Coupling
	Invited (O) 14:15 – 14:45	**Rachel Atlas** (LMD/CNRS, online) Turbulence in the tropical stratosphere, equatorial Kelvin waves, and the quasi-biennial oscillation
	Contributed 14:45 – 15:00	**Petr Šácha** (Charles University) Stratosphere-troposphere exchange during a typhoon supported by gravity wave effects
Break (15:00 – 15:30)		
15:30 – 16:45	Session 8 [Chair: Young-Ha Kim, Ji-Hee Yoo]	
	Contributed 15:30 – 15:45	**Hyun-Joo Choi** (Korea Meteorological Administration) Recent Updates to the Korean Integrated Model and the Characteristics of Subgrid Orographic and Turbulent Stresses
	Invited 15:45 – 16:15	**Felix Jochum** (Goethe University Frankfurt) Applying a 3D transient gravity-wave parameterization to mountain waves
	Contributed 16:15 – 16:30	**Myung-Seo Koo** (Korea Institute of Atmospheric Prediction Systems) Recent Progress of Subrid Orographic Parameterization in the Korean Integrated Model
	Contributed(O) 16:30 – 16:45	**Yewon Shin** (Seoul National University, online) Generation and Evolution Mechanisms of Mountain Wave Turbulence in the Upper Troposphere and Lower Stratosphere over Alaska, USA

Day-3 (June 11) (Sci Bld B102)		
08:30 – 10:00	Joint FISAPS / GW Discussion Session [Chair: Hye-Yeong Chun, Han-Chang Ko, Laura Holt, Riwal Plougonven, Aurelien Podglajen, Corwin Wright]	
Break (10:00 – 10:30)		
10:30 – 11:05	Feedback from discussion groups in plenary [Chair: Riwal Plougonven, Corwin Wright, Aurelien Podglajen, Han-Chang Ko]	
11:05 – 12:00	Flash Talk Session	
	Corwin Wright (University of Bath) Can GNSS-RO be used to extend the SABER climatological record?	
	Petr Šácha (Charles University) Static instability based method for detection of overturning turbulence	
	Young-Hee Ryu (Yonsei University) Online coupling of an urban canopy model with trees and a mesoscale atmospheric model to assess the cooling effects of trees	
	Peter Berthelemy (University of Bath) Fine Vertical Scales of Tropical Tropopause Layer Cirrus and Their Relationship with Gravity Waves: Insights from High-Resolution Balloon-Borne Lidar Observations	
	Optional 2-min flash talks by afternoon poster presenters	
Group picture and lunch (12:00 – 14:00)		
14:00 – 15:00	Yonsei Campus Tour (Yonsei Campus)	
Break (15:00 – 15:30)		
15:30 – 16:15	Session 9 [Chair: Corwin Wright, Masashi Kohma]	
	Contributed 15:30 – 15:45	**Aurelien Podglajen** (LMD/CNRS) Fine Vertical Scales of Tropical Tropopause Layer Cirrus and Their Relationship with Gravity Waves: Insights from High-Resolution Balloon-Borne Lidar Observations
	Contributed 15:45 – 16:00	**Stamen Dolaptchiev** (Goethe University Frankfurt) - given by Alena Kosareva A strategy for coupling ice microphysics to 3D transient gravity wave parameterization
	Contributed 16:00 – 16:15	**Alena Kosareva** (Goethe University Frankfurt) Impact of gravity waves on nucleation of ice particles based on a coupled approach in global NWP model
16:15 – 18:00	Poster Session (Sci Bld 1st Floor and ARC)	
	Masashi Kohma (The University of Tokyo) Reproducibility of vertical winds and momentum fluxes observed by an MST radar at Syowa Station in the Antarctic	
	Neil Hindley (University of Bath) How realistic are resolved gravity waves in ERA5 reanalysis compared to satellite observations?	

	Riwal Plougonven (LMD/Ecole Polytechnique) Comparison of orographic gravity waves in super-pressure balloon observations and in high-resolution simulations
	Riwal Plougonven (LMD/Ecole Polytechnique) The Strateole 2 project: long-duration balloon observations in the tropical lower stratosphere
	Shingo Watanabe (Japan Agency for Marine-Earth Science and Technology) Origins of UTLS Turbulence: Insights from the RRJ-ClimCORE Mesoscale Reanalysis - The ACCLIP Flights Over East Asia
	Shingo Watanabe (Japan Agency for Marine-Earth Science and Technology) Gravity Wave Morphology During the 2018 Sudden Stratospheric Warming Simulated by a Whole Neutral Atmosphere General Circulation Model
	Young-Ha Kim (Seoul National University) Impact of obliquely propagating gravity waves on the QBO simulated using the parameterization MS-GWaM
	Juliana Jaen (University of Bath) Bridging Observational Disparities in Gravity Wave Studies over Scandinavia: A Multi-Instrument Comparison
	Dominika Hájková (Charles University) Parameterized orographic gravity wave drag and its influence on SSWs
	Dominika Hájková (Charles University) Testing orographic gravity wave parameterizations over idealized orography
	Zuzana Procházková (Charles University) 43 years of gravity wave drag in ERA5 reanalysis
	Ju-Seob Kim (Seoul National University) Estimation of Eddy Dissipation Rate (EDR) derived from Vertical Wind Shear using Wind Lidar and Radiosonde data at NARO Space Center in South Korea
	Vincent Brémaud (LMD, online) Wave-Mean Flow Interactions and QBO-like Oscillations in an Idealized Two-Dimensional Atmospheric Model
	Toyese Tunde Ayorinde (Instituto Nacional de Pesquisas Espacial) Near-global Occurrences of Mesospheric Inversion Layers Observed from 22 years of TIMED/SABER Temperature Measurements
	Toyese Tunde Ayorinde (Instituto Nacional de Pesquisas Espacial) Characterization of Gravity Wave Dissipation in the Mesosphere Using TIMED/SABER Satellite Data
	Milena Corcos (NorthWest Research Associates) Observation of gravity waves generated by convection and the moving mountain' mechanism using superpressure balloon observations
	Han-Chang Ko (Yonsei University) Evaluation and Improvement of the ECMWF Aviation Turbulence Forecasts
	Hyun-Kyu Lee (Yonsei University) Contributions of Parameterized Gravity Waves and Resolved Equatorial Waves to the QBO Period in a Future Climate of CESM2
18:00 –	Banquet (Grand Ballroom, Baekyang Nuri, Yonsei University)

Day-4 (June 12) (Sci Bld B102)		
08:45 – 10:00	Session 10 [Chair: Petr Sacha, Soo-Hyun Kim]	
	Contributed 08:45 – 09:00	**Ulrich Achatz** (Goethe University Frankfurt) Effects of Non-Classical Gravity-Wave Dynamics on Middle-Atmosphere Circulation and Solar Tides
	Contributed 09:00 – 09:15	**Ji-Hee Yoo** (Yonsei University) Influences of in-situ excited planetary waves in splitting the polar vortex during the Southern Hemisphere sudden stratospheric warming in 2002
	Contributed 09:15 – 09:30	**So-Young Kim** (Korea Institute of Atmospheric Prediction Systems) Evaluation of the middle atmosphere circulation and non-orographic gravity wave parameterization in the Korean Integrated Model (KIM)
	Contributed 09:30 – 09:45	**Anzu Asumi** (The University of Tokyo) Climatology of the Residual Mean Circulation of the Martian Atmosphere and Contributions of Resolved and Unresolved Waves Based on a Reanalysis Dataset
	Contributed(O) 09:45 – 10:00	**Scott England** (Virginia Tech, online) The thermal impacts of GWs in the Martian thermosphere
Break (10:00 – 10:30)		
10:30 – 11:45	Session 11 [Chair: Tyler Mixa, Kaoru Sato]	
	Contributed(O) 10:30 – 10:45	**Xinzhao Chu** (University of Colorado Boulder, online) Vertical Fluxes and Vertical Winds Driven by the Full Spectrum of Gravity Waves and Observed by Lidars in the MLT over McMurdo (77.84°S, 166.67°E), Antarctica
	Invited 10:45 – 11:15	**Kaoru Sato** (The University of Tokyo) Causes of the abnormally strong easterly phase of the mesopause semiannual oscillation during the March equinox of 2023 revealed by JAWARA
	Contributed(O) 11:15 – 11:30	**Boris Strelnikov** (Leibniz Institute of Atmospheric Physics, online) Turbulence measured in-situ in the northern mesosphere/ lower thermosphere since 1990
	Contributed 11:30 – 11:45	**In-Sun Song** (Yonsei University) A simple parameterization of the effects of secondary gravity waves due to orographic primary gravity waves and its impacts in the upper mesosphere of whole atmosphere models

Lunch (11:45 – 13:30)		
13:30 – 15:00	Session 12 [Chair: Riwal Plougonven, Ulrich Achatz]	
	Invited 13:30 – 14:00	**Sebastian Rhode** (Forschungszentrum Jülich) Gravity wave analyses with the EE11 candidate CAIRT – Temperature measurements, GWMF, and ray tracing
	Contributed 14:00 – 14:15	**Peter Berthelemy** (University of Bath) A Novel Identification Method for Stratospheric Gravity Waves in Nadir Viewing Satellite Observations
	Invited 14:15 – 14:45	**Neil Hindley** (University of Bath) Long-term changes in gravity wave activity in the middle atmosphere from satellite observations
	Contributed 14:45 – 15:00	**Haruka Okui** (University of Bath) A Convolutional Neural Network for Detecting Gravity Waves in Satellite Observations and Model Simulations
Break (15:00 – 15:30)		
15:30 – 17:00	Session 13 [Chair: Kaoru Sato, Corwin Wright]	
	Contributed(O) 15:30 – 15:45	**Natalie Kaifler** (German Aerospace Center DLR, online) Gravity waves in the middle atmosphere above South Pole, Antarctica
	Contributed(O) 15:45 – 16:00	**Robin Wing** (Leibniz Institute for Atmospheric Physics, online) Simultaneous Measurements of Quasi-monochromatic Gravity Waves and Estimates of Turbulence in the Polar Night Jet
	Contributed 16:00 – 16:15	**Jackson Jandreau** (University of Colorado Boulder) Antarctic Gravity Waves in the MLT: Developing Energy and Spectral Baselines from 14 years of Lidar Observations to investigate Vertical Coupling Processes
	Contributed(O) 16:15 – 16:30	**Christoph Zülicke** (Leibniz Institute of Atmospheric Physics, online) Evidence for nonlinear wave-wave interaction in generation of secondary gravity waves
	Contributed 16:30 – 16:45	**Priyanka Ghosh** (Leibniz Institute of Atmospheric Physics) Intermittency of Waves in the Polar Upper Troposphere and Lower Stratosphere Over Northern Norway Using MAARSY
	Contributed(O) 16:45 – 17:00	**Robert Reichert** (LMU, online) Observation of mountain waves and secondary gravity waves over Patagonia

Day-5 (June 13) (Sci Bld B102)		
08:45 – 10:00	Session 14 [Chair: Han-Chang Ko, Richard Wilson]	
	Contributed(O) 08:45 – 09:00	**Irina Strelnikova** (Leibniz Institute of Atmospheric Physics, online) Derivation of gravity wave parameters from lidar observation and high-resolution nested UA-ICON simulation
	Invited 09:00 – 09:30	**Zuzana Procházková** (Charles University) Gravity wave spectra in high-resolution ICON simulation
	Contributed 09:30 – 09:45	**Phoebe Noble** (University of Bath) Stratospheric Gravity waves in AIRS observations and high-resolution models
	Contributed 09:45 – 10:00	**Hyun-Kyu Lee** (Yonsei University) Impacts of Stratospheric Aerosol Injection on Parameterized Convective Gravity Waves in the Equatorial Stratosphere
Break (10:00 – 10:30)		
10:30 – 11:00	Session 15 [Chair: Han-Chang Ko, Richard Wilson]	
	Invited(O) 10:45 – 11:15	**Iman Toghraei** (École normale supérieure, online) Evaluation of gravity wave parameterization schemes in a climate model using high-resolution simulations of ICON and IFS
11:00 – 12:00	Plenary brainstorm to guide post-lunch discussions	
Lunch (12:00 – 13:30)		
13:30 – 15:00	Discussion	
Break (15:00 – 15:30)		
15:30 – 16:00	Feedback from discussion groups in plenary	
16:00 – 16:15	Closing Remarks	