



TRENDS 2024

12th International Workshop on Long-Term Changes and Trends in the Atmosphere

Programme

	<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>
	10:15 Welcome				
<u>Session 1</u>	10:30	10:00	10:00	10:00	10:50
Coffee Break	11:00	11:10	11:10	11:10	11:40
<u>Session 2</u>	11:30	11:40	11:30	11:40	12:10
Lunch	13:30	13:30	13:00 Field trip & Lunch	13:30	13:30
<u>Session 3</u>	14:30	14:30		14:30	
Coffee Break	15:40	15:40			
<u>Session 4</u>	16:10	16:10			
	18:15 City Tour & Ice breaker				20:00 Gala Dinner Ágape Liceo Resturant

Presentations highlighted in green will be delivered online

MONDAY

Monday morning: Climate Change and Atmospheric Trends

09:30-10:15 Registration

10:15-10:30 Opening & Welcome

10:30-11:00 Scenario of trends in the stratosphere-mesosphere-thermosphere-ionosphere system (Jan Laštovička) - Invited -

== Coffee Break ==

11:30-11:50 Advances In Linkages Of Climate Change And Mesospheric Temperature Trends (Gufran Beig)

11:50-12:10 Long-term Evolution of Equatorial Mesospheric and Stratospheric Quasi-biennial Oscillation: New Insights (Karanam Kishore Kumar) - from India

12:10-12:30 Impact of Differential Long-Term Evolution in the Solar Atmosphere on the Thermosphere During the Decay of the Modern Maximum (Liyang Qian)

12:30-13:30 Poster Session 1 ==

Monday afternoon: Thermospheric Studies and Space Climate Change Effects

14:30-15:00 Long-term trends in the thermospheric composition ratio O/N₂ measured by TIMED GUVI in 2002-2023 (Shun-Rong Zhang) - Invited -

15:00-15:20 Future thermospheric neutral density reductions from WACCM-X, and their impact on the space debris environment (Matthew Brown)

15:20-15:40 Initiating long-term atmospheric monitoring: in situ analysis of the variation of the chemical composition and total number density of Earth's lower thermosphere (Rico Fausch) - from Bern (Switzerland)

== Coffee Break ==

16:10-16:30 Response of thermospheric hydrogen to increases in greenhouse gases and to changes in solar activity (Susan Nossal) - from Madison (WI, USA)

16:30-16:50 Long-term trends in the ionospheric equivalent slab thickness: Some evidences by Working Team #1 within IAGA WGII-F (Ana G. Elías)

16:50-17:10 Modeling the influences of changes in Earth's greenhouse gas concentrations on the climatology of Ionospheric slab thickness (Chih-Ting Hsu) - from Boulder (CO, USA)

17:10-17:30 The influence of the secular change of Earth's magnetic field and greenhouse gas concentration on the climatology of the thermosphere and ionosphere system (Wenbin Wang) - from Boulder (CO, USA)

18:15 - 21:00 - City Tour and Ice Breaker

TUESDAY

Tuesday morning: Ionospheric Research

10:00-10:30 Evolution of the Ionosphere and Thermosphere During the Holocene (Xinan Yue) - Invited -

10:30-10:50 Impact of Anthropogenic Emission Changes on the Occurrence of Equatorial Plasma Bubbles (Xu Zhou)

10:50-11:10 Impact of selection of optimum solar activity proxy on trends in midlatitude foF2 (Jan Laštovička)

== Coffee Break ==

11:40-12:10 Ionospheric F2-region long-term trends (Ana G. Elías) - Invited -

12:10-12:30 How does the dayside ionospheric electron density react to the changing long-term relation between solar activity parameters? (Kalevi Mursula)

12:30-12:50 Long-term Trends in the ionosphere over the Indian Region: A perspective of five decades in the Equatorial and Equatorial Ionization Anomaly location (Som K. Sharma)

12:50-13:10 Long-term trends in the total electron content (TEC) (Jan Laštovička)

13:10-13:30 A statistical study of Arctic and Antarctic Sudden Stratospheric Warming (SSW) events and their impacts on the ionosphere-thermosphere system (Jinee Gogoi)

Tuesday afternoon: Stratospheric and Mesospheric Research I

14:30-15:00 The long-term variability of middle atmosphere water vapor revealed from merged HALOE and SABER datasets (Tao Li) - Invited - from Beijing (China)

15:00-15:20 Observations and trends of the structure and dynamical properties of the stratosphere under climate change (Juan A. Añel)

15:20-15:40 Upper Stratospheric Temperature Trends: New Results from OSIRIS (Kimberlee Dubé)

== Coffee Break ==

16:10-16:40 Variability and trends of ozone and temperature profiles in the middle atmosphere: overview of recent results (Viktorija Sofieva) - Invited -

16:40-17:00 Disentangling the advective Brewer-Dobson circulation trends (Radek Zajíček) - from Prague (Czechia)

17:00-17:20 Climatology, long-term variability and trend of gravity wave drag in the stratosphere revealed by ERA5 (Petr Šácha)

17:20-17:50 Long-term changes from SABER observations (Martin M. Mlynczak) - Invited - from Hampton (VA, USA)

WEDNESDAY

Wednesday morning: Stratospheric and Mesospheric Research I

10:00-10:30 Trends and impacts of short lived halogens (Alfonso Saiz López) - Invited -

10:30-10:50 Quantifying the sources of increasing stratospheric H₂O concentrations in the 21st century (Patrick Sheese)

10:50-11:10 The future of noctilucent clouds (Franz-Josef Luebken)

== Coffee Break & Group photo ==

11:30-12:00 Trends and Variability in Stratospheric NO_x (Kimberlee Dubé) - Invited -

12:00-12:20 Comparison of different stratospheric parameters from reanalysis and satellite data (Laura de la Torre)

12:20-12:40 Temperature Trends and Solar Irradiance Effects in the Mesosphere (Liyang Qian)

== FIELD TRIP ==

THURSDAY

Thursday morning: Solar Activity and its Impact on the Atmosphere

10:00-10:30 Korea Ancient Aurora Record and Implications (Yong Wei & Xinan Yue) - Invited -

10:30-10:50 Solar Flux Effects on the Variations of Equatorial Electrojet (EEJ) and Counter-Electrojet (CEJ) Current across the Different Longitudinal Sectors during Low and High Solar Activity (Alemayehu Mengesha Cherkos)

10:50-11:10 Long-term solar activity impact on ionospheric ionization (Norbert Jakowski)

== Coffee Break ==

11:40-12:00 A change in solar radio spectrum and UV vs. sunspot relation during the decay of the Modern Maximum (Kalevi Mursula)

12:00-12:20 Unraveling Seasonal and Diurnal Variability in F2-Region Peak Height Trends Driven by Greenhouse Gas Concentrations and Geomagnetic Field Shifts (Trinidad Durán)

12:20- 13:30 Poster Session 2

Thursday afternoon: Solar Cycle Variability and its Broader Impacts

14:30-15:00 Solar Cycle and Long-Term Trends in the Observed Peak of the Meteor Altitude Distributions by Meteor Radars (Erin C. M. Dawkins) - Invited -

15:00-15:20 TRENDS in D-region ionospheric parameters over the solar cycle 24 during solar flare events (Ashutosh K. Singh) - from Bihar (India)

15:20-15:40 Long-term trends in NmF2 related to secular variation of Earth's main magnetic field (Dupinder Singh) - from Boston (MA, USA)

== Coffee Break ==

16:10-16:30 Multi-index analysis of ionospheric irregularities observed during solar cycle 24-25 over South America (Giorgio Arlan da Silva Picanço) - from Sao Paulo (Brazil)

16:30-16:50 Long-term trends at the geomagnetic equator: New results from Jicamarca Radio Observatory (Meyer Merino) -from Lima (Perú)

16:50-17:10 Investigating the influence of solar cycle and greenhouse gases on decadal variability in the polar summer mesosphere (Aimee Merkel) - from Boulder (CO, USA)

17:10-17:30 Combining solar EUV proxies to create new solar indices (Bruno Zossi)

FRIDAY

Friday morning: Observational Studies and Long-term Atmospheric Monitoring

10:50-11:20 Long-term Variability and Tendencies in Mesosphere and Lower Thermosphere Winds and Tides from Meteor Radar Observations and WACCM Simulations Over Esrange (67.9°N, 21.1°E) (Ramesh Karanam) - Invited -

11:20-11:40 Investigation of the long-term variation of gravity waves over South America using empirical orthogonal function analysis (Toyese Tunde Ayorinde)

== Coffee Break ==

12:10-12:30 Long-term changes in the dependence of NmF2 on solar flux at Juliusruh (Gloria Tan Jun Rios)

12:30-12:50 15-Year Tidal Trends of Longitudinal Variability in Global Temperature and Density in the Mesosphere, Thermosphere, and Ionosphere (Sovit Khadka) - from Boulder (CO, USA)

12:50-13:00 Final Remarks and Workshop Closing

POSTERS

Posters (Presentation Monday 12:30)

P01. Upper stratospheric trends in JRA-3Q vs JRA-55 (Celia Pérez-Souto)

P02. Compiling a global rocketsonde database for middle and upper atmospheric research (Juan A. Añel)

P03. Investigating the Long-Term Effects of Dust Particle Dynamics on Middle and Upper Atmosphere Variations and Satellite Navigation (Mohamad Essam Abdelaal) - from Moscow (Russia)

P04. Coupling of Long-Term Trends of Zonal Winds Between the Mesopause and Stratosphere in Southern Winter (Byeong-Gwon Song)

P05. Rescued searchlight stratospheric aerosol extinction observations from 1963 to 1976 to complement the ones from December 1963 to December 1964 (Juan C. Antuña-Marrero)

P06. Searchlight stratospheric density observations during 1950 and 1952 rescued and digitized (Juan C. Antuña-Marrero).

P07. Occurrence of Ionospheric irregularities over Brazil and Africa during the 2019 Antarctic minor sudden stratospheric warming (Ebenezer Agyei-Yeboah)

P08. Crustal magnetic fields' effect on the day-night transportation process in the Martian ionosphere (Kai Fan)

P09. Long term Trend and Changes in the atmospheric temperature, water vapour, ozone, methane and carbon-monoxide over the Indian region (Som K Sharma)

P10. Regional aspects of the long-term trends in the Western Mediterranean (Diego Campos Díaz)

P11. Ionospheric responses in the low-latitude region of Africa during the geomagnetic storm of 27 August 2021 (Chukwuma Anoruo) - from Brazil

P12. Prediction of Ionospheric Disturbance over North Africa Using Machine Learning with Integration of Space and Ground-based GNSS Observations (Hassan Nooreldeen) - from El Cairo (Egypt)

P13. Measurement of aerosols, clouds and surface temperature at the Antarctic bases Marambio and Juan Carlos I (Juan C. Antuña-Marrero)