

UNION SYMPOSIA

U01	Geoscience and Mathematics for Sustainable Development	12 July
U02	Artificial Intelligence for Managing Natural Hazards and Disasters	13 July
U03	New Discoveries in Deep Interior of the Earth and Planets	16 July
U04	New Advances in Planetary Science and Comparative Planetology	17 July

INTER-ASSOCIATION SYMPOSIA

JA01	Machine Learning in Geo-, Ocean and Space Sciences (IAGA, IAVCEI, IAHS, IASPEI, IAMAS, IAPSO)
JA02	Data Assimilation and Statistical Learning in Earth and Space Sciences (IAGA, IACS, IAHS, IAMAS, IASPEI)
JA03	Analogue Data for the Future: Preservation and Present-Day Utilization of Historical Data in the Geosciences (IAGA, IACS, IASPEI, IAHS, IAG, IAPSO)
JA04	Marine Geodesy and Geophysics – Opportunities & Hazards (IAGA, IAG, IASPEI, IAVCEI)
JA05	Solar Influence on the Atmosphere and Climate (IAGA, IAMAS)
JA06	Long-Term Changes in the Stratosphere, Mesosphere, Thermosphere, and Ionosphere (IAGA, IAMAS - ICMA)
JA07	Interdisciplinary Observations of Pre-Earthquake Processes. The Concept of Lithosphere- Atmosphere- Ionosphere Coupling (IAGA, IASPEI (EMSEV))
JA08	Ground and Satellite Electromagnetic Observations Related to Earthquakes, Tsunami's and Volcanic Activity (IAGA, IASPEI (EMSEV), IAVCEI)
JC01	Remote Sensing of the Cryosphere (IACS, IAHS)
JC02	Declining Glacier, Snow Cover and Permafrost and Their Impacts on Downstream Hydrology (IACS, IAHS, IAG)

JC03	Coupling Processes Between the Atmospheric Boundary-Layer and Snow - Ice Surfaces: Modelling at Convection and Snowdrift-Permitting Scales (IACS, IAHS, IAMAS)
JC04	Atmospheric Circulations and Surface Mass Balance of Ice Sheets (IACS, IAMAS)
JC05	Atmosphere-Ocean-Sea Ice Interactions: Physical and Chemical Processes (IACS, IAMAS, IAPSO)
JC06	Mountain Cryosphere Hazards (IACS, IAVCEI, IASPEI)
JG01	Interactions of the Solid Earth With Ice Sheets and Sea Level (IAG, IACS, IASPEI)
JG02	Theory and Methods of Potential Fields (IAG, IAGA)
JG03	Remote Sensing and Modelling of the Atmosphere (IAG, IAGA, IAMAS, IAVCEI,)
JG04	Satellite Gravimetry for Groundwater Monitoring (IAG, IAHS)
JG05	Geodesy for Climate Research (IAG, IAMAS, IACS, IAPSO, IAHS)
JG06	Monitoring Sea Level Changes by Satellite and In-Situ Measurements (IAG, IAPSO)
JG07	Modern Gravimetric Techniques for Geosciences (IAG, IAVCEI, IAPSO, IASPEI)
JH01	New, Large, and Open Data for the Earth and Environmental Science Community (IAHS, IAPSO, all associations)
JH02	Advances in Snow Hydrology (IAHS, IACS)
JH03	Snow in the Critical Zone (IAHS, IACS)
JH04	Anthropocene: Perspectives From and Within Geophysics (IAHS, IAMAS, IACS, IASPEI, IAVCEI, IAG, IAPSO)
JH05	Citizen Science, Crowdsourcing and Innovative Monitoring for Advancing Geo-Sciences (IAHS, IASPEI, IAGA, IACS, IAMAS)
JH06	Education & Outreach in Geosciences (IAHS, IASPEI, IAGA, IAG, IAVCEI, IACS, IAMAS, IAPSO)
JM01	Recent Advances in Regional Climate Modelling (IAMAS, IACS, IAHS)

JM02	Tropical-Polar Interactions, Arctic Amplification and Its Influence on Midlatitude Weather (IAMAS, IACS, IAPSO)
JM03	Polar Regions Instrumentation (IAMAS, IACS, IASPEI)
JM04	Weather and Climate Extremes: Understanding, Modeling, Prediction, and Impacts (IAMAS, IAHS, IACS)
JM05	Earth System Models: Assessing the Earth System's State and Fate From Regional to Planetary Scales (IAMAS, IAHS, IACS, IAPSO, IAVCEI?)
JP01	Tides (IAPSO, IAHS, IAGA, IASPEI, IAG)
JP02	Arctic Ocean Physics and Biochemistry in a Changing Climate (IAPSO, IACS)
JP03	Physical and Biogeochemical Ocean and Ice Processes in the Southern Ocean: Observations, State Estimation and Modeling (IAPSO, IACS)
JP04	Ice Sheet-Ocean Interactions: Challenges and Insights From Theory, Observations and Modelling (IAPSO, IACS, IASPEI)
JP05	Tsunamis (IAPSO, IASPEI, IAVCEI, IAMAS, IAG)
JP06	Electromagnetic Studies of the Ice and Ocean System (IAPSO, IACS, IAGA)
JS01	Cryoseismology (IASPEI, IACS, IAG)
JS02	Seismo – Geodesy (IASPEI, IAG)
JS03	Probing the Earth's Lithosphere: Understanding Tectonic, Volcanic, Cryotonic and Geodynamic Processes Using Geophysical Methods (IASPEI, IAG, IAGA)
JS04	Monitoring, Imaging and Mapping of Volcanic Areas (IASPEI, IAG, IAVCEI, IAGA)
JS05	Real-Time GNSS Data and Products Usage: Interoperability and Management Challenges (IASPEI, IAG, IAVCEI, IAPSO)
JS06	Joint Inversion of Different Geophysical Data Sets (IASPEI, IAGA, IAG, IAVCEI)
JS07	Geophysical Constraints on the Earth's Deep Interior Combining Modelling and Observations (IASPEI, IAGA, IAG, SEDI)
JS08	Advances in Heat Flow Studies: From Fundamental Geodynamic Understanding to Geothermal Energy Applications (IASPEI, IAVCEI (IHFC))
JS09	Early Warning Systems for Geohazards (IASPEI, IAVCEI, IAHS, IAG)

JV01	Volcano-Ice Interactions (IAVCEI, IACS)
JV02	Dispersal of Volcanic Particulates in the Atmosphere and the Oceans (IAVCEI, IAMAS, IAPSO)
JV03	Hunga Tonga (IAVCEI, IAMAS, IAPSO, IASPEI, IAGA, IAG)
JV04	Volcano Seismology (IAVCEI, IASPEI)
JV05	Strain Localisation and Seismic and Volcanic Hazards (IAVCEI, IASPEI, IAG)
JV06	Geophysics of Solar System Planets (IAVCEI, IASPEI, IAG, IAGA)
JV07	Structure and Composition of the Earth Mantle and Crust (IAVCEI, IASPEI, IAGA, ILP)

ASSOCIATION SYMPOSIA

INTERNATIONAL ASSOCIATION OF CRYOSPHERIC SCIENCES

C01	Advances in Modelling Glaciers and Ice Caps – Past Reconstructions, Future Projections, and Process-Based Studies
C02	Glacier Changes in High Mountain Asia and the Karakoram Anomaly: Latest Insights From the Atmosphere and Cryosphere
C03	Debris Covered Glaciers
C04	Fast Glacier Flow: Processes, Observations and Modelling of Ice Streams, Tidewater Glaciers and Surging Glaciers
C05	Tropical Glaciers: Mass Changes, Climate Forcing and Impacts on Indigenous Communities
C06	New Frontiers in Paleoclimate Reconstructions and Proxy Interpretations From Ice Cores
C07	Mass Changes of The Cryosphere – The Need for and Lessons Learned From Intercomparison Exercises
C08	Challenges in Modeling, Monitoring and Predicting Alpine Mass Movements
C09	Mountain Snow Cover Under Climate Change: From Past to Future
C10	Satellite-Derived Snow Cover Products and Their Applications in Hydrology
C11	Light Absorbing Particles on Snow and Ice
C12	Spotlighting Divergence: Climate Change Refugia Within Snow-Dominated Catchments and Where to Find Them
C13	Data Driven Cryospheric Sciences: Machine Learning, Data Assimilation and Inverse Methods for the Cryosphere
C14	Cryospheric Processes and Related Socioeconomic Impacts
C15	Progress in Quantifying Ice-Sheet Surface Mass Balance: Past, Present and Future



INTERNATIONAL ASSOCIATION OF GEODESY

G01	Reference Systems and Frames
G02	Static Gravity Field and Height Systems
G03	Time-variable Gravity Field
G04	Earth Rotation and Geodynamics
G05	Multi-signal positioning, Remote Sensing and Applications
G06	Monitoring and Understanding the Dynamic Earth with Geodetic Observations



INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY

A01	New Frontiers in Rock and Environmental Magnetism
A02	Electrodynamics and Energetics of the Middle Atmosphere
A03	Coupling Processes in the Atmosphere-Ionosphere System
A04	Advances in Mid-Latitude, Low-Latitude and Equatorial Aeronomy
A05	Space Weather and Electrodynamics of the Ionosphere and Atmosphere into the Polar Regions
A06	Energetic Particle Precipitation Impacts on the Ionosphere, Upper Atmosphere, and Climate System
A07	Radiation Belt and Ring Current: Emergence and Loss in Geospace, and the Role of the Cold Plasma Background
A08	DIV III Reporter Review
A09	Magnetosphere-Ionosphere-Thermosphere Coupling during Enhanced Geomagnetic Activity
A10	The Expanding Regimes of ULF Wave Research
A11	Magnetotail Dynamic Processes
A12	Magnetospheric Processes
A13	Magnetospheric Boundary Layers
A14	Dayside Magnetosphere Interactions
A15	Advances and Upcoming Developments in Solar and Heliospheric Physics
A16	Waves and Turbulence in the Solar Corona and Wind

A17	Interplanetary Shocks, Particle Acceleration, and Transport in Solar and Heliospheric Physics
A18	Space Weather and Space Climate: Data and Models
A19	Solar Eruptions (CMEs, Flares, Filaments), Their Source Region Evolution, and Forecast
A20	The Rising Phase of Solar Cycle 25 and Comparisons to Previous Cycles
A21	Satellite-Based Geomagnetic Field Measurements and Modeling
A22	Planetary Magnetic Fields and Secular Variation at All Temporal Scales
A23	Current Developments of Ground Geomagnetic Observations and Integration With Space Based Data
A24	Geomagnetic Observations, Indices and Products for Space Science, Space Weather and Space Climate Applications
A25	Geoelectric Field Measurements and Modeling for Space Weather Applications



INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES

H01	Panta Rhei Synthesis: Change in Hydrology and Society
H02	Detecting the Impacts of Water Management on the Spatial and Temporal Pattern of Natural Water Resources Via Observations, Models and Remote Sensing
H03	Floods: Processes, Forecasts, Probabilities, Impact Assessments and Management
H04	Diminishing Lakes and Wetlands: Causes Behind the Process and Actions for Recovery
H05	Climate Change and The Water Quality
H06	The Future of Water Resources Management
H07	Stable Isotopes of Water in the Hydrological Cycle
H08	A Familiar Paradigm – Climate Change and the Soil-Sediment Continuum - Resilience, Thresholds, and Adjustments
H09	Analysis and Prediction of Hydrological Induced Disasters in High Mountain Environment
H10	Transdisciplinary Citizen-Centred Participatory WEF E Nexus Approaches to Achieve Water, Food, Energy and Environment Security
H11	Stochastic Hydrology With Contributions on Methodologies and Applications, for Modeling, Forecasting, Change Assessment, and Uncertainty Quantification
H12	Extremes in Hydroclimatic Systems
H13	Vegetation and Hydrology Interactions: A Remote Sensing Perspective
H14	Improving Understanding of Hydrological Processes Through Water Quality
H15	The History of Hydrology



INTERNATIONAL ASSOCIATION OF METEOROLOGY AND ATMOSPHERIC SCIENCES

M01	Middle Atmosphere Symposium
M02	Dynamics and Variability of the Warming Hole(s) in the Climate System
M03	Climate Extremes in the Atmosphere-Land-Ocean System: Physical Processes, Predictability, Impacts and Adaptation
M04	Past Climate Changes and Their Relevance for the Future
M05	Atmosphere-Ocean-Ice Interactions: Physical, Biogeochemical and Biological Processes in the Ross Sea
M06	Monsoon Systems in Rapid and Intensifying Climate Change and Their Role in Extreme Events
M07	Earth System Response to Solar Radiation Modification: Modeling, Impacts and Uncertainties
M08	Variability and Near-Term Predictability of the Antarctic Climate System
M09	Geosciences for Sustainable Development
M10	El Niño - Southern Oscillation and its Regional and Global Impacts
M11	Earth's Energy Budget
M12	Advances in Atmospheric Radiation
M13	The Year of Polar Prediction (YOPP)
M14	Climate Change in the Polar Regions
M15	Polar Modelling

M16	Atmosphere-Ocean-Sea Ice Interactions: Local Processes and Global Implications
M17	Space Weather Influence on Polar Lower Atmosphere
M18	60 Years Of ICPM
M19	Lightning Observations for Research and Applications in Meteorology and Climate
M20	Lightning Physics and Effects
M21	Thunderstorms and the Global Electrical Circuit
M22	Cloud and Precipitation Studies
M23	Cloud-Radiative Interactions
M24	Dynamics and Microphysics of Moist Convection
M25	Cloud Nucleation Studies
M26	Weather Modification and Small Scale Geoengineering: Theory, Practice and Technology
M27	Atmospheric Chemistry in the Anthropocene: From the Urban to Global Scales
M28	Advances in Dynamic Meteorology
M29	Dynamics of Mountain Weather and Climate: Observations, Modeling and Prediction at All Scales
M30	Tropical Meteorology
M31	Ocean-Atmosphere Mechanisms of Climate Variability, Change and Predictability
M32	Sub-Seasonal to Decadal Prediction (S2S-S2D)
M33	Diagnosing and Reducing Errors and Biases in Weather and Climate Models
M34	Data Assimilation and Machine Learning in Earth Systems Modeling

M35

Exploration of the Diversity of Planetary Atmospheres: From the Solar System to Exo-Planets

IAPSO

INTERNATIONAL ASSOCIATION FOR THE PHYSICAL SCIENCES OF THE OCEANS

P01	General Topics in Oceanography (physics and biogeochemistry)
P02	Physics and Biogeochemistry of Semi-Enclosed, Shelf Seas, and Coastal Zones
P03	Ocean Mixing Frontiers
P04	Storm Surges, Waves, and Coastal Hazards
P05	The Meridional Overturning Circulation
P06	IIOE-2: A Huge Step Forward for the Indian Ocean Sciences
P07	Unravelling New Aspects of Nutrient Cycling in the Ocean: Multi-proxy and Modelling Approaches
P08	Bringing Scientific and Technological Ocean Information Together for Advancement of Sustainable Development in the Framework of the UN Ocean Decade



INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARTH'S INTERIOR

S01	Observational Seismology - Open Session
S02	International, National, Regional and Local Networks and Earthquake Data Centers: Highlights and Challenges
S03	Seismic Scattering and Absorption, Ambient Noise, and Monitoring Earth's Structure
S04	Advancements in Acquisition, Processing and Interpretation of Seismological Data
S05	Advances in Earthquake and Explosion Monitoring Using Distributed Acoustic Sensing
S06	Pre-Instrumental Earthquake Data
S07	Scientific Drilling and Downhole Monitoring – A Key to Understand Geohazards
S08	Anthropogenic Seismicity
S09	Earthquake Ground Motion and Seismic Hazard
S10	Multi-Hazard Risk Assessment
S11	Site Response in Urban Areas
S12	Recent Devastating Earthquakes
S13	Development, Testing and Application of Earthquake Forecasting Models
S14	New Advances in Understanding The Earth's Crust Dynamics in the Light of Solving the Problem of Earthquake Forecasting
S15	Boundary Layers in Earth's Mantle: Origin, Structure, and Influence on Convection
S16	Earthquake Source Mechanics
S17	European Lithosphere
S18	Integrating Seismic Tomography With Mineral Physics and Potential Fields to Describe the Crust and Upper Mantle Physical State



S19	Fabrics and Dynamics of the Lithosphere-Asthenosphere System Imaged by Seismic Anisotropy and Integrated Studies
S20	Education & Outreach to Ensure Success of Earthquake Early Warning Programmes
S21	Seismology Education and Inclusive Environments



INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR

V01	Volcano Geodesy Techniques and Approaches for Studying and Monitoring Volcanic Processes
V02	Modelling and Monitoring of Volcanic Ash Clouds
V03	Uncertainty Treatment in Volcanic Hazard Analyses
V04	Integrated Approaches to Investigate Pyroclastic Density Currents
V05	Interactions Between Volcanic Eruptions and Climate
V06	Geochemical and Geophysical Responses of Magma Feeding Systems and Eruption Dynamics at Active and Quiescent Volcanoes
V07	Putting Time And Rate Constraints On Magmatic Processes - How Fast How Long
V08	Volcano Geology and Mapping, Eruptive Behaviour and Hazard Assessment From Field Studies
V09	Advanced Remote Sensing Techniques to Study Volcanic Hazards
V10	History of Volcanology and Historical Volcanology
V11	Planetary Volcanism: Remote Sensing, Rovers, Earth Analogues and Modelling
V12	Toward Realistic Modelling of Volcano Deformation
V13	Recent Advances in Volcanology
V14	Open-vent Systems - Definitions, Longevity, and Implications
V15	Interdisciplinary Approaches to Volcanic Hazards Modelling