Session 1	Conveners
Observations and modelling of solar eruptions, solar wind and SEPs from Sun through interplanetary space	Spiros Patsourakos Emilia Kilpua Allison Jaynes
The dynamic expansion of the solar atmosphere in the form of solar wind fills in and mediates the interplanetary medium. Occasionally, destabilization of the magnetized solar atmosphere gives rise to gigantic energy releases, flares and Coronal Mass Ejections (CMEs), which in turn could drive Solar Energetic Particles (SEPs). Solar winds, CMEs, flares and SEPs could, and in various degrees and modes, influence space weather conditions in the inner heliosphere and beyond. Therefore, characterizing and understanding these phenomena is important for not only advancing our knowledge on how the solar atmosphere operates, but also for capacity-building towards their prediction. This session solicits contributions, of recent observational, theoretical and modelling results pertaining to the physical aspects of the formation and evolution of the solar wind, the pre-eruptive phase, eruption and evolution of flares and CMEs in the solar atmosphere, the propagation and evolution of CMEs in the interplanetary space, and finally the formation, evolution of propagation of SEPs in the solar atmosphere and the interplanetary space.	

Session 2	Conveners
Prediction of solar transients, streams/SIRs and SEP from Sun to geospace	Emilia Kilpua Spiros Patsourakos Allison Jaynes
This session will focus on predicting conditions at the Sun, heliosphere and finally in geospace that lead to a variety of space weather phenomena. This challenging topic covers a multitude of different plasma environments and timescales and requires an interplay of observations and modelling tools (from empirical to first-principle models, and machine learning approaches). The important questions concerning the topic include for example predicting the formation, coronal and heliospheric evolution of coronal mass ejections (CMEs) and their shocks, resolving the most reliable eruption precursors at the Sun, predicting solar flares and Solar Energetic Particles (SEPs) as well as the background solar wind structures and stream interaction regions. Another important aspect is to predict geospace response of solar transients, SEPs and solar wind, including dramatic changes in radiation belt electron fluxes, geomagnetic storms and radiation storms. We solicit presentations on these topics both focusing on one of the domains or those that couple between different domains.	

Session 3	Conveners
Effect of Space Weather on the Earth's ionosphere, thermosphere, and magnetosphere	Duggirala Pallamraju Loren Chang Nick Pedetella
Solar variability is a considerable source of changes in Earth's ionosphere, thermosphere, and magnetosphere (ITM) across a range of time scales. This includes variations due to impulsive events, such as solar flares and coronal mass ejections (CMEs), and longer term variations due to changes in solar irradiance. This session solicits presentations on variability in Earth's ITM that are primarily of solar origin. Topics of interest include, but are not limited to, the influence of solar flares, CMEs, and the solar cycle on the ITM, as well as developments in observational and modeling advances in studying these effects. For improving predictions of the effects of Space Weather on the ITM, it is required that there is a greater understanding of the chemistry, dynamics, electrodynamics, and physics of this region. This session thus also welcomes presentations focused on improved fundamental understanding of the ITM.	

Session 4	Conveners
Influence of the lower atmosphere on the mesosphere, thermosphere, and ionosphere	Nick Pedetella Loren Chang Duggirala Pallamraju
A significant fraction of variability in the mesosphere, thermosphere, and ionosphere is driven by processes that originate in the lower atmosphere (i.e., troposphere-stratosphere), especially during geomagnetically quiet time periods. This session solicits presentations focused on the application of numerical models and observations to characterize and understand the effects of the lower atmosphere on the mesosphere, thermosphere, and ionosphere. Topics of particular interest include the response of the middle and upper atmosphere to gravity waves, planetary waves, and tides, long-term trends, and recent advancements in numerical modeling and observational capabilities that will serve to improve our understanding of the influence of the lower atmosphere on the mesosphere, thermosphere, and ionosphere.	

Session 5	Conveners
Solar forcing specification and impacts on the atmosphere and climate	Stergios Misios Odele Coddington Jie Jiang
Preparation to the upcoming IPCC CMIP7 activity requires refined understanding of the future solar activity. The session will be devoted to the discussion of the future spectral solar irradiance scenarios. We welcome contributions from both solar physicists and atmospheric scientists. We expect to cover possible long-term changes in solar magnetic activity, radiation properties of the sunspot, faculae and quiet solar surface.	

Session 6	Conveners
Precipitating energetic particles and their effects on atmosphere	Eugene Rozanov Odele Coddington Jie Jiang Stergios Misios
Quantification of the energetic particle precipitation influence on the Earth's system is still a challenging issue. The session will be devoted to the detailed characterization of the energetic particle's properties and their effect on the atmosphere from the ground to the middle thermosphere. We welcome contributions from the experts in magnetospheric processes as well as from atmospheric scientists. The session will cover the analysis of the driving forces, related to the solar activity, related magnetospheric processes as well as the response of the atmosphere and climate.	

Session 7	Conveners
Predictability of the solar cycle	Jie Jiang Stergios Misios Odele Coddington

Solar eruptions and their effects on the Earth vary with the solar cycle. The solar activity record shows the strong variability of the cycle amplitudes, including extended intervals of very low activity, e.g., Maunder minimum, or particularly high activity, e.g., modern maximum. The last solar cycle, cycle 24, is the weakest one during the past 100 years. The maximum amplitude of the ongoing cycle 25 is still uncertain. Understanding the nature of the variability is a prerequisite for sensible predictions of future solar activity levels. The session aims to discuss advances in observations and modeling of the solar cycle and its predictability. The discussion includes stochastic and nonlinear mechanisms that modulate the solar cycle and their effects on the cycle prediction, physics-based prediction models of the solar cycle, prediction models of cycle 25, impacts of future cycle strength on the atmosphere and climate, and so on. We welcome contributions from both solar physicists and atmospheric scientists.