

Variability of the Sun and Its Terrestrial Impact (VarSITI): SCOSTEP's scientific program in 2014-2018

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During the last solar minimum, solar activity was extremely low for an extended period, and the present maximum of sunspot cycle 24 is the lowest in the last 100 years. It is not clear what long-term solar activity variations we can expect in the future: whether this is just the end of the recent decades of high solar activity, or whether the Sun is entering a Maunder-type minimum. Moreover, it is not clear to what extent our present understanding of how the Sun influences the geospace - which is based on instrumental observations taken during only the period of high solar activity in the second part of the 20th century - will hold during periods of more moderate to low solar activity that may follow. And it is still more unclear how all this would affect global climate change, or how important becomes the penetration of various inputs from the Earth's lower atmosphere to the ionosphere and plasmasphere. In 2014-2018 the Scientific Committee On Solar-TERrestrial Physics (SCOSTEP) operates the scientific program "Variability of the Sun and Its Terrestrial Impact" (VarSITI) which will focus on the recent and expected future solar activity and its consequences for the Earth, for various time scales from the order of thousands years to milliseconds, and for various locations and their connections from the solar interior to the Earth's atmosphere. In order to elucidate these various Sun-Earth connections, we encourage much closer communications between solar scientists (solar interior, atmosphere, and heliosphere) and geospace scientists (magnetosphere, ionosphere, and atmosphere). Campaign observations/data analysis for particular intervals, VarSITI web pages (<http://www.varsiti.org/>), mailing lists, and newsletters, are developed for this purpose. Four scientific projects are carried out under the VarSITI program: (1) Solar Evolution and Extrema (SEE), (2) International Study of Earth-Affecting Solar Transients (ISEST/MiniMax24), (3) Specification and Prediction of the Coupled Inner-Magnetospheric Environment (SPeCIMEN), and (4) Role Of the Sun and the Middle atmosphere/thermosphere/ionosphere In Climate (ROSMIC). These four projects will be carried out in collaboration with relevant satellite and ground-based missions as well as modeling efforts to facilitate the implementation of the projects. We will also discuss the collaboration with other on-going international projects like the UN-based space weather activities, particularly for promoting VarSITI-related science in developing countries, and ICSU World Data System (ICSU-WDS).

Keywords: VarSITI, solar activity, climate change, heliosphere, magnetosphere, atmosphere