

AOGS - AGU (WPGM) Joint Assembly



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Session: ST07

The Sun-climate connection from millennial to seasonal timescales: Top-down and bottom-up physical pathways and scenarios

Conveners:

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Increasing evidence from around the world shows that the main driver of terrestrial climate is the Sun. It is responsible for climate variability that ranges from millennial, centennial, multi-decadal, and seasonal timescales. The modulation of incoming solar radiation has both external and internal components. The former is in the form of intrinsic changes in solar magnetism while the latter arises from variations in the distribution and amount of cloud cover as well as changes in atmospheric transparency to solar radiation. Although changes in solar irradiance are the only external climate forcing, the resultant changes in the terrestrial climate systems are often modified due to internal causes (*e.g.*, atmosphere-ocean interactions and anthropogenic effects at shorter time scales) and through complex feedback mechanisms. Despite the enormous complexities and difficulties, recent progress is now beginning to offer concrete sun-climate physical mechanisms and processes that cover a very wide range of spatial domains and temporal scales. It remains to be seen how the diverse range of mechanistic processes and interconnections may be superimposed to manifest the time-changing and spatial-pattern-varying/shifting solar-induced responses that are observed through both instrumental and proxy climate records across the globe. It is of utmost importance to understand the origin of these wide ranges of climate cycles to delineate natural climate variability from anthropogenic causes. Such an understanding requires synergistic effort from researchers across diverse scientific disciplines including but not limited to solar physics, earth sciences, atmospheric sciences, and mathematical modeling.

The scientific agenda of Session ST07 of the AOGS-AGU (WPGM) Joint Assembly (August 13-17 2012, Singapore) is to analyze available climate records across the globe in diverse systems for presence of millennial to seasonal scale climate variability. Abstracts are solicited for presentation in this session from researchers across numerous disciplines. Evidence of climate variability as retrieved from various terrestrial proxy climate records (*e.g.*, marine and lacustrine sediments, corals, and tree-rings) and instrumental climate records (air temperature and precipitation) can be presented. Discussions on numerical climate models that simulate climate variability across a broad range of time scales are also welcome. We shall strive to understand the synchronicity in time and space of these climate cycles, their relationship to the absolute changes in solar irradiance (our best knowledge from sunspot and cosmogenic radionuclides), and deciphering the complex feedback mechanisms underlying these cycles.

Instructions for submission of abstracts can be obtained from the AOGS-AGU conference website at <http://www.asiaoceania.org/aogs2012>. Abstract submission opens **January 15** and runs through **March 12**. Accepted abstracts will be notified after **April 9**. Conference registration closes on **June 4**. Future updates on this session including a tentative list of the invited speakers will be available at: <http://www.cfa.harvard.edu/~wsoon/aogs2012-st07>.