

Project Details

ROSES ID: NRA-02-OSS-01

Selection Year: 2003

Program Element: Independent Investigation: LWS

Project Title:

Pacific centers of action: linkage between the solar cycle and regional climate variations

PI Name: Sultan Hameed

PI Email: atn@g.ucla.edu

Affiliation: State Univ of New York Stony Brook

Project Member(s):

- Geller, Marvin A; COI; State Univ of New York Stony Brook
- Zhang, Minghua ; COI; State Univ of New York Stony Brook

Summary:

Recent work carried out at Stony Brook University has presented evidence that the atmospheric Centers of Action in the North Pacific, the Aleutian Low and the Hawaiian High pressure systems shift their geographical positions significantly between solar minimum and maximum conditions, and also, that such changes in the Centers of Action are correlated significantly with the interannual variations of winter temperature and precipitation in several regions in North America and Asia. The goal of this project is to further understand this sun-climate link and to study the hypothesis that regional climate changes caused by the Pacific Centers of Action act to amplify the relatively small solar forcing to produce large perturbations in regions of North America and Asia. We propose to use an integrated approach of data analysis from satellites, NCEP reanalyses and GCM simulations with solar cycle forcing. The specific tasks detailed in the proposal are: i) integrated analysis of satellite measurements, operational reanalysis products, and conventional meteorological measurements to study the temporal and spatial structures of the sun-Centers of Action-regional climate relationship; ii) hypothesis study of the mechanism of the sun-climate relationship through amplification feedback processes of the atmospheric action centers.

Publication References:

Summary: "

Reference: Hameed, Sultan SUNY - Pacific centers of action: linkage between the solar cycle and regional climate variations, Northern Hemisphere annular mode in summer: Its physical significance and its relation to solar activity variations, JGR, August 2007

Summary: no summary

Reference: Hameed, Sultan; Piontkovski, Sergey; (2004), The dominant influence of the Icelandic Low on the position of the Gulf Stream northwall, Geophysical Research Letters, Volume 31, Issue 9, CiteID L09303, doi: 10.1029/2004GL019561

Summary: no summary

Reference: Hameed, Sultan; Lee, Jae N.; (2005), A mechanism for sun-climate connection, Geophysical Research Letters, Volume 32, Issue 23, CiteID L23817, doi: 10.1029/2005GL024393

Summary: no summary

Reference: Kolker, Alexander S.; Hameed, Sultan; (2007), Meteorologically driven trends in sea level rise, Geophysical

