

A Dissipation of Solar Transition Region Network Cells as a Proxy of Activity Decrease

Leonid Didkovsky [leonid@usc.edu], Space Sciences Center / University of Southern California (USC), Los Angeles, CA, USA

Solar EUV He II (30.4 nm) network scale variations are analyzed and compared to the changes of concentration of spotless days for 1996 – 2019. Transition Region (TR) network scale variations are determined using spatial power spectra of SOHO/EIT and SDO/AIA images. These spectra show some dissipation of the mid-size EUV network scale compared to the spectra for Solar Cycle 22/23 minimum. The rate of dissipation for 2010 – 2018 does not follow the AIA instrumental degradation and is caused by solar changes within the TR. A comparison of groups of continuous spotless days during 1996, 2008-09, and 2019 with the same time interval around activity minima demonstrates some larger concentration of extended spotless groups toward the end of 2019, which is consistent with the changes of the EUV network scale. Spatial power spectra which could be calculated a number of years before expected solar minimum would provide a proxy of activity decrease in addition to the other methods predicting solar cycle activity and upcoming solar minimum.