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MONITORING OF THE SUNSPOTS AND SOLAR RADIO BURSTS FOR THE 25TH SOLAR CYCLE
USING THE SHARJAH OBSERVATORIES

Abstract

This paper studies the correlation between the number of sunspots observed by the Sharjah Optical Observatory (SOO) and the solar radio bursts observed by the Sharjah Decametric Radio Telescope (SDRT) following the new 25th solar cycle. Both observatories (SOO and SDRT) are located at the Sharjah Academy for Astronomy, Space Sciences, and Technology (SAASST) in the United Arab Emirates. As the Sun's magnetic field changes, the Sun's activity changes. The start of a solar cycle coincides with a solar minimum, referred to as the quiet radio Sun, when the Sun has the least number of sunspots. Our SDRT observations reveal that the last quiet Sun phenomenon has occurred between 2018 and 2019, i.e., the end of the 24th solar cycle and the beginning of the new 25th solar cycle. In 2020, solar activity and the number of sunspots saw a surge. The half period of the solar cycle is the solar maximum, or once the Sun has the highest number of sunspots. The 24th solar cycle ended in December 2019 when the average number of sunspots achieved its minimum, and the first sunspots of the new cycle started to occur. Our preliminary results showed a strong correlation between the number of sunspots observed by the SOO and the detected radio bursts by the SDRT system. The two observatories' optical and radio contribute to the SAASST Space Weather program as part of the UAE Space Agency's vision to have a national program related to solar observations.