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[*Invited Lecture*]

Cosmic Ray Studies Related to Space Weather in Türkiye

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Abstract: In this talk, we summarize the space weather related studies based in Türkiye, mostly at Istanbul University and Türkiye National Observatories. Daily sunspot and chromospheric narrow-band observations in H_alpha have been carried out continuously since 1951 at Istanbul University Observatory. These observations are conducted with two telescopes focused on the photosphere and chromosphere. Sunspots are monitored daily using a 13 cm, 200 cm focal length Photosphere Telescope (50' FOV), while flares and prominences are observed with a 12 cm, 232 cm focal length Chromosphere Telescope. In addition to these efforts in 2024 we built the Mirya-m1 muon detector, which consists of two 1m^2 scintillators readout by eight photomultiplier tubes (PMTs) located on each side of the scintillators following a very similar design to muon impact tracer and observer (MITO, Ayuso et al. 2021). The Miyra-m1 detector is located in the

Türkiye National Observatories' Eastern Anatolia Observatory site at an altitude of roughly 3150 metres in Erzurum, Turkiye. We also acquired and installed an e-callisto radio spectrometer to monitor radio bursts. At the moment, a smaller cosmic ray detector has also been installed as a part of the gLOWCOST network. Finally, we are establishing a neutron monitor system based on three NM64 systems, from LND. We are hoping that by the time of the meeting the monitors will be shipped to Türkiye and by the end of 2025 Türkiye will be an active contributor to the Neutron Monitor Database.

Keywords: cosmic rays, space weather, solar activity

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References
Ayuso, S, Blanco, J, García-Tejedor, JI, et al. 2021, 'MITO: a new directional muon telescope', Journal of Space Weather and Space Climate, vol. 11, p. 13.