

EGU21-5896

<https://doi.org/10.5194/egusphere-egu21-5896>

EGU General Assembly 2021

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Solar Wind control of Auroral Kilometric Radiation as measured by the Wind Satellite

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Auroral Kilometric Radiation (AKR) emanates from acceleration regions from which escaping particles also excite a number of phenomenon in the terrestrial ionosphere, notably aurorae. As such, AKR emission is a barometer for particle precipitation, indicating activity in the magnetosphere. Observations suggest that the emission is mostly limited to the nightside, relating to bursty tail reconnection events. In this study we investigate the relationship between upstream interplanetary magnetic field and solar wind conditions, and the onset and morphology of corresponding AKR emission. Additionally, we explore the delay time between the arrival of solar wind phenomena at the magnetopause, and the onset of related AKR emission and morphology changes. Connections between AKR and solar wind observations allude to solar wind driving of energetic particle precipitation at different local times. The WAVES instrument on the Wind satellite has provided measurements of radio and plasma phenomenon at a range of locations for over two decades, and in this study a recently developed method is utilised to extract AKR bursts from WAVES data, enabling quantitative examination of AKR emission over statistical timescales.