



New two-dimensional UHF radar observations of space weather at the Jicamarca Radio Observatory

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A 14-panel version of the Advanced Modular Incoherent Scatter Radar (AMISR-14) has been deployed at the Jicamarca Radio Observatory in Peru. Due to technical difficulties, however, only a few initial observations could be made with the system. These initial observations, however, served to show the potential of the system for two-dimensional studies of ionospheric irregularities [1,2], an important component of space weather. More recently, repairs have been made and new experiments were possible. One of these experiments explored the electronic beam steering capability of the system for new two-dimensional coherent scatter radar observations of sub-meter F-region ionospheric irregularities. In this presentation we will describe a F-region radar mode that provides new observations of the spatio-temporal variability of F-region irregularity structures including those associated with equatorial plasma bubbles (EPBs). Figure 1 shows an example of the two-dimensional observations made by AMISR-14. It shows the morphology of the radar signature of an EPB (radar plume) on the magnetic equatorial plane. EPBs are recognized as a dramatic variation in the low-latitude geospace conditions at ionospheric heights; associated with some of the most intense impacts on radio systems. During the presentation we will discuss how these new observations complement other types of measurements at Jicamarca and how they can benefit studies of F-region irregularities and space weather at low latitudes.

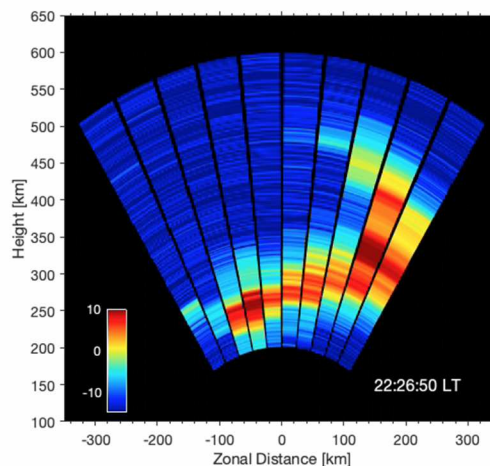


Figure 1 – Example of two-dimensional coherent backscatter radar observations of F-region irregularities made by the new AMISR-14 F-region mode on August 30, 2021.

References

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