

Recent High-Altitude ISR Experiments at Jicamarca

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In an attempt to reproduce experimental results obtained in the early days of operations, incoherent scatter measurements have been made at the Jicamarca Radio Observatory extending to altitudes of $L=2$. The methodology involves using a combination of pulses including pulses as long as 4 ms. Electron density profiles have been obtained using matched filtering and other filtering schemes, and parameter estimation is being conducted using full-profile analysis. The modern-day experiments are complicated by systemic, time-dependent bias in the noise estimators as well as by clutter from satellites and space debris, including a geosynchronous satellite. Ultimately, experiment performance comparable to what was achieved in the original experiments can be achieved and should be surpassed in future experiments when all four of the Jicamarca transmitters will be utilized. Results from the high-altitude experiments should be directly comparable to magnetoseismic observations of plasmaspheric content, both incisive tools for diagnosing storms.