

Multi-beam incoherent scatter radar modes at the Jicamarca radio observatory

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Abstract

The modularity of the main antenna array at the Jicamarca radio observatory allows the implementation of multi-beam incoherent scatter radar modes. The main goal of these modes is the estimation of the different ionospheric plasma parameters simultaneously. By interleaving observations pointing perpendicular and off-perpendicular to the Earth's magnetic field, different regimes of magneto-ionic propagation and incoherent scattering are probed in order to increase the sensitivity of our radar to measure plasma densities, electron and ion temperatures, and vertical and zonal plasma drifts. In this presentation, we will describe different radar configurations and the results obtained with them, we will also compare the different techniques based on the statistical uncertainties of the estimated parameters.