

High Frequency Spectrum Occupancy Measurements for Alice Springs.

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Abstract

The Frequency Management System (FMS) of the Jindalee Over-the-Horizon radar near Alice Springs has been used to collect synoptic data relevant to high-frequency (HF) propagation since 1984. In particular, the FMS Background Noise Monitor (BNM) has recorded background noise data levels using omni-directional antennae in each 1-MHz band over the frequency range 5 to 30 MHz and the Spectrum Monitor (SM) has recorded the power levels in every 2 kHz channel over the same frequency range using the same antennae. Prior to 2000, the BNM and SM scanned this frequency range four or five times every hour. The BNM and SM data can be combined to make measurements of spectral occupancy to determine the availability of clear channels for use by HF communication links or HF radar. This paper compares the number of clear channels in the high-frequency band of the spectrum for every hour of every month in 1997 with the same data for 1986. Without exception, there were significantly more clear channels available in 1997 than in 1986. Clear channel statistics were also generated for 1985, 1987, 1996 and 1998 to check this result. Examination of the data for these years confirmed that there were more clear channels available in the first three years of the current sunspot cycle (i.e. number 23) than the previous one.