

Empirical Models of the Ionosphere



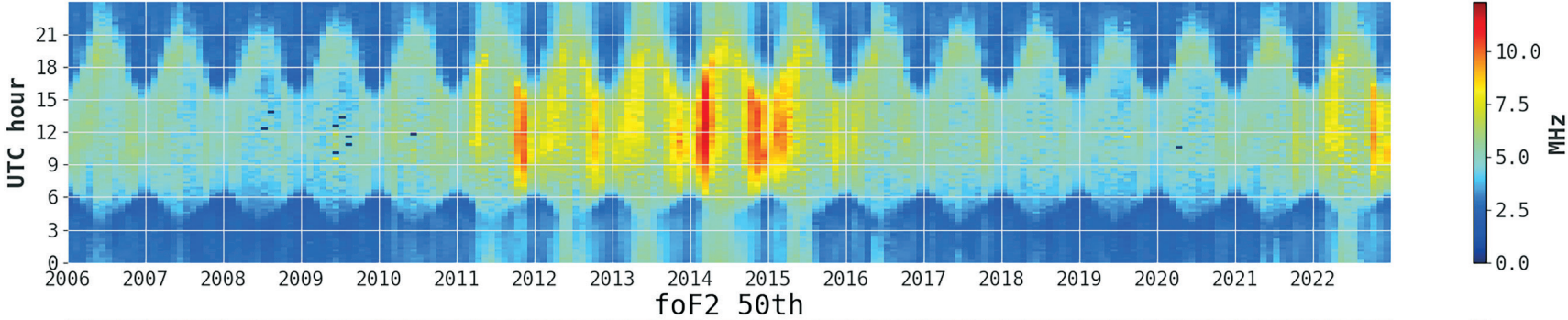
Forecasting the ionospheric plasma frequency plays a critical role in the operation of radio communications and radar systems. We aggregate several decades of observations of ionospheric measurements and build empirical models of the plasma frequency peak.

These time series illustrate the time-varying distributions of the peak plasma frequency parameter, foF2, over the course of nearly two full solar cycle progressions. Upper and lower deciles demonstrate how, in addition to the median, the variance in plasma frequency is highly dependent on exogenous forcing from solar activity. These time series inform us when building the next generation of data-driven forecasting models for ionospheric prediction.

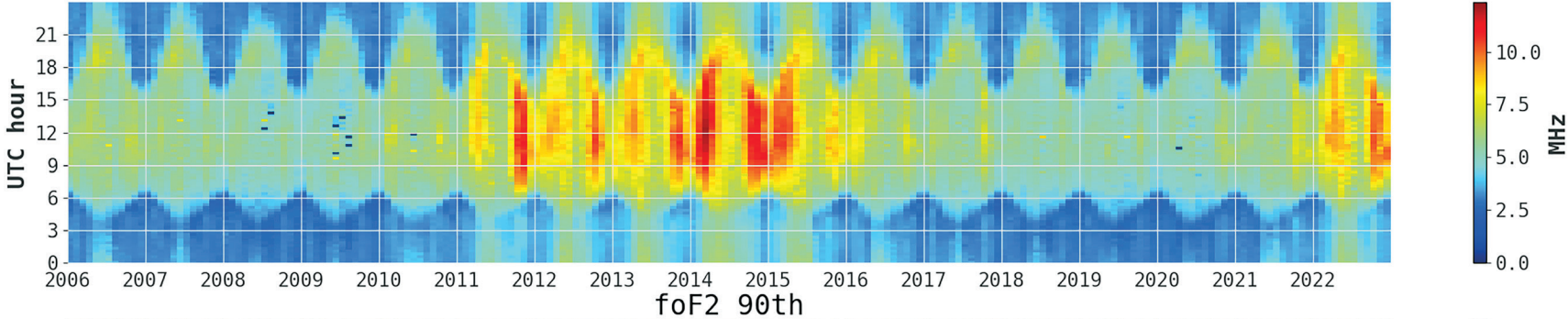
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Peak Plasma Frequency Percentiles Above Rome, Italy
foF2 10th



foF2 50th



foF2 90th

