



## The 2009-2012 Ionosonde and IRI2012 Variability of $foF2$ , $hmF2$ , $M3000F2$ , $B0$ , $B1$ Parameters over Warsaw

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### Abstract

This paper presents comparisons of variability and accordance of ionospheric parameters  $foF2$ ,  $hmF2$ ,  $M3000F2$ ,  $B0$ ,  $B1$  over the middle latitude station in Warsaw (52.21°N, 21.06°E). Examination included observational data from Space Research Centre ionosonde in Poland and International Reference Ionosphere (IRI) 2012 model, for the time period of increasing solar activity from 2009 to 2012. The analysis concerned: trend, monthly median differences in twenty-four hours variability, local minima and maxima. Results are presented as tables of semi-annual data, and plots of difference in four-year period. The study indicated good agreement of  $foF2$  and  $hmF2$  parameters. Underestimations of  $B1$  and  $M3000F2$ , variability of  $B0$  parameter in Bil-2000, Gul-1987, and ABT-2009 option, were taken into consideration.

**Key words:** ionosonde, IRI, ionospheric sounding.