Performance analysis and perspectives of automatic whistler detection

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Whistler method for studying plasma properties allowed
for plasmasphere discovery over a half century ago.
Up to now it is relatively cheap tool used in magnetospheric research
by means of remote diagnostics. However complexity of the whistler
detection algorithm and hitherto computing power were main
obstacles in creating automatic method.
Recent progress in automatic whistler detection renewed an interest
in remote diagnostics of magnetospheric plasma properties. That
makes us able to utilise vast amount of experimental measurements
of VLF emmissions and an almost real time diagnosis of plasma parameters.

Whistlers travelling many earth radii carry the information about the
environment through which they propagate. The key information that
can be derived from whistlers is the electron density concentration on
the equatorial plane.

We developed an automatic whistler detection algorithm
and analysed its performance: its sensitivity on electron
concentration and magnetic field models, ability to seperate
overlaping whistler traces.
The algorithm was tested on synthetic spectrograms. Here we
present the results.