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Separate lines in MLR event can come from different source regions

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Magnetospheric line radiation occurs at frequencies below a few kHz and consists of several spectral lines having quite similar widths from a few Hz up to a few hundred Hz. The lines change frequency in time in quite similar way. Wide lines can have very narrow band internal structure and at least once periodic intensity variation of lines has been seen. The recent ground based and simultaneous satellite results have shown that the same MLR can cover simultaneously wide longitude and latitude range and can be seen at both hemispheres. The angle of arrival analysis using ground based measurements shows in such case that the signal arrives from distributed source and no structure in angle of arrival distribution can be identified. On 04 March 2008 at about 08.40-09.00 UT, however, a different kind of MLR event occurred, which shows very clear structure in angle of arrival distribution. The frequency coverage was about 1000-3000 Hz. The whole angle of arrival cone is about 50 degrees and the individual lines come from slightly different directions. The whole source region moves slowly during the event. Polarization is right-handed and quite circular. Mode 1 cutoff of the Earth-ionosphere waveguide is not seen and thus the source region was not far from the zenith of the measuring site. This very first event of the kind is described here in detail.