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Combining incoherent scatter radar data and IRI2007 to monitor the open-closed field line boundary during substorms.

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The size of the polar cap, and hence the amount of open magnetic flux contained within it, is a very important quantity when it comes to understanding the substorm process as well as reconnection rates in general. Ground-based proxies of the open-closed field line boundary (OCFLB) have therefore been of great interest in recent years. In this work we build on previous studies by Aikio et al (e.g. Ann. Geophys., 24, 1905-1917, 2006) which use a combination of EISCAT electron temperature measurements from the mainland and Svalbard to track the motion of the OCFLB. We demonstrate whether using the International Reference Ionosphere model (IRI2007) can enhance this method and make it applicable to other incoherent scatter radars. In particular we make use of EISCAT data to investigate the electron temperature signatures of the OCFLB during a large number of substorms.