

A comparison study of the polar cap and auroral zone ionosphere

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Ionospheric parameters are known to vary strongly during different conditions such as season, time of day, solar and geomagnetic activity. Data from the EISCAT radar systems in both Northern Scandinavia and Svalbard now covers several decades, and it is therefore suitable for studying variations of parameters in the high latitude ionosphere. In this work, we present the characteristics of the electron density and ion temperature from the mainland system and the ESR during different conditions. The purpose of this study is to understand similarity/difference of the polar cap and auroral zone ionosphere. In particular, we focus on determining how solar and geomagnetic activities affect electron density depletion and enhancement regions during different seasons. In addition, we will show how well the IRI model is able to reproduce the observed characteristics of the electron density and ion temperature in the polar cap and the auroral zone ionosphere.