Whistler and FLR density calibration

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One of the major objective in PLASMON (http://plasmon.elte.hu) project is to provide plasma densities for data assimilative modeling of plasmasphere from two ground based measurements: whistlers and field line resonances (FLRs). The whistler inversion method used in this procedure includes various model, including wave propagation, magnetic field, field aligned density distribution and equatorial electron density models. The latter one is a special one used for multiple-path whistler groups.

As one can obtain electron densities from whistler inversion and plasma mass densities from FLRs, the ion composition would be required to connect the to dataset (that are intended to use in the plasmasphere model), which is rarely known or available. Therefore we have developed a method for cross calibration of the data from two sources. It is based on physics based and experimental field aligned plasma density distribution models as well as on comparison with in situ wave and density (IMAGE and Van Allen Probes) measurements.