Geophysical Research Abstracts
Vol. 20, EGU2018-11747, 2018
EGU General Assembly 2018

Spectral forms of whistlers observed by Juno in the topside ionosphere of Jupiter

Ondrej Santolik (1,2), Ivana Kolmasova (1,2), Masafumi Imai (3), Donald A. Gurnett (3), George B. Hospodarsky (3), William S. Kurth (3), John E. P. Connerney (4), and Scott J. Bolton (5)

(1) IAP CAS, Prague, Czechia (os@ufa.cas.cz), (2) Faculty of Mathematics and Physics, Charles University, Prague, Czechia, (3) Department of Physics and Astronomy, University of Iowa, Iowa City, Iowa, USA, (4) NASA/Goddard Spaceflight Center, Greenbelt, MD, USA, (5) Space Science Department, Southwest Research Institute, San Antonio, Texas, USA

Lightning generated electromagnetic waves have been discovered in the dense plasma of Io torus by Voyager 1. Original short impulsive signals from Jovian atmosphere were dispersed by their passage through the plasma medium into the form of whistlers at time scales of several seconds and at frequencies of several kHz. The unique polar orbit of the Juno spacecraft allows us to observe whistlers in the topside ionosphere very close to Jupiter. As their path through the dense plasma is short, the accumulated dispersion is low, and the time scales of these whistlers decrease to only several tens of milliseconds. Two-component electromagnetic measurements of the Juno Waves instrument allow us to observe different spectral forms of whistlers at these time scales, including the proton whistlers which have not been previously observed at Jupiter. Comparison of their observed frequency-time structure with calculations of their frequency dependent group delay provides us with a possibility to estimate parameters of the topside ionosphere of Jupiter.