



## **Reliable real-time assessment of the Earth's global ionosphere**

Bodo Reinisch

Lowell Digisonde International & University of Massachusetts, Lowell, US  
(STCE Visiting Fellow, Royal Meteorological Institute, Belgium)

Dynamic variations in the ionospheric electron density distribution result in significant changes in the propagation characteristics of radiowaves in the ionosphere. Such variations can falsify GPS location results and disturb ionospheric and transionospheric communication. Inversely, measurements of changes in the ionosphere can reveal space weather activities. Real-time assessment of the ionospheric plasma redistribution is required for many applications. Ironically it is the old workhorse of ionospheric research, the ionosonde that is offering new solutions for this task. A global network of more than 70 digital ionosondes is forming the Global Ionosphere Radio Observatory (GIRO), each one simultaneously measuring the vertical electron density profile every 15 minutes. Real time assimilation of these data into a climatological model, the International Reference Ionosphere (IRI), produces the Real-Time Assimilative Model (IRTAM). The RMI Geophysical Centre in Dourbes is an active member of this development project.