



Seismo-electromagnetic variations in the VLF/LF sub-ionospheric waveguide before, during and after the April 6, 2009 earthquake at L'Aquila

K. Schwingenschuh (1), F. Simoes (5), A. Rozhnoi (2), M. Friedrich (4), G. Stangl (1), M.Y. Boudjada (1), B.P. Besser (1), H. Eichelberger (1), G. Prattes (1), and P.F. Biagi (3)

(1) Space Research Institute, Graz, Austria (konrad.schwingenschuh@oeaw.ac.at), (2) IFZ, Moscow, Russian Federation, (3) University of Bari, Bari, Italy, (4) University of Technology, Graz, Austria, (5) NASA/GSFC, Space Weather Laboratory (Code 674), Greenbelt, USA

The study of seismo-electromagnetic phenomena is part of an interdisciplinary approach to provide an early detection of earthquakes. The Graz VLF facility is part of a European seismo-electromagnetic VLF/LF network. The radio paths between the European VLF/LF transmitters and receivers are used in order to investigate the lithospheric-ionospheric coupling of European active seismic regions. The ULF signals emitted by the lithosphere in seismic active regions or generated in the magnetosphere and attenuated in the ionosphere above seismic active regions are investigated too.

Mainly the pre-, co- and after- seismo-electromagnetic parameters of the 6-April-2009 earthquake in the Abruzzo region in Central Italy near L'Aquila have been studied.

A major emphasis is on the comparison of observations and theoretical calculations of the amplitude and phase variations of the sub-ionospheric, seismo-electromagnetic VLF radio signals received in Graz, Bari and Moscow. A combined analytical and computer model is being developed in order to determine the influence of seismo-electromagnetic parameters, on the wave properties of the various radio paths used for the experimental investigations. A similar combined observational and modelling approach is used to differentiate the influence of the seismicity on the radio path from phenomena of non-seismic origin, e.g. atmospheric or ionospheric processes.