



Lucilla Alfonsi

Istituto Nazionale di Geofisica e Vulcanologia (INGV), Itália

Lucilla Alfonsi é M.Sc. em física pela Universidade Sapienza de Roma, Itália e Ph.D. em geofísica pela Alma Mater Studiorum, Università di Bologna, Bolonha, Itália. Atualmente, atua na investigação de irregularidades ionosféricas a partir de observações em solo e in situ, bem como em modelagem ionosférica.

Título da Palestra: “The study of the ionospheric irregularities on a global scale“

Palestrante Convidada da Sessão Ionosfera Terrestre e Planetárias:

Resumo: The Istituto Nazionale di Geofisica e Vulcanologia (INGV) has a long tradition of probing the ionosphere via HF sounding, inherited by its founder Guglielmo Marconi. Thanks to that legacy, INGV matured a consolidated experience in the monitoring of the upper atmosphere and in the comprehension of the physics ruling the Sun-Earth relationship. Besides the traditional observation by the ionosondes started in the '30s, INGV performs measurement of the ionosphere through GNSS ground-based receivers since 2003. The stations are located in the Mediterranean area, at high and low latitudes all over the world, allowing a global description of the ionospheric plasma reconstructed through a regional assessment. Furthermore, thanks to its international collaborations with academic entities from European and extraEuropean Countries, such as Brazil, South Africa, USA, Canada and South-East Asia, INGV has access to additional ground-based and satellite data. The measurements are analysed by means of different approaches to derive information on the effects of the solar wind-magnetosphere-ionosphere interplay in terms of formation and evolution of ionospheric irregularities. The ionosphere is considered irregular when its electron density is unevenly distributed, presenting regions of depleted or enhanced density, termed irregularities. The study of the irregularities is necessarily based on a multi-instruments and multi-disciplinary approach, leveraging on in-situ (from satellites and rockets) and ground-based data providing information on the Sun, the solar wind, the magnetosphere, the ionosphere. Where the data are scarce, or completely missing, the use of theoretical and semi-empirical models can support the investigation. INGV developed good skills in this framework, contributing to advance the understanding of physical mechanisms triggering the electron density gradients, the scintillations, the ionospheric absorption, the positive/negative ionospheric storms, the travelling ionospheric disturbances. This presentation will give an overview of the capabilities recently reached in probing, modelling and investigating the ionospheric irregularities at global scale as a matter of discussion and further collaboration with the audience.

