

The Earth's Ionosphere and Thermosphere and Ionospheres of Other Planets

Jean Lilensten

Laboratoire de Planétologie de Grenoble, France

[jean.lilensten@obs.ujf-grenoble.fr]

Abstract

We will first review the solar energy characteristics at the top of the atmosphere (around 1000 km), both in term of radiation and particles.

We will then write the basic equations describing how this energy is released into the atmosphere to dissociate, ionize, excite and heat to build these two components of the upper atmosphere called the ionosphere and the thermosphere.

We will review the different characteristics of this atmospheric layer at Earth (with its sub-layers): plasma densities and temperatures, composition, conductivity, dynamics.

We will then show the making of the aurora by examining the different desexcitation processes.

Finally, we will review the planetary thermospheres and ionospheres, pointing out the similarities and the differences.

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Time: 09:00-13:00

Room: Kastler Lecture Hall @ Adriatico Guest House

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Jean Lilensten is Director of Research at CNRS (France), in the newly created Institute for Planetology and Astrophysics in Grenoble (IPAG). He is a specialist of modelling planetary ionospheres and thermospheres. In the case of the Earth, this extend to the domain of Space Weather in which J. Lilensten has some implication. His recent discoveries are the existence of doubly charged ions in several planetary ionospheres (Earth, Venus, Mars and Titan), the origin of the atmospheric detached haze layers on Titan, and the existence of polarization in the Earth thermospheric emissions. He participates to several ground experiments (radar and optical). He is very deeply involved in outreach activities.