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Preface

A symposium on the atmospheres of the giant planets and their satellites, as well as on Pluto (PS6.02) was held in Nice, France, during the European Geophysical Society meeting in March 2001, as part of the Planetary and Solar System Sciences programme. A good number of scientists (more than 30) presented their research in the oral and poster sessions. Five papers from this symposium are included in this special issue of *Planetary and Space Science*. All papers were reviewed by at least two experts, according to the standard policy of the journal. These papers cover a wide range of topics in a thorough up-to-date manner, dealing with the atmospheric aspects of the giant planets and Titan. Recent progress in analyzing observational and space mission data, as well as laboratory and theoretical work related to the outer planets systems and Titan are included.

The paper by Therese Encrenaz summarizes the ISO observations of the stratospheres of the giant planets, with special emphasis on new discoveries including the first ever detection of externally delivered oxygen species and detection of certain new hydrocarbons. From the currently known composition of Jupiter's atmosphere, Sushil Atreya and colleagues argue for the cold icy planetesimals as being the preferred original carriers of the heavy elements to Jupiter, but point out other possibilities including clathrate hydrates formed in Jupiter's feeding zone. On the basis of Jupiter's atmosphere, Atreya et al., also suggest in this paper that the recently detected sodium on an extrasolar giant planet is most likely of an extraplanetary origin. Ralph Lorenz and co-authors make a case that

amateur astronomy observations can provide scientifically useful quantitative information, even for the giant planets and Titan. A profound review of Titan's atmospheric aspects is given by R.E. Samuelson in a paper that contains an attempt to physically interpret and explain the main processes involved in such a complex "atmospheric engine". In view of the upcoming Cassini/Huygens mission to encounter the Saturnian system in 2004, the paper by B. Grieger et al., gives a description of some of the questions that will be addressed by the Descent Imager/ Spectral radiometer (DISR) on board of the Huygens probe.

As a whole, in the following pages there is a fair amount of both original and review material covering the current state of our knowledge about the giant planetary systems and the world of Titan, in particular.

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