

## **Atmospheric Composition of Hot Jupiters : Insights from the History of the Solar System**

D. Turrini, M. Barbieri, F. Altieri, D. Grassi, A. Adriani, G. Piccioni

Ground and space based observational facilities are supplying us with an ever-increasing number of extrasolar planets and planetary systems. As a consequence, the focus in the exoplanetary quest for knowledge is starting to shift from their discovery to their characterization. However, our understanding of the mechanisms that can shape the atmospheric composition of extrasolar planets in general and Hot Jupiters in particular is still quite limited. Here we illustrate two case studies based on processes studied in the Solar System where, even with simple toy models, we can gain a better insight on the link between atmospheric composition and the history of giant planets. In the first case study we will use Jupiter as our template to discuss how the formation of a giant planet perturbs the protoplanetary disk and how, in turn, this can lead to an extended phase of late accretion and enrichment of the giant planet. In the second case study, prompted by the recent results of Hershel linking the presence of water in Jupiter's stratosphere to the impact of comet Shoemaker-Levy 9, we will discuss the delivery of volatile elements to Hot Jupiters by means of cometary impactors.