



Modeling of the solar wind interaction with Mars: first results of high spatial resolution hybrid simulations.

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The solar wind interaction with the Martian neutral environment is investigated by means of three dimensional hybrid simulations. In such formalism, ions have a kinetic description while electrons are treated as an inertialess fluid, ensuring the neutrality of the plasma and contributing to currents and pressure terms. This model has been successfully used to describe the near ionized environment of Mars (Modolo et al, 2005; 2006). The main drawback of the hybrid formalism is the coarse spatial resolution (about 150 km), mainly restricted by computational limitation for sequential programs (memory and CPU). In the frame of the HELIOSARES project (PI F. Leblanc) dedicated to the modeling of Mars environment (neutral and charged species) from the lower atmosphere to the solar wind, a modeling effort of parallelization has been conducted. The latest progresses are reported and simulations results with a uniform spatial resolution of 75 km are presented.