



Relation between solar surface and coronal processes - simulations and spacecraft observations

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Ongoing HINODE and STEREO spacecraft observations provide better than ever information about the processes occurring at the solar surface and those in the solar corona as well as in the heliosphere. Numerical simulations are necessary to verify their possible causal relationship.

We review appropriate modelling approaches able to describe major coupling effects between the photosphere, the chromosphere and the outer atmosphere of the Sun in comparison with HINODE and STEREO spacecraft observations. In particular we draw attention at topological features and at the evolution of the magnetic helicity and preceding eruptions of Flares and CMEs.