



## **Evaluation of the plasma pressure during the magnetic storm**

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The strength of a magnetic storm is strongly affected by the plasma pressure in the ring current. In this study, we estimate the contribution of different ion species at two energy ranges to the plasma pressure both in the ring current and in the magnetotail during the magnetic storm observed by the Cluster mission from 27 September until 3 October 2002. The comparison of two different regions gives us a hint on which mechanisms are effective in populating the ring current and on the location of ion sources. We estimate the contribution of the derived plasma pressure to the Dst index and compare it with the observed one. We compare the derived from Cluster observations plasma pressure in the ring current for the magnetic storm event with simulations of the Space Weather Modeling Framework (SWMF), which take into account ionospheric ion outflows from two different models. We assess our current capability to reproduce the ionosphere-magnetosphere coupling.