

# RESEARCH TO OPERATIONS IN SPACE WEATHER – SOLAR WIND NEAR EARTH

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## **Abstract:**

The understanding and prediction of the risks associated with the solar activity have gained importance during the last decades. Thus, the characterization of the response of the Earth's environment is fundamental to be able to mitigate its negative effects. In particular, one of the most important phenomena affecting space weather are originated from coronal instabilities, producing interplanetary coronal mass ejections. In this work we will explore and make progress in the understanding of ICMEs near Earth, through the analysis of in-situ data of the interplanetary properties and the use of a list of ICME events (Richardson & Cane, 2010), using statistics tools such as the Receiver Operating Characteristic (ROC) curve. The ROC curve is a technique for visualizing, organizing and selecting classifiers based on their performance (Fawcett, 2006). The main purpose of this work is to generate algorithms to be used in operative space weather products that allow to characterize the solar wind in real-time at 1 au, and at the same time that will serve as complementary tools for the detection of ICMEs before they hit Earth.

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## **References:**

Richardson, I. G., y H. V. Cane, 2010: Near-Earth Interplanetary Coronal Mass Ejections During Solar Cycle 23 (1996 - 2009): Catalog and Summary of Properties. *Solar Physics*, 264 (1), 189–237, doi:10.1007/s11207-010-9568-6.

Fawcett, T., 2006: Introduction to roc analysis. *Pattern Recognition Letters*, 27, 861–874, doi:10.1016/j.patrec.2005.10.010.

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