

# Development and operation of Space Weather instruments carried out by LAMP (Laboratorio Argentino de Meteorología del espacio)

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## Abstract:

In this work we present a summary of activities related with technological development and operation of Space Weather instruments carried out by the LAMP group (Laboratorio Argentino de Meteorología del espacio, Argentinean Space Weather Laboratory,

[http://www.iafe.uba.ar/u/lamp/grupo\\_landing\\_page.html](http://www.iafe.uba.ar/u/lamp/grupo_landing_page.html)).

In the context of the increasing demands on space weather activities, at international and national levels, LAMP was founded in 2011 by Sergio Dasso (the group director) and since 2020 is the Argentine regional warning center of the international consortium of space weather organizations (ISES). As part of their activities from 2012, LAMP designed, developed, constructed, and characterized the site, to deploy a Space Weather laboratory at the Argentine Marambio base, in the Antarctic Peninsula [Dasso et al., 2015]. The laboratory was finally deployed and installed during January-March, 2019 [Gulisano et al. 2021]. This project was an inter-institutional effort involving mainly three institutions: Instituto de Astronomía y Física del Espacio (IAFE), Instituto Antártico Argentino (IAA), and Departamento de Ciencias de la Atmósfera y los Océanos (DCAO) of the Faculty of Exact and Natural Sciences of Universidad de Buenos Aires (FCEN-UBA). One of the instruments inside the LAMP Antarctic laboratory is a Water Cherenkov Detector (WCD) [Santos et al., 2021], which is also a node of the LAGO (Latin American Giant Observatory) collaboration, and it was specially developed for Antarctic conditions, based on the surface detectors of the Pierre Auger Observatory. Additional instruments are also installed in the LAMP Antarctic laboratory, such as a GPS system for making time stamp of the observations, a meteorological station, an inexpensive fixed magnetometer and a portable one, for space weather monitoring. All the observations made by the instruments installed at Marambio are available in our servers at Buenos Aires, in 5-minutes real time. In another Argentine Antarctic bases LAMP also has scientific instruments.

At the Antarctic San Martin base: a flux gate magnetometer, a riometer and a vertical ionosonde. At the Antarctic Belgrano II base (the southern Argentine base): a protonic magnetometer, a flux gate magnetometer, a riometer and, an ionosonde.

In the present work, we will review the LAMP activities on developing and operations of space weather instruments, making emphasis on those installed at Antarctic locations. Future development to expand LAMP observations in Antarctica will be also described.

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**References:**

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