

# International Workshop on Machine Learning for Space Weather: Fundamentals, Tools and Future Prospects



**7-11 November 2022**  
**This is a hybrid meeting**  
**Buenos Aires, Argentina**

Further information:  
<https://indico.ictp.it/event/9840/>  
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This workshop aims to foster Space Weather research through the application of Machine Learning (ML) and statistical techniques by providing the participants with theoretical and practical training on Space Weather and Machine Learning fundamentals, with hands-on tutorials.

## Description:

The complex and highly coupled Sun-Earth system is constantly being monitored by ground and space-based instrumentation which produces a huge amount of daily data. These datasets, in addition to the increasing computing capability, are regularly used to produce forecasting models and other Space Weather products. In particular, Space Weather data analysis and modeling using ML techniques are showing promising results.

The purpose of the workshop is to give theoretical and tailored practical training on Machine Learning fundamentals, its application to Space Weather and future prospects, covering also important topics like Research to Operations (R2O), explainable Artificial Intelligence (XAI) and trustworthiness and ethics.

## Topics:

- Space Weather fundamentals.
- Space Weather Gaps and applications that can be tackled with Machine Learning.
- Machine Learning Basic Concepts and Tools.
- Deep Learning and current trends
- Machine Learning techniques applied to Space Weather and their main challenges
- Discussion on R2O, XAI, trustworthiness and ethics in ML.
- Open source tools for ML (Python, scikit-learn, Keras, etc).

Applicants can submit a 'Research Abstract'.  
A number of abstracts will be selected for a contributed talk.

## How to apply:

Online application:  
<https://indico.ictp.it/event/9840/>

Female candidates are encouraged to apply.

## Grants:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from Latin America and other developing countries.  
There is no registration fee.

## Directors:

S. GADIMOVA, UNOOSA-ICG  
K. GROVES, BC  
Y. MIGOYA-ORUÉ, ICTP  
M. G. MOLINA, FACET-UNT / CONICET

## Local Organiser:

M.G. MOLINA, FACET-UNT / CONICET

## ICTP Scientific Contact:

B. NAVA, ICTP

## Deadlines:

**4 September 2022**

for in person participants

**30 September 2022**

for online participants



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