COSPAR

Panel on Machine Learning and Data Science (PMLDS)

15 avril 2026

Chair: Yuri Shprits (Germany), 2024-2028

In July 2022, Yuri Shprits, Chair of Sub-Commission D3: Magnetospheres, made a proposal in Athens during the 44th COSPAR Scientific Assembly (COSPAR 2022), to establish a Panel on Machine Learning and Data Science (PMLDS). The proposal was discussed at the annual meeting in March 2024 and endorsed by Scientific Commission D, by Sub-commission D3 and by the Panel on Radiation Belt Environment Modelling (PRBEM) Business Meeting that took place on 19 July 2024 in Busan, South Korea. Yuri Shprits is also co-Chair of PRBEM. The COSPAR Bureau has agreed to set up this new Panel on Machine Learning and Data Science. A joint session is already proposed for COSPAR 2026 in Florence, Italy, in coordination with the Panel on Innovative Solutions (PoIS)—PoIS deals with other subjects and takes different kinds of impetus and directions, e.g. innovation, AI, etc.

The need for a new COSPAR Panel stems from the rapid growth of Machine learning (ML) and Data Sciences (DS) as fields of research. ML and DS have advanced various domains of industry, such as fraud detection, web search results, credit scoring, automation, email spam filtering, and, most recently, space research. Machine learning tools are effectively used for problems of regression and classification including image analysis and development of empirical models as well as intelligent AI that helps understand the underlying processes. AI tools can help develop algorithms to analyze data, combine sparse data into global empirical models, help calibrate instruments, develop empirical versions of the numerically expensive models etc. for a number of COSPAR related fields such as Earth observations, analysis of data from lunar and planetary missions, space observations of the atmosphere, ionosphere, and magnetosphere, life sciences, material sciences, human health risk modelling and telemedicine, and help understand fundamental processes in space. An increasing amount of data from multiple sensors requires the development of new methods and tools that can enable the storage, sharing, access, and searching of data.

This panel’s events will address the growing number of advances in machine learning, giving a platform to present the latest techniques, tools and results emerging from this field. It will involve scientists and ML/DS experts from various COSPAR commissions and from panels. While discussions on AI are certainly taking place in all commissions of COSPAR, it is most important and timely to have a central focused panel, where the tools, methods, and approaches of AI and DS will be discussed and shared.

Intercommission/Panel/Task Group Liaisons:

SC B: Hajime Yano (Japan), 2025 – 2029
SC E: Brigitte Schmieder (France), 2025 – 2029
PCB: Carlos Gabriel (Spain), 2025 – 2029
PCSS: Amal Chandran (USA), 2025 -2029
PoIS: Aura Roy (USA), 2026 – 2030
PoIS: Eric H. Smith (USA), 2026 – 2030