



SIFAU – FIRE INTELLIGENCE SYSTEM FOR WETLANDS

*Transforming environmental data into
decisions to prevent fires in the Pantanal*

The Pantanal, the largest tropical wetland on the planet, is shaped by natural flood and fire cycles. However, extreme events, climate change, and the accumulation of fuel load have increased the risk of large-scale fires.

In this context, **Wetlands International Brazil** and **Mupan – Women in Action in the Pantanal**, under the Corredor Azul Programme, together with the **Laboratory for Environmental Satellite Applications (LASA)** at the **Federal University of Rio de Janeiro (UFRJ)**, developed **SIFAU – the Fire Intelligence System for Wetlands**. The platform integrates environmental, climate, and territorial data to support fire prevention and decision-making related to **Integrated Fire Management (MIF)** in the Pantanal.



SUPPORT



The system is the result of a partnership between **Wetlands International Brazil**, **Mupan – Women in Action in the Pantanal**, and the **Laboratory for Environmental Satellite Applications (LASA)** at the **Federal University of Rio de Janeiro (UFRJ)**, with support from the **Long-Term Ecological Research Programme (PELD)**, coordinated by the **Centre for Fire Studies in Wetlands (NEFAU)** at the **Federal University of Mato Grosso do Sul (UFMS)**, and institutional cooperation from the **Mato Grosso do Sul Institute for the Environment (Imasul)** and the **Mato Grosso do Sul Secretariat for Environment, Development, Science, Technology and Innovation (Semadesc)**.

The system brings together scientific information and geospatial data that make it possible to identify **safe conditions for the use of fire**, helping to reduce the risk of uncontrolled fires and strengthen territorial management strategies.

How the platform works

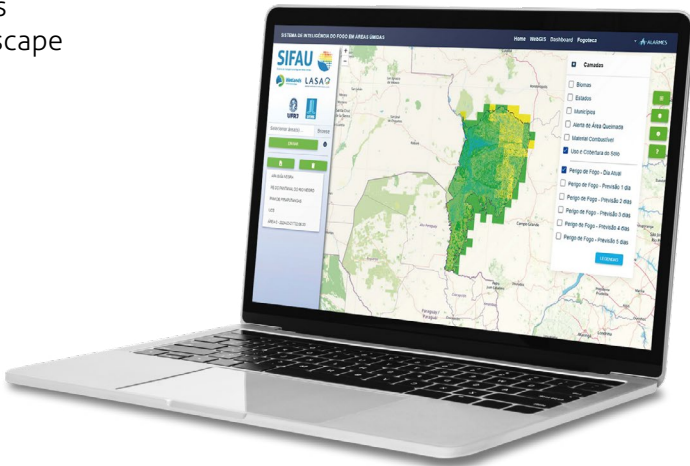
SIFAU combines different data layers that help users understand fire behaviour across the Pantanal landscape and guide management decisions.

The main types of data available include:

-  land use and land cover
-  fuel load accumulation (dry biomass)
-  rapid burned area assessment
-  fire weather danger forecast

The integration of this information makes it possible to assess **when and where fire can be used safely and in a controlled manner**, reducing the risk of large-scale fires.

The system also makes it possible to **anticipate fire danger conditions up to five days in advance**, expanding planning and prevention capacity.



Support for Integrated Fire Management

In the Pantanal, fire is part of both the biome's natural dynamics and traditional landscape management practices, such as the renewal of native pastures.

SIFAU supports the implementation of **Integrated Fire Management (MIF)** by providing data that make it possible to:

- plan prescribed and controlled burns more safely
- identify priority areas for preventive management
- guide strategies to reduce fuel load
- support territorial management decisions on rural properties, in conservation units and in traditional territories

Applications and results

Since its launch in 2023, SIFAU has been used as a strategic tool for fire management in the Pantanal.

Its main applications include:

Support for environmental licensing

The system is used by the **Mato Grosso do Sul Institute for the Environment (Imasul)** as a technical support tool for reviewing applications for prescribed and controlled burning.

Fire risk reduction

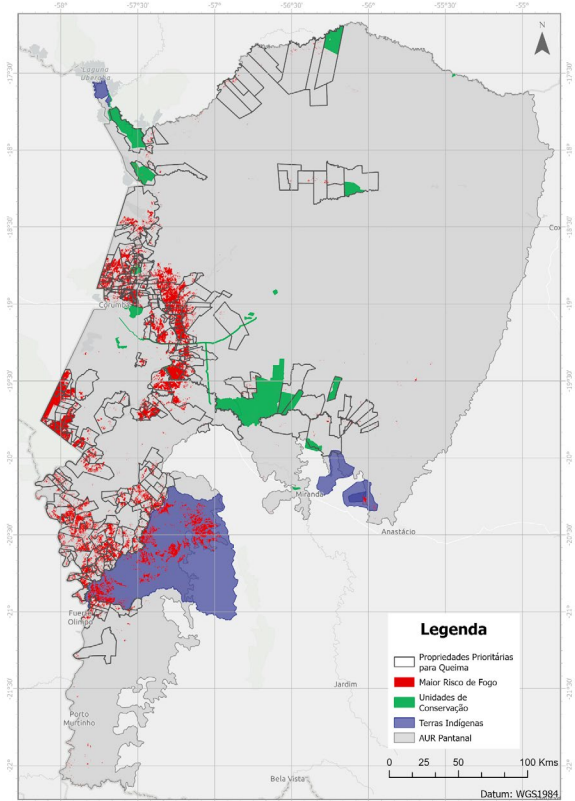
By indicating suitable conditions for the use of fire, the system helps minimise uncontrolled burning and prevent large-scale fires.

Planning of preventive actions

The information generated by the platform helps guide prevention and management strategies across different territories in the Pantanal region.

Scientific basis for public policy

The system also strengthens the development of fire management policies and climate change adaptation strategies.



Map of Priority Areas for Prescribed Burning in the Restricted Use Area of the Pantanal Floodplain. Released by Imasul in June 2025.

A tool for fire management in wetlands

The development of SIFAU results from coordination among **science, civil society and public authorities**, combining technical knowledge, environmental data and territorial experience.

The initiative is part of the **Corredor Azul Programme**, which works to protect the health and connectivity of the Paraguay–Paraná Wetland System, one of the largest river corridors in the world.

By expanding public access to strategic data and information, the system helps strengthen fire management governance, support public managers and rural producers, and promote sustainable practices in the Pantanal.



Why discuss fire management in the Pantanal?

The Pantanal evolved with natural flood and fire cycles. The problem is not fire itself, but **extreme and uncontrolled fires**, intensified by climate change and the accumulation of fuel load.

Integrated Fire Management (IFM) seeks to reduce these risks through planned strategies for prevention, monitoring and the controlled use of fire.

Tools such as SIFAU increase planning capacity and help build science-based solutions to protect wetlands, biodiversity and the ways of life that depend on the Pantanal.



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SUPPORT

