JUNON

A tailored solution of environmental digital twins to better understand natural resources and the impact of human activities in Centre-Val de Loire

WHAT IS A DIGITAL TWIN?

- Virtual representations of the region powered by real-time data
- Use of domain-specific, neural (AI), or hybrid models
- Monitoring and anticipating environmental changes: water, soil, air

FOR YOU TOMORROW, A TAILORED SUPPORT

Provided by specialists in natural environments and digital technologies, to:

- build new environmental digital twins in other regions
- develop specific applications
- integrate JUNON into existing professional tools

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DATA SOURCES

FUNCTIONNAL OBJECTS MODELS

EXAMPLES OF USE CASES

Air quality

- Identification of atmospheric pollution sources
- Hypothesis testing and evaluation of greenhouse gas reduction strategies (N_2O, CO_2, CH_4)

Wetlands

- Health risks related to ammonia, fine particulate matter, and ozone
- Wetland loss and restoration pathways

Water quantity

- Prediction of local impacts of climate change and consequences for ecosystems
- Forecasting drought risks and groundwater and surface flooding
- Anticipating water resource availability: abstraction points

Water quality

- Modeling and simulation of pollutant migration
- Supporting the sustainability of agricultural activities

Who is JUNON for?

	Experts & technicians	Managers & decision-makers	Communication & reporting
For what purpose?	Observe Monitor Develop	Manage Support regulatory processes	Showcase commitments Foster dialogue
With which tools?	Dashboards focused on a specific issue but connected to others Export, interoperability, and integration with existing tools	Visualization of the current situation Scenarios and evolution forecasts Ready-to-use content and visuals	Accessible summary interface

How is JUNON deployed?

1 Initial contact

- **Identification of challenges:**
  - Management of agricultural activities
  - Protection of people and property
  - Regional planning
  - etc.
- **Clarification of objectives:** planning & investments, regulatory compliance, communication, etc.

2 Definition of needs and use cases

- **Selection** of environmental parameters to monitor;
- **Definition** of indicators, scenarios, and expected outputs.

3 Platform configuration and calibration

- Model setup and data flow **configuration** (public and/or private);
- **Integration** with existing tools;
- **Creation** of dashboards tailored to user profiles.

4 Delivery, training, and follow-up

- **Deployment** of the tool;
- **User training** adapted to specific applications;
- **Scientific monitoring** and model updates over time.

the added value of JUNON

Scientific credibility: cutting-edge research (BRGM, CNRS, INRAE, universities, etc.)

Operational focus: expert companies & professional use cases

Integrated vision: air, soil & water interactions

Frugal AI: high-performance & responsible

AVEC LE SOUTIEN DE LA RÉGION CENTRE VAL DE LOIRE

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