



**HAL**  
open science

## **PESAa - Platform for studying Soil–Atmosphere Exchanges on agricultural soils An agro-environmental equipment for experimentation and acquisition of agro-environmental references**

Isabelle Cousin, Adeline Ayzac, Lionel Cottenot, Hervé Gaillard, Guillaume Giot, Agnès Grossel, Marine Lacoste, Christian Le Lay, Catherine Pasquier, Maud Seger

### ► To cite this version:

Isabelle Cousin, Adeline Ayzac, Lionel Cottenot, Hervé Gaillard, Guillaume Giot, et al.. PESAa - Platform for studying Soil–Atmosphere Exchanges on agricultural soils An agro-environmental equipment for experimentation and acquisition of agro-environmental references. Workshop “Knowledge’s frontiers in water unsaturated hydrogeosystems: interface dynamics, heterogeneities & couplings”, Jun 2019, Orléans, France. 2019. hal-02736215

**HAL Id: hal-02736215**

**<https://hal.inrae.fr/hal-02736215>**

Submitted on 2 Jun 2020

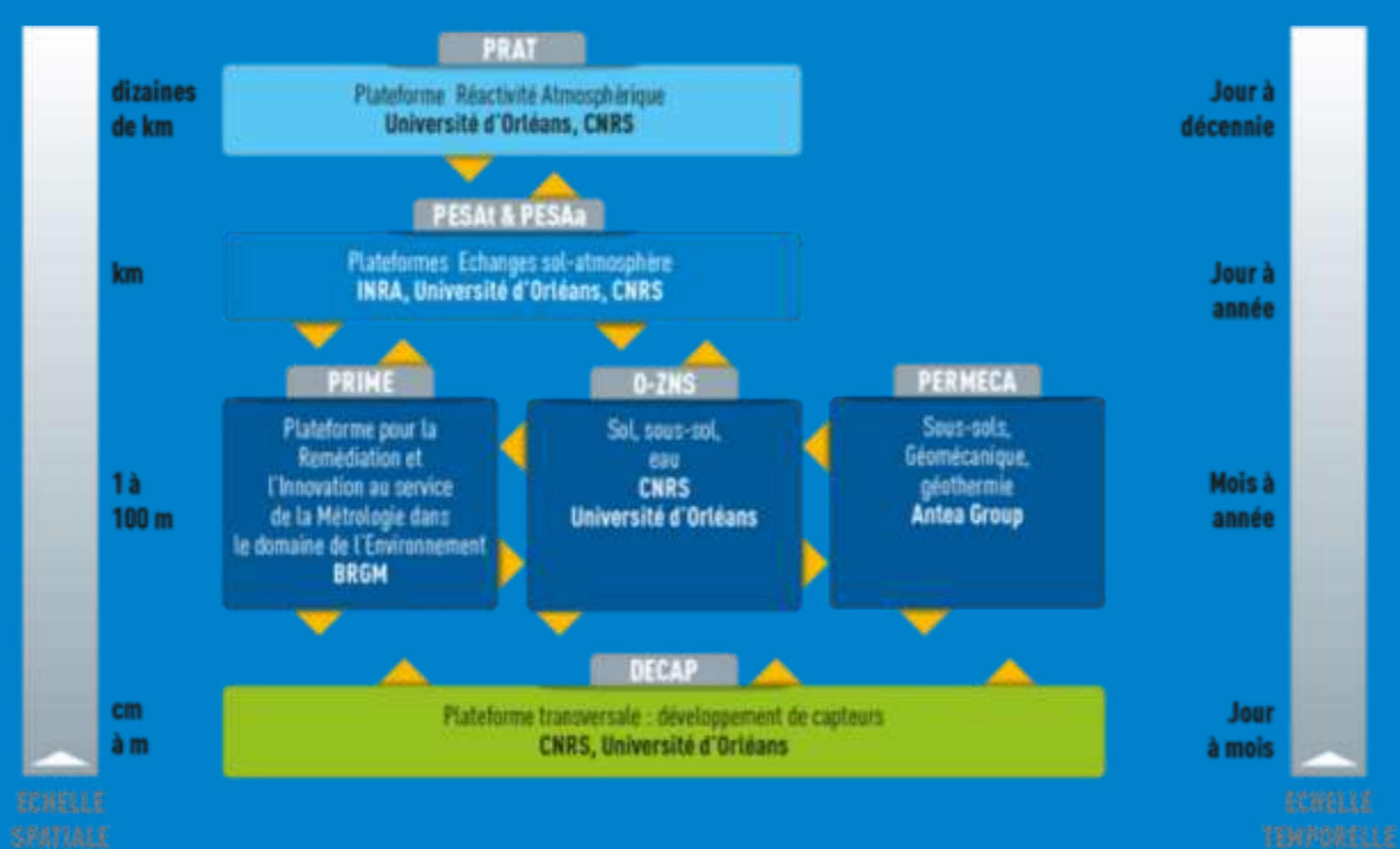
**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# PESAa - Platform for studying Soil–Atmosphere Exchanges on agricultural soils

## An agro-environmental equipment for experimentation and acquisition of agro-environmental references

I. Cousin, A. Ayzac, L. Cottenot, H. Gaillard, G. Giot, A. Grossel, M. Lacoste, C. Le Lay, C. Pasquier, M. Seger  
UR 0272 SOLS, Inra, Centre Val de Loire, Orléans, France



The PESA-a platform is dedicated to the characterisation of soil functions and services, especially gaseous and hydric exchanges between soils, water, and atmosphere, in agricultural contexts.

Experiments are conducted:

- in the laboratory under controlled conditions,
- at an Inra experimental plot (Nouzilly, 37),
- in an agricultural watershed (OS<sup>2</sup> site, 28),
- on your own sites



### Rainfall simulator and laboratory measurements of soil physical properties

- Simulated rainfall of 10 to 100 mm/h over a 10 m<sup>2</sup> surface; monitoring of soil temperature, soil water content, etc..
- Water retention curves, hydraulic conductivity curves;
- Electrical resistivity;



### Micro-meteorological device

- Continuous measurements of N<sub>2</sub>O, NH<sub>4</sub>, CO<sub>2</sub> emissions by agricultural fields ;
- Under development;
- Link with ICOS under study.



### Automated N<sub>2</sub>O fast-boxes

- Continuous measurements of N<sub>2</sub>O emissions by soils at the meter scale;
- Analyses of agricultural practices and soil effect on the N<sub>2</sub>O emissions; focus on fertilization mode and soil hydric functioning.
- Available 2019.



### Precision irrigation ramp



- Valley precision irrigation system
- Length of ramp: 145 m
- Agricultural field
- Role of irrigation in the production and regulation services provided by agro-ecosystems: crop yield, water infiltration and runoff, water quality, N<sub>2</sub>O and CO<sub>2</sub> emissions
- Available 2019.

Contact: Isabelle Cousin (Inra)  
Isabelle.Cousin@inra.fr

[www.plateformes-pivots.eu](http://www.plateformes-pivots.eu)