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# AnaEE-France research infrastructure services for experimental studies on soil biodiversity and associated ecological functions



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AnaEE-France (**A**nalysis and **E**xperimentation on **E**cosystems) is the french node of a European research infrastructure dedicated to experimental research on continental ecosystems. It gathers a set of platforms selected for their originality, their quality and their access to the scientific community. The Infrastructure offers clear access rules for a large set of services including in vitro, in natura experimental facilities, front hedge equipments, modelling platforms and data bases. In particular, a wide panel of complementary services is relevant for soil ecology and biodiversity.



The **SOERE ACBB** & the **SOERE PRO** are long-term experimentation sites (6) on grassland and arable land. Long term treatments have been applied. They are characterized by different levels of intensification or types of organic waste products leading to differentiated ecosystems. Each treatment is heavily instrumented to characterize biogeochemical cycles and biodiversity. They also give access to their data bases and archived samples.

<http://www6.inra.fr/qualiagro/Nos-partenaires/Le-reseau-SOERE-PRO>  
<http://www.soere-acbb.com>



The **GenoSol** platform is designed to provide a logistic and technical structure for the acquisition, conservation and characterization of soil microbial genetic resources (DNA) derived from wide-scale soil sampling (several hundred to several thousand samples corresponding to large spatial and/or time scales). It also provides an Information System on soil and environmental microbial diversity.

[http://www2.dijon.inra.fr/plateforme\\_genosol](http://www2.dijon.inra.fr/plateforme_genosol)

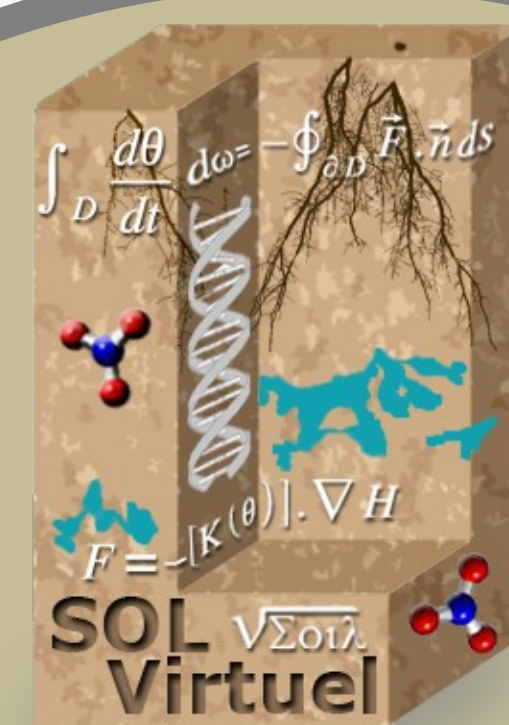


The **SOERE F-ORE-T** is a long term experimentation platform gathering 15 highly instrumented forest sites (10 in metropolitan France and 5 in the humid intertropical zone). Its aims are: to understand forest ecosystems functioning thanks to carbon stocks and fluxes, water and mineral elements analysis; and second, to evaluate their responses to change (climate, forestry, land use...).

<http://www.gip-ecofor.org/f-ore-t>



The **M-POETE** platform (**M**obile **P**latform for the **O**bservation and the **E**xperimentation in **T**errestrial **E**cosystems) aims at characterizing terrestrial ecosystems **in situ** thanks to a set of mobile equipment (a van with measuring devices, a quad with a winch, two platforms to deploy the material, two trailers and two tents). It enables to prospect the site, to geolocate the samples precisely, to extract soil and store it, and to make basic dendrometric measures.



**Virtual Soil modelling Platform** hosts models including representation of soil biological processes. It offers a model development environment to couple soil biological, physical and chemical processes and their relation with external forcing as the climate or management conditions. The platform is also directly linked to AnaEE France data bases.

[http://www6.inra.fr/sol\\_virtuel](http://www6.inra.fr/sol_virtuel)



The **BiochemEnv** platform provides equipments and services for the biochemical characterization of natural environments (enzyme activity in soils and sediments) and their associated macrofauna (enzyme activity, phospholipidic fatty acids (PLFAs), terrestrial fauna biomarkers).

<http://www.biochemenv.fr/>



The **Montpellier Ecotron** consists of three 12 units platforms: Macrocosms (40 m<sup>3</sup>), Mesocosms (4 m<sup>3</sup>) & Microcosms (1 dm<sup>3</sup> to 1 m<sup>3</sup>). The **Ecotron Ile-de-France** will host a platform of 18 climate chambers (Ecolabs).

The Ecotrons allow a large environmental control through the simulation of climatic environments (temperature, humidity, light, rainfall & atmospheric composition) & measurements of fluxes and carbon isotopes for studies on small terrestrial ecosystems.

<http://www.ecotron.cnrs.fr/>  
<http://www.foljuif.ens.fr/>



**Mobile spectrometers** are under development to provide advanced equipments to characterize soil biological activity. Two mobile trailers are setup comprising each instruments to measure in real time the evolution of CO<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>O and CH<sub>4</sub> fluxes and their isotopic signatures (13C, 15N) on various ecosystems. In addition, a PTR-MS will be conditioned to measure *in situ* COV emission from soil.



Some AnaEE France *in natura* experimental platforms enable ecological studies in extreme environments: the **SAJF** (Station Alpine Joseph Fourier) provides a model site for the study of alpine grasslands and high altitude species, and the **Nouragues Ecological Research Station** located at the heart of a tropical rain forest in

a natural reserve in French Guiana, is a privileged equipment for the study of the functioning of tropical forests and their biodiversity.

<http://www.nouragues.cnrs.fr/>  
<https://sajf.ujf-grenoble.fr/>

Analytical platform

Experimental platform

Modeling platform

Application for the use of an AnaEE France service is done through the unique web portal <http://www.anaee-s.fr>. Requests will be sent to the service local committee that evaluates the scientific and technical feasibility of the project (to check this last point, it is recommended to contact the service first). The use of an AnaEE France service implies the acceptance of the users' rights and obligations, in particular concerning the supply of metadata and the opening of the data after a maximum delay of 5 years. The use of several services is encouraged to