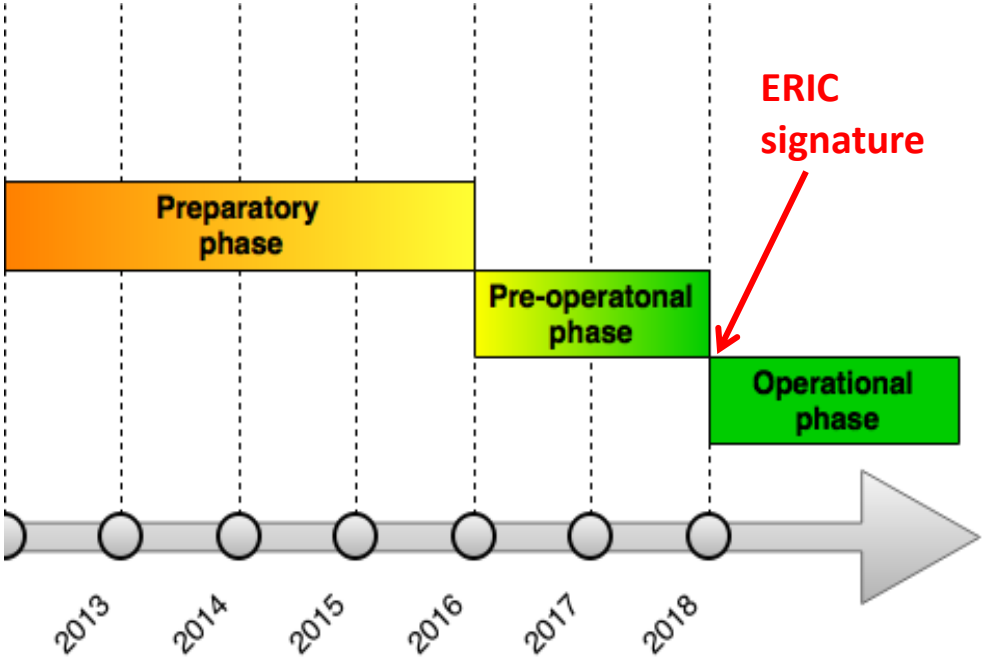
AnaEE
Analysis and Experimentation on Ecosystems

ESFRI

A European infrastructure for analysis and experimentation on ecosystems, including agro-ecosystems



AnaEE steps towards an ESFRI infrastructure

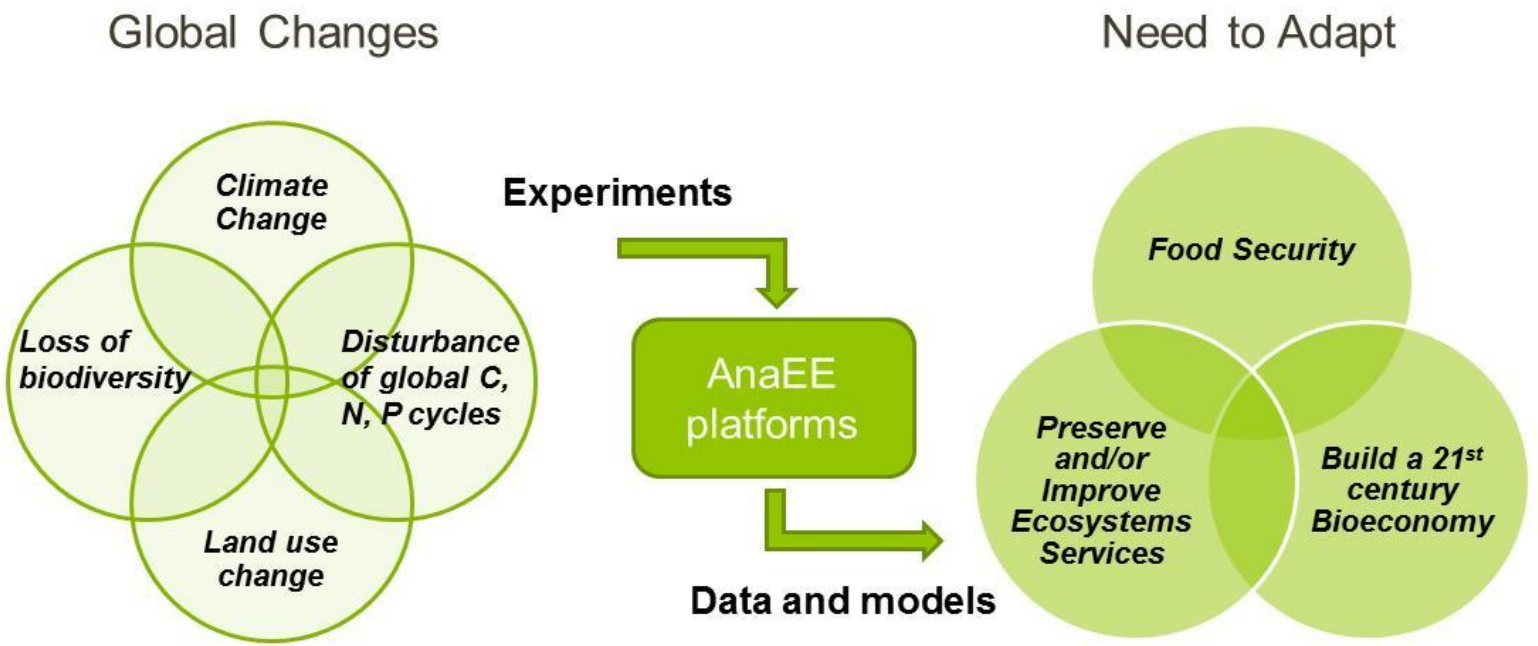
November 2016
Jacques ROY

AnaEE addresses grand challenges, in particular

Food Security
Bioeconomy

under the threat of

Climate Change
C, N, P cycles disturbance



AnaEE Vision 2013

Key threats to ecosystems and AnaEE corresponding field of experimental research

ecosystem type	threats	services affected	AnaEE research fields leading to adaptation and mitigation strategies
agricultural systems 	climate change land use change air and soil pollution soil erosion flooding soil fertility pests	food production food quality nutrient cycling carbon storage GHG emissions buffering stream water quantity and quality renewable natural resources biodiversity maintenance	agronomy agroecology soil sciences hydrology plant biology microbiology biogeochemistry Agricultural sciences
forests 	climate change land use change air pollution biodiversity loss invasions	timber and wood production timber and wood quality carbon storage water cycle biodiversity maintenance habitat quality leisure & tourism	ecology hydrology tree biology biogeochemistry
wetlands 	climate change management practices soil pollution flooding invasions	water quality habitat biodiversity GHG emissions	hydrology ecology biology of aquatic species microbiology management alternatives
grasslands, shrublands 	climate change land use change air and soil pollution biodiversity loss soil erosion invasions	fodder production grazing quality and quantity nutrient cycling GHG emissions buffering renewable natural resources	agroecology plant biology biogeochemistry microbiology management alternatives

Cropping systems x environment = **AnaEE**

Genotypes x Environment = **Emphasis**

AnaEE Business Plan 2016

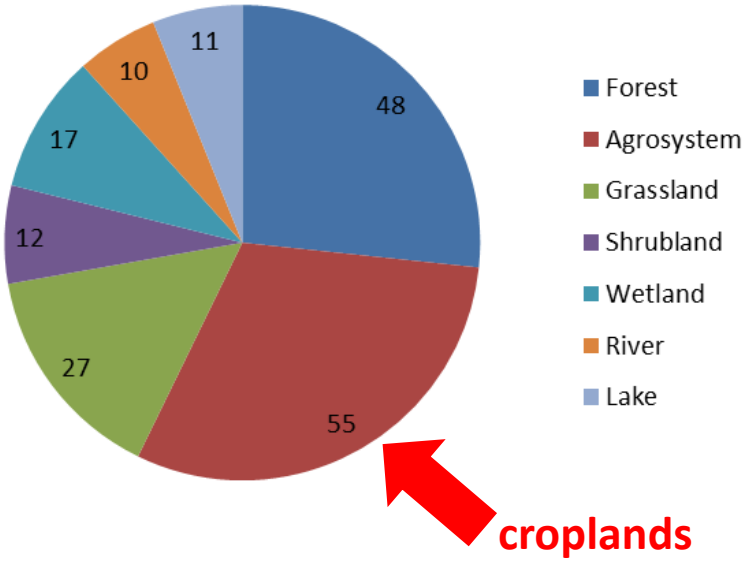
The backbone of AnaEE is Ecosystem Experimentation

with the majority of the platforms being field experimentation

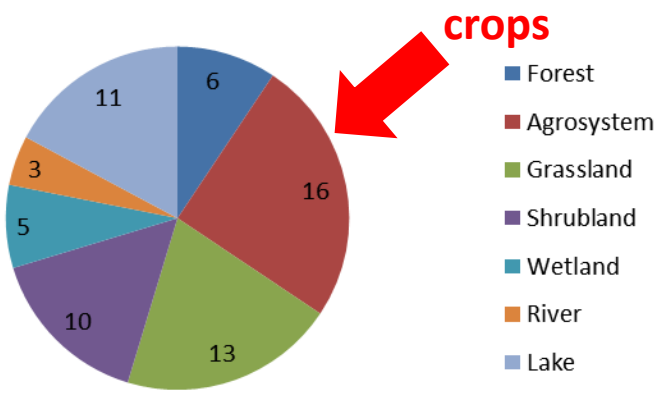
117 open-air platforms were submitted to AnaEE (2015),

96 were retained

with a majority (55) including cropland experiments



This is complemented by 28 enclosed ecosystem platforms (ecotrons, climate controlled greenhouses) **with a majority (16) running primarily crop experiments**



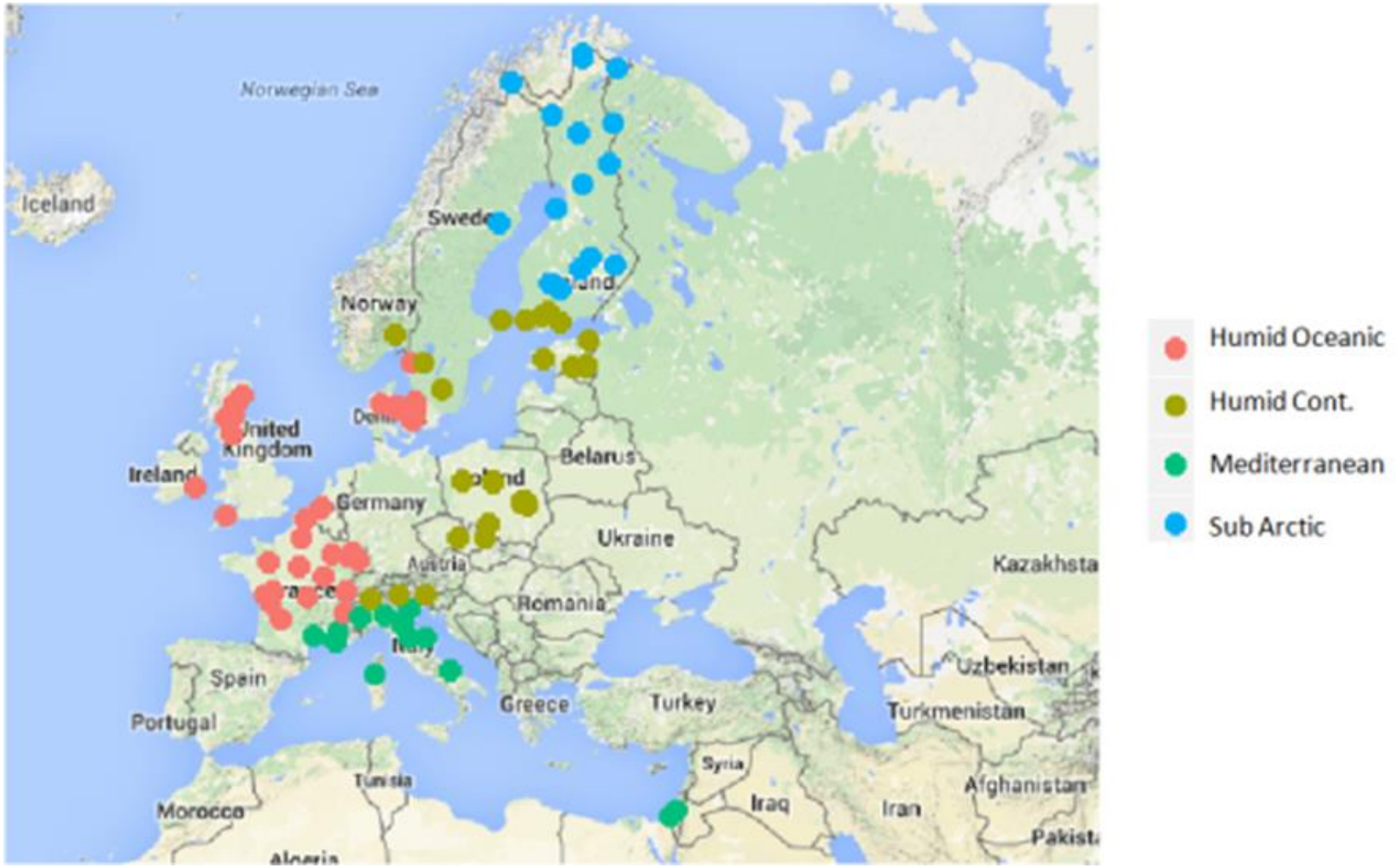
Each platform (site) often have more than one experimental set-up

AnaEE Platforms analysis 2015

145 experimental platforms covering all European climates

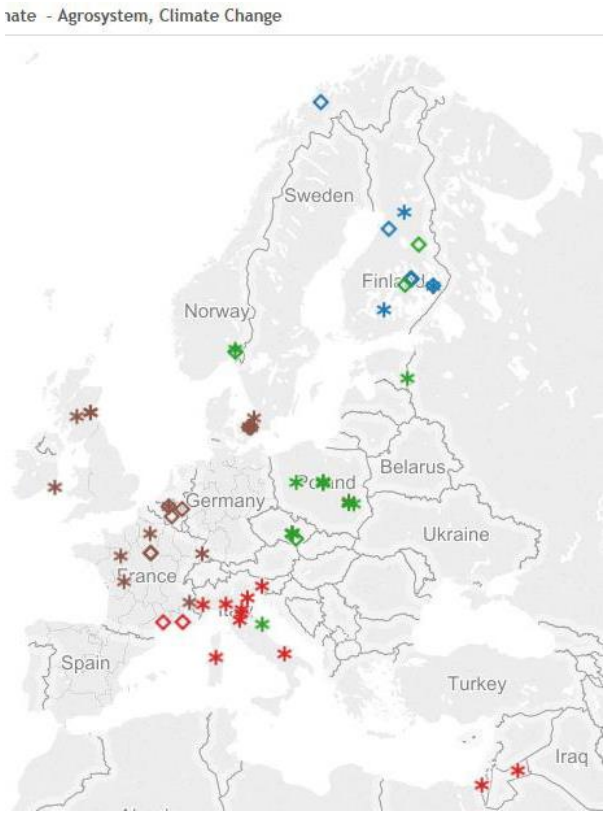
and additional platforms will be submitted from Spain, Turkey, …

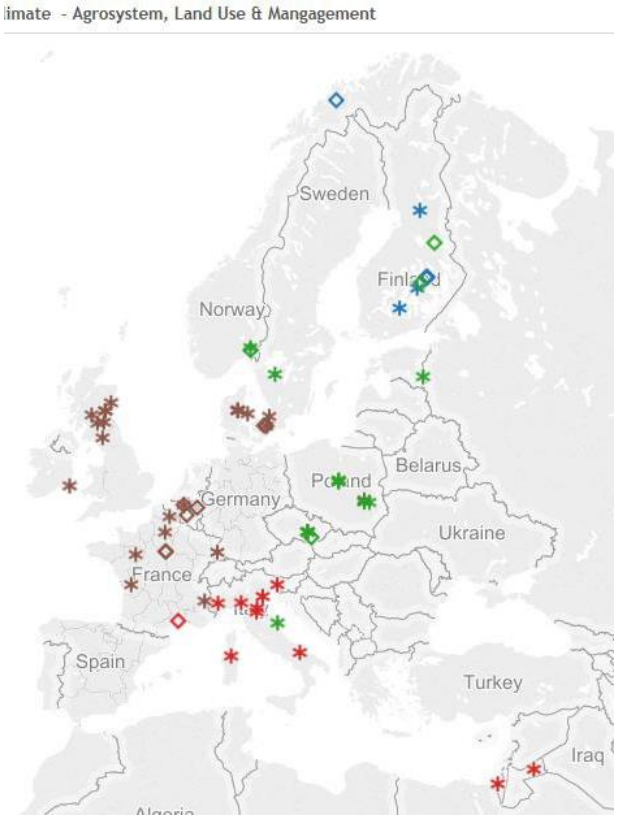
pan-European long-term experiments under real-world conditions

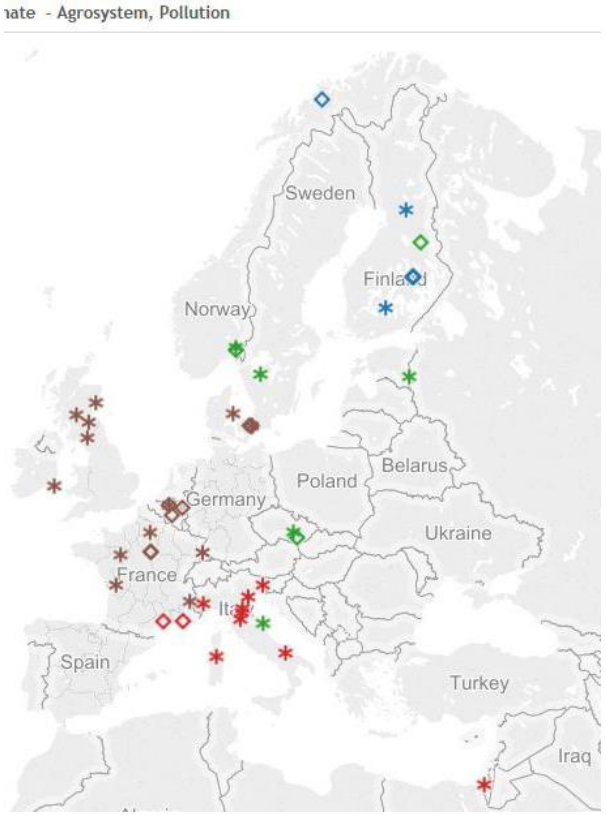


These AnaEE crop experiments cover the major drivers challenging food security

climate/CO_2 change, land use & management, pollution







AnaEE Platforms analysis 2015

The AnaEE crop experimental platforms are complemented by analytical facilities

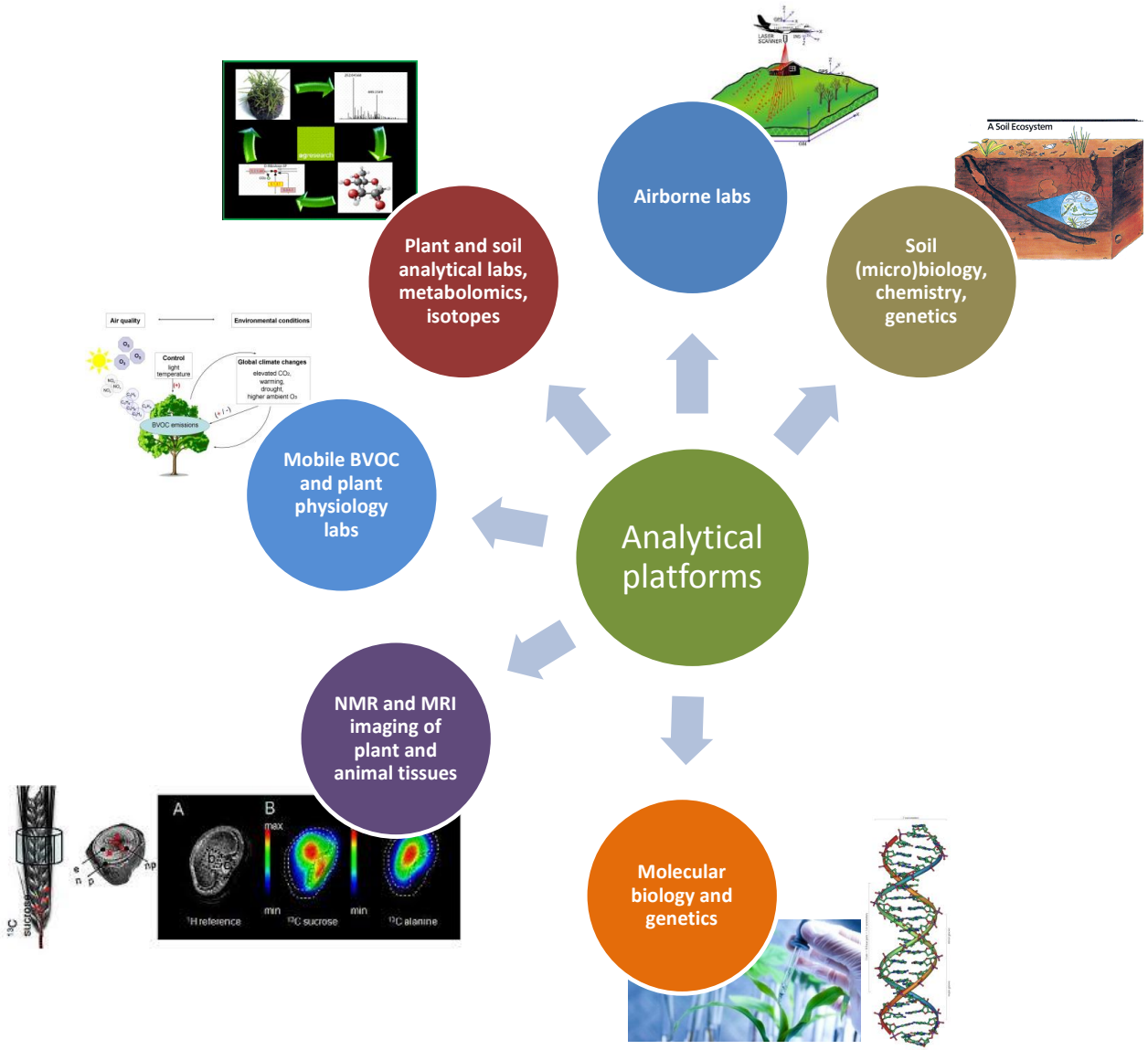
mobile or local

NMR / MRI

Molecular

Chemistry

Isotopes



Platforms not yet selected

The AnaEE crop experimental platforms are also complemented by modelling facilities

Some of the agronomy models used with the experimental platforms

Model	Domain of use
Coup	SVAT, biogeochemistry
FASSET	farm dynamic model
PASIM	Grassland model
HydroSVAT, DSSAT-CERES, AFRCWheat, LPJ, Daisy, CLM, Dexi	Surface model (SVAT crop model)
Ecosse, Vsoil, Soilclim, RothC, Hydrus 2D, PhreeqC	Soil, Soil carbon

Modelling solution platforms as well as model factories (BIOMA, VirtualSoil, Record) have been submitted to AnaEE

AnaEE Platforms analysis 2015

AnaEE more than a network: added value through 4 supra-national entities

Central Hub

strategy, coordination, communication (AnaEE portal) and administration

Technology Centre

harmonization of procedures and instruments, improvement of the quality of their data, technological development, transfer of innovation

Data & Modelling Centre

access to the data of the platforms (metadata and data standards)
access to and use of modelling solutions and models factories

Interface & Synthesis Centre

interactions with scientists (projects developments) and stakeholders
foresight and synthesis activities; production of outreach materials

The AnaEE Central Hub & Service Centres will allow a structured development and/or circulation of:

- Methods
- Instruments
- People
- Science
- Projects
- Data
- Models
- Knowledge
- Innovations