

Observatories and research infrastructures identified by OneWater

AnaEE France (RI) is dedicated to the understanding and the prediction of global change effects on continental ecosystems. It performs ecosystem manipulations in order to characterize ecosystem properties, decipher feedback, and develop fundamental knowledge necessary for the implementation, adaptation or restoration strategies. It currently brings together 33 distributed experimental platforms able to analyze biological diversity and ecosystem functioning, in open air and enclosed facilities, spread over 28 sites, including world-class tools dedicated to grasslands, croplands, forest and lakes. It also offers facilities for data management and data-model coupling. <https://www.anaee-france.fr/en/>

Data Terra (RI) is based on four data centres covering each of the major compartments of the Earth System: continental surfaces (THEIA), atmosphere (AERIS), oceans (ODATIS) and Solid Earth (FORM@TER), working groups and transversal services (DINAMIS). It aims to facilitate access to satellite, airborne and in-situ data acquired and managed by different sources (research laboratories, national infrastructures SNO, Environmental Research Observation and Experimentation Systems) - <https://www.data-terra.org/>

DEM'EAU observatories (RI) are two experimentation platforms in complex aquifers (karstic «pli Ouest de Montpellier» and the plio-quadernary multilayers aquifer of Plaine du Roussillon, representative of Mediterranean coastal aquifers) to monitor the impact of climate change and to better understand past environmental changes and regional geological events. It involves several laboratories and institutions from the ISITE MUSE and the UNESCO ICEWARD, as well as local partners (water resources managers, local authorities).

eLTER European long-term ecosystem research (RI): eLTER-France represents the national community composed of the national research infrastructures OZCAR (Observatories of the Critical Zone: Applications and Research) and RZA (Network of Zones Ateliers). It is the French mirror of the European research infrastructure on ecosystems, the Critical Zone and socio-ecosystems, eLTER RI <https://www.lter-europe.net/>

GAIA Data (Equipment) is a PIA3 project led by three e-Infrastructures : Data Terra, the national biodiversity data centre (PNDB), and the reference of climate simulations (CLIMERI-France). Designed to jointly develop and implement an integrated platform of distributed data and services supported across a continuum of science-driven data centres for the understanding of the Earth system, the environment and biodiversity. Targeted to the scientific community, the public and socio-economic stakeholders, these services will be accessible through user-oriented interfaces (e.g. portals and gateways) enabling smart uses of multi-source data in inter- and trans-disciplinary research practices.

Figure A Erreur ! Il n'y a pas de texte répondant à ce style dans ce document.-1 Articulating OneWater Specific Water data services with Gaia Data

OccitANum (LL - Territoires d'Innovation) is a living lab in numeric agroecology. Its goal is to mobilise digital technologies to accelerate the implementation of the agriculture and food of tomorrow in Occitanie, while meeting the demands of society: reducing the environmental impact of agriculture (agroecology), more effectively capturing added value, restoring agriculture to a prominent position in society (inclusion of farmers), and producing healthy local food. In this region, water quantity and

quality are key factors in agroecological transitions. <https://www.hdigitag.fr/en/occitanum-living-lab-digital-agroecology-in-occitanie-winner-french-territoires-innovation-action/Contact>

OHM Observatoires Hommes-Milieus are dedicated to the study of anthropized systems affected by socio-ecosystemic crisis resulting from global change. Their originality lies in the fact that they are built around a founding event of human origin that disrupts the entire functioning of the socio-ecosystem of the territory under consideration. The objective is to produce knowledge that is indispensable to scientists and society alike, in order to better inform political and economic decision-makers and citizens in their choices to resolve environmental crises. There are thirteen such observatories scattered throughout France mainland (7), overseas (2) and abroad (4). Together, they constitute the Interdisciplinary Research infrastructure on Human-Environments Interactions, i.e. the LabEx DRIIHM. <https://www.driihm.fr/en>

OZCAR Critical Zone Observatories- Research and Application (RI) are a national distributed Research Infrastructure associating most of the French observation sites dedicated to the in situ long-term observation and monitoring of the Critical Zone (CZ) the thin outer veneer of the Earth's continents extending from the top of the vegetation canopy down to the non-altered bedrock. OZCAR RI gathers 21 observatories monitoring catchments, aquifers, peatlands, the cryosphere, land surface in France, in oversea French territories and abroad (West Africa, South-East Asia, South America and Antarctica). <https://www.ozcar-ri.org/>

O-ZNS Observatory of the Vadoze Zone (VZ) of the Beauce carbonate aquifer (RI): platform designed to explore mass and heat transfer mechanisms and the fate of nano-micro-pollutants in the Critical Zone compartments. The observatory consists of a well prospecting the entire thickness of the VZ up to the water table, with a finite diameter of ~ 4 m and a depth of ~ 20 m and a myriad of boreholes equipped with innovative monitoring tools including those using Optic Fiber. The well will be equipped with environmental monitoring, soil, and subsoil imaging tools in order to understand reactive transport phenomena and mass and heat exchanges between phases (water - rock – gas) throughout the continuum “Soil – Unsaturated Zone – Capillary Fringe – Aquifer”.

PNDB National Biodiversity Data Center (RI): the digital research infrastructure PNDB is dedicated to promoting biodiversity data through research. Its mission is to provide tools and services enabling access and openness of data and metadata in a FAIR approach (Findable, Accessible, Interoperable, Reusable), to organise scientific animation for promoting tools for user and producer communities, and to facilitate the sharing of practices with other research communities, including European and international communities. It also promotes the appropriation of biodiversity data by the public, the economic sector and civil society.

PRIME (Demo): Experimental platform that is part of the PIVOTS programme (established in the Centre - Val de Loire region) designed to test monitoring devices and decontamination technologies of water, soil and the subsurface. Integrated in the European Water Test Network (<https://watertestnetwork.eu/en>), for use by SMEs in North-West Europe (NWE) to test, demonstrate and develop new products for the water sector.

RZA Zones Ateliers network (RI): the “Zones Ateliers” infrastructure put research at the centre of public and economic action by combining observation of socio-ecosystems with experimentation in natura and with local stakeholders. The aim is to build a long term integrated research (biosciences, geosciences, physico-chemical sciences, human and social sciences) to answer basic ecology questions, but also to respond to current societal challenges in the context of global changes. They are the place to co-construct questions and transfer the results to managers and society, in close partnership with local stakeholders. <http://www.za-inee.org/en/node/804>

TERRA Forma (Equipment) aims to design and test a smart observatory of socio-ecological systems in the Anthropocene. It will design and test in-situ observatories offering a new multi-messenger vision, coupling sensor viewpoints on human, biotic and abiotic dynamics. The project builds on pioneering and mature technological advances (optical sensors, 3D printing, IoT, AI) to design and probe a scalable network of smart sensors, as well as the associated communication infrastructure embedding energy harvesting and in-line processing power.

Terre de Source LL (Territoires d’Innovation): is a territorial entity, which deals with water management for the Rennes metropole and works with farmers on drinking water areas to reduce their impact on water quality. A key aim is to encourage them to change their agricultural production systems while economically promoting the agricultural products from these areas, with a local label “Terres de source”, socially in collective restoration, as well economically. Research is involved in the economic model, in developing indicators of agroecological transition at farm level.

<https://www.eauebassinrennais-collectivite.fr/nos-actions-pour-lenvironnement/labellocal-terres-de-sources>