

# EUROPEAN RESEARCH INFRASTRUCTURE FOR ANALYSIS AND EXPERIMENTATION ON ECOSYSTEMS



## Newsletter 1

### ISSUE ONE

Dear all,

As you may or may not know, AnaEE (Analysis and Experimentation on Ecosystems) is a leading European research infrastructure. AnaEE aims to bring together and strengthen the resources for experimentation and observation of ecosystems across Europe, in order to best respond to grand challenges such as climate change, loss of biodiversity and disturbance of biogeochemical cycles.

AnaEE was launched a little over a year ago in Versailles, France, and has since made leaps and bounds in its Preparatory Phase and in moving towards a Construction Phase; outlining a clear vision and developing communication tools to disseminate that vision and the actions that flow from it; defining site criteria and national nodes; moving towards a clearer understanding

of data access issues; and a wide range of other issues.

This first issue aims to bring you news and updates on where AnaEE is on a range of different topics. However, we also have a more specific focus - namely, cooperation between research infrastructures (RIs) across Europe and around the world. We will be looking at how AnaEE is building links with such key European research infrastructures as ICOS (Integrated Carbon Observation System) and LifeWatch (E-Infrastructure for Biodiversity & Ecosystem Science), but also cooperation between RIs in other parts of the globe namely with NEON (National Ecological Observatory Network, USA), TERN (Terrestrial Ecosystem Research Network Australia), and the Intergovernmental Group on Earth Observations (GEO), and how this

cooperation is contributing to better science and providing responses to the key challenges of today and tomorrow.

We hope you enjoy reading this as much as we enjoyed writing it.

Kind regards,

*Abad Chabbi*  
AnaEE Coordinator



AnaEE NEWSLETTER

AnaEE NL 1 | March 2014 | [www.anaee.com](http://www.anaee.com) | 1

## TABLE OF CONTENTS

ISSUE ONE.....	1
INTERNATIONAL FOCUS <i>by Dr. Russ Lea and Dr. Hank Loescher</i> : RESEARCH INFRASTRUCTURES IN AN INTERNATIONAL CONTEXT.....	3
NATIONAL FOCUS <i>by Dr. Rudy Herman</i> : BELGIUM - SUPPORTING RESEARCH INFRASTRUCTURES IN THE FIELD OF THE ENVIRONMENT.....	4
INTERVIEW of <i>Prof. Dr. John R. Porter</i> : FOOD SECURITY AND RESEARCH - THE KEY ROLE OF AnaEE.....	5
SPECIAL REPORT.....	6
• EUROPEAN AND INTERNATIONAL COOPERATION	
• CLUSTERS AND MORE - STRENGTHENING COOPERATION BETWEEN RESEARCH INFRASTRUCTURES	
UPCOMING DEVELOPMENTS.....	7
• VISION AND OTHER KEY DELIVERABLES	
• LEGAL, GOVERNANCE AND FUNDING - PROGRESS AND TERMS OF REFERENCE	
UPCOMING EVENTS AND WHAT TO EXPECT FROM AnaEE.....	7
AnaEE ALSO ATTENDING.....	8
NEWS	
• BELGIUM.....	4
• DENMARK.....	5
• FRANCE.....	7
• ITALY.....	7

## INTERNATIONAL FOCUS

### RESEARCH INFRASTRUCTURES IN AN INTERNATIONAL CONTEXT

*Editorial by Dr. Russ Lea (CEO) and Dr. Hank Loescher (Program Developer, International Initiatives), National Ecological Observatory Network, (NEON), Boulder, Colorado, USA*

Natural, managed, and socio-economic systems are subjected to complex interacting stresses that play out over extended periods of time and space. Some are rapid and visible, like extreme precipitation or heatwaves, wind, and wildfire events, while others are subtle and play out over decades like changing temperatures and nitrogen deposition that affect the whole ecosystem. These ecosystem changes threaten to erode the world's environmental capital, resulting in disruptions that would likely alter the trajectory of society and quality of life around the world.

These stresses and changes make accessible long-term data sets all the more essential. The world needs interoperable global environmental data platforms specifically designed to address large-scale challenges for. This data and information must be discoverable, accessible, and usable to the wider marketplace of value-added consumers.

Research infrastructures like NEON, AnaEE, CERN, TERN and other emergent environmental observatories not only will similarly transform the way we think about the world by challenging present-day accepted theories, but also provide key data to inform policy, decision-makers, and applied managers for a better society.

Because there are no blueprints on how to build a NEON or AnaEE, we have engaged many organi-

sations that have done something similar to understand the lessons learned and what aspects of their designs can be transferred or adopted. We have gleaned inspiration from many sources. Aside from sharing lessons learned, the main opportunity is to build our RIs in such a way to augment capacity for mutual research and education activities.

We consider the Europe and the US as very strong partners and there are numerous examples in which this is the proven path forward. True advances in ecological theory, applying these understandings to benefit society, and developing new frontiers in science have all come about through the open, transparent exchange of ideas and data. We fully encourage this approach in all our collaborative endeavors. We would encourage road map activities of how best work collaboratively with AnaEE that is primarily centered around interoperability.

We also recognize the unique challenges AnaEE faces in designing an adaptive infrastructure to enable ecosystem-scale manipulations. NEON also faces these same challenges to embed new experiments and to deliver user-requested infrastructure (e.g. New sensors, additional remote sensing flights, new organismal sampling, mobile platforms, etc.). The challenge is to provide a range of infrastructure (i.e., constrained scope), and in the same way be adaptive

to unknown requests in the future. This challenge does not only apply to our physical infrastructures, but to data systems, staffing, logistical and scientific merit review etc. NEON looks forward to working together with AnaEE to address these challenges at the macrosystems ecology level, and would welcome greater interactions.



*Dr. Russ Lea*



*Dr. Hank Loescher*

## NATIONAL FOCUS

# BELGIUM - SUPPORTING RESEARCH INFRASTRUCTURES IN THE FIELD OF THE ENVIRONMENT

*Editorial by Dr. Rudy Herman, Senior Researcher, Flemish Department of Economy, Science and Innovation, Government of Flanders (Belgium)*

One of the most prominent pillars in building the European Research Area is the priority given by Member States and the Commission to the construction of new or upgrading of existing large scale research infra-structures of pan-European importance.

Belgium - and Flanders in particular - has contributed to the development of infrastructures such as ICOS (Integrated Carbon Observation System) and LifeWatch (E-Infrastructure for Biodiversity & Ecosystem Science).

In 2009, the Department of Economy, Science and Innovation of the Flemish Government tasked the Hercules Foundation to organize a first call for proposals to join ESFRI infrastructures from the roadmaps 2006 and/or 2008. From this call ICOS and Lifewatch were selected, as they both had not only value for Flanders, but also a contribution that added to a pan-European component of these environmental infrastructures. In 2012, Flanders began contributing financially to the construction of ICOS and LifeWatch; at the same time, Flanders organized a second call for ESFRI proposals. In this call, AnaEE was ranked in the top four.

In Flanders the AnaEE and ICOS teams cooperate very well already, there was significant interest in developing an Ecotron Flanders component. The Flemish Minister for Science and Innovation, Ingrid Lieten, decided to support the construction of the

Ecotron Hasselt University near the Hasselt University, as a substantial contribution to a better understanding of the impact of climate variability on nature and biodiversity. Along with LifeWatch, AnaEE and ICOS benefit from a close collaboration in order to reduce redundancy, look for complementarities and jointly work out programs, so that they can mutually benefit from shared human and financial resources.

The cooperation between these three infrastructures is also an asset in dealing with some of the societal challenges addresses in Horizon 2020, especially in terms of assessment of ecosystem services, the need to preserve our ecosystems and their biodiversity. Both AnaEE and ICOS, as well as LifeWatch, will produce vital complementary information that contributes to the scientific underpinning of future important processes, such as IPBES and the development of adaptation measures to the ongoing climate variability.

We believe that AnaEE has a great potential to develop a coordinated set of experimental platforms and stations to analyze and predict ecosystem processes and responses. This will play an important role in producing adequate data and information to develop and support measures and policy instruments at local, sub-regional and even at a larger European scale.



## NEWS *Belgium*

The Department of Economy, Science and Innovation of the Flemish Government (EWI) has selected the construction of AnaEE Belgium as a top-priority national contribution to AnaEE Europe, and has proposed to the Hercules Foundation for Large Research Infrastructure in Flanders to finance AnaEE Belgium with 14 million € to cover a 5 year period (2 years construction phase + 3 years exploitation phase). This includes the flagship ecotron project housed by Hasselt University, which has been called "Ecotron Hasselt University". The first steering committee meeting of "Ecotron Hasselt University" took place in January 2014, and construction will begin in 2014, with secured funding of roughly 5 million € from Hercules and other sources.

## INTERVIEW

### FOOD SECURITY AND RESEARCH - THE KEY ROLE OF AnaEE

*Prof. Dr John R. Porter, University of Copenhagen, elected member of the Scientific Advisory Board of FACCE-JPI\* ; Coordinating lead author for the IPCC 5th Assessment for the chapter on food production systems and food security*



**AnaEE team:** Do you think Europe's researchers currently possess enough resources in terms of climate and food security research?

**Prof. John Porter:** Clearly, the answer is no. I think since the 1990s people have been doing lots of modelling and not enough experimental work. But what's missing the most is research where scientists can look at interactions between factors like nitrogen, water, CO<sub>2</sub> levels and temperatures.

**AnaEE team:** Why is the experimental aspect so important?

**Prof. John Porter:** It ties in very nicely with the FACCE-JPI. One of the grand challenges is food security. The time is right for a change of focus to look at the predominant land use type in Europe - agriculture.

**AnaEE team:** Can AnaEE help improve on the uncertainty of models?

**Prof. John Porter:** I think it's the only way. I think you need to better understand and get a handle on processes and the manner in which interactions occur. You need to work hand in hand between experimentation and models.

**AnaEE team:** How can knowledge on impact and adaptation of the food system benefit from AnaEE?

**Prof. John Porter:** We need AnaEE to understand factors that contribute to greater production with the same inputs - and the risks and

factors that could contribute to falling production. However, there are production and non-production elements. Food security is also about other things. In Europe we should be thinking about a common food policy and not just a common agriculture policy. Many people in Europe have jobs that have something to do with the food system but they're not all farmers. Food security is also about processing, retailing, transport and waste. It is one of the main topics to cross all three working groups of the IPCC 5th Assessment Report.

**AnaEE team:** Do you think that AnaEE once established could have a significant impact on European and global research on food security and global change?

**Prof. John Porter:** It would be brilliant to make a transect from north to south and from east to west in Europe and have the same experiments. Europe could really lead on this. More generally, I think that physicists do a great job in communicating the need for billions of euros in funding for particle accelerators and the like. We need to do much more to make policy makers and funders understand the value of contributing a fraction of that amount to build a fantastic infrastructure of experimental sites across Europe.

*\*Joint Programming Initiative Agriculture, Food Security and Climate Change*

## NEWS *Denmark*

In Denmark, several meetings with funders have taken place. The first was held on 18 Nov 2013 at the Danish Agency for Science, Technology and Innovation with representatives of the Danish Agency for Science as well as from four Universities in Denmark. Two subsequent meetings including representatives from the four universities were arranged on 11 Dec 2013 and 10 Jan 2014 by DTU in order to initiate the discussion of a future AnaEE Denmark.

Based on a list of potential Danish AnaEE infrastructures that has now been made in collaboration between the four universities, DTU will lead the work of preparing a first draft for AnaEE Denmark. The Danish partners have decided to use the AnaEE WP3 site survey questionnaire as an internal tool to help narrow the list of potential Danish AnaEE infrastructures.

In March, the Danish NUI board will meet again and discuss the Danish roadmap of European infrastructures and the four partners are working together to try to get AnaEE accepted on the Danish roadmap for future support.

AnaEE NEWSLETTER

AnaEE NL 1 | March 2014 | [www.anaee.com](http://www.anaee.com) | 5

## SPECIAL REPORT

### EUROPEAN AND INTERNATIONAL COOPERATION

22 January 2014 saw AnaEE (the European infrastructure *par excellence* for analysis and experimentation on ecosystems) organise a high-level technical working session with two other key European research infrastructures - ICOS (Integrated Carbon Observation System) and LifeWatch (E-Science European Infrastructure for Biodiversity and Ecosystem Research) - at INRA headquarters in Paris.

Attendees included Abad Chabbi (AnaEE coordinator), Wouter Los (LifeWatch coordinator) and Werner Kutsch (ICOS Director-general).

Abad Chabbi, AnaEE coordinator, stressed the need to better define

complementarities of the 3 research infrastructures in dealing with stakeholders. He pointed out that these synergies and complementarities should be driven by science (e.g. jointly addressing important science questions such as carbon storage and sources of uncertainty in the estimates, water use by ecosystems or land management in a changing climate) and built around common core sites and connected "one stop shop" portals.

Among the proposals were the following items:

- Focus on optimizing user services, promoting joint programming and cost-effective operations. Users of one research

infrastructure should seamlessly benefit from data and capabilities of the others, and as such the interoperability and common access between infrastructures should be ensured.

- Consider common sites for data production through observations and experimentation.
- A common reference model, including harmonized data formats and data access.

Attendees agreed to continue discussing how best to cooperate in a way that highlighted each other's strengths while also forging as many synergies as possible.

### CLUSTERS AND MORE - STRENGTHENING COOPERATION BETWEEN RESEARCH INFRASTRUCTURES

As you no doubt know, Horizon 2020 - the new Framework Programme for research policy, replacing the 7th Framework Programme (FP7) - heavily focuses on promoting cooperation and synergies between research infrastructures across Europe (and beyond). This includes clusters. In 2011, four such initiatives were awarded, in the fields of Social Sciences and Humanities (DASISH), Life Sciences (BioMed Bridges), Environmental Sciences (ENVRI), plus Physics, Astronomy and Analytical Facilities (CRISP).

AnaEE is in the "health and food" Strategic Working Group of ESFRI, but has strong natural ties to infrastructures in the field of the environment. As a result, we are trying to build closer links with

both communities, as a research infrastructure that truly "bridges the gap" between life sciences and environmental sciences.

We have observed great advances within these clusters under FP7, and AnaEE has participated in both BioMed-Bridges and ENVRI workshops, looking at tricky issues such as data and standardisation.

However, with the move to a new Framework Programme, these clusters will come to an end in late 2014. We hope to be an active partner in building new clusters in the fields of food, biology and environmental sciences and contributing our unique viewpoint as the research infrastructure *par excellence* dealing with ecosystems.

Beyond Europe, AnaEE has observed great progress in building ties between research infrastructures worldwide.

We are proud to feature Russ Lea (of the National Ecological Observatory Network - NEON -) and Tim Clancy (of the Terrestrial Ecosystem Research Network - TERN -) as members of our International Scientific Advisory Board.

In addition, we have built strong ties with the Group on Earth Observations (GEO); AnaEE Coordinator Dr. Abad Chabbi has presented to the GEO plenary in the past and we will continue to cooperate with this grouping in future.

## UPCOMING DEVELOPMENTS

### VISION AND OTHER KEY DELIVERABLES

AnaEE's vision has now been finalised. It and other important reports and deliverables can be

found under the **reports** section of the AnaEE's website. [www.anaee.com](http://www.anaee.com)

### LEGAL, GOVERNANCE AND FUNDING - PROGRESS AND TERMS OF REFERENCE

As AnaEE's preparatory phase progresses and we move onto more concrete legal, governance and funding issues, **a workshop with national ministries and other funding and research policy bodies will take place on May 22**

**in Helsinki.** This should be a chance for AnaEE to unveil more defined proposals on future governance structures and other key elements. Please visit our website for more information.

## UPCOMING EVENTS AND WHAT TO EXPECT FROM AnaEE

#### CALL FOR EXPRESSION OF INTEREST - AnaEE SITES AND PLATFORMS

More information will be forthcoming.

#### TURKEY ANAEE MEETING, ISTANBUL, 18 APRIL 2014 (N. DALFES)

An information day will be taking place (with the participation of Jacques Roy) in Istanbul at the ITU Campus on April 18th, to inform potential stakeholders from academia, government research labs and environmental NGOs about AnaEE and to foster formation of a network among ecosystem scientists in Turkey. More information will be forthcoming on the site.

#### AnaEE WORKSHOP ON TECHNICAL ASPECTS AND SITE CRITERIA FOR THE UPCOMING CALL, BRUSSELS, 7-8 MAY 2014 (C. BEIER)

This workshop, organised by WP3 leader Claus Beier, will look at the upcoming draft call for Expression of Interest, technical aspects and criteria, as well as how to communicate the call to the scientific community.

#### AnaEE LEGAL, GOVERNANCE AND FUNDING ADVISORY GROUP (LGF-AG) MEETING, HELSINKI, 22 MAY 2014 (J. BÄCK AND G. PASTORI)

AnaEE will be hosting a meeting dealing with key aspects of governance, including the preparation of a Memorandum of Understanding (MoU), the launch of a call for Expression of Interest, and other key issues that interest funding and policy bodies in particular. All national ministries and research agencies are welcome and we hope to have significant attendance from the policy and funding community.

## NEWS *France*

AnaEE France is a national infrastructure project financed by France's National Research Agency (ANR) to the tune of €14 million (not including personnel costs) devoted to upgrade and/or to complete the national research infrastructure. AnaEE-France brings together experimental, analytical and modeling platforms dedicated to the biological study of continental ecosystems. It is made up of three experimental nodes and two modelling/analytical/data nodes, offering open-access to the best experimental facilities and associated biological resources and data: the two Ecotrons (Ecotron Montpellier and Ecotron Ile-de-France-Foljuif), providing unprecedented means to control and monitor whole-ecosystems manipulation (node 1); three semi-natural experimental platforms to manipulate terrestrial and aquatic ecosystems in situations intermediate between those of Ecotrons and nature (node 2); and twenty-one sites equipped for long-term (>20 year) experiments in natura in major biomes (forests, crop-lands, grasslands and lakes, node 3).

AnaEE France is also investing in shared instruments and analytical platforms dedicated to environmental microbiology (node 4). Finally, AnaEE-France provides users with databases and modeling tools designed to represent ecosystem dynamics and to go further in coupling ecological, agronomical and evolutionary approaches (node 5).

## NEWS *Italy*

AnaEE Italia is now funded for the preparatory phase as of 2014, with €561k contributed by the CNR to consolidate selected sites.

## AnaEE ALSO ATTENDING

### 2nd INTERNATIONAL CONFERENCE ON RESEARCH INFRASTRUCTURES (ICRI 2014), ATHENS, 2-4 APRIL 2014

Abad Chabbi, AnaEE Coordinator, has been invited as a key contributor to the 2nd International Conference on Research Infrastructures (ICRI 2014), taking place in Athens, Greece, on 2-4 April 2014 under the auspices of the Greek Presidency of the European Union, co-organised by the Commission and the "Athena" Research Center.

### ExpeER ANNUAL MEETING AND INTERNATIONAL CONFERENCE, PARIS 23-25 SEP 2014

The 4th annual meeting of ExpeER will be held on Tuesday 23 September 2014 and the ExpeER international conference will be held on 24-25 September 2014, in the National Museum of Natural History in Paris.

### INTERNATIONAL TERENO-CONFERENCE, BONN, 29 SEP-2 OCT 2014

Abad Chabbi and Jacques Roy of AnaEE are invited to attend the International Terrestrial Environmental Observatories Conference in Bonn, from 29 September to 2 October 2014.

## NOTA BENE

AnaEE Legal, Governance and Funding Advisory Group (LGF-AG) meeting

Helsinki, 22 May 2014

If you represent a policy-making or funding body, you may be interested in attending our upcoming meeting. You can learn more in our "Upcoming events" section, and register by visiting our website or by emailing us at [info@anaee.com](mailto:info@anaee.com).

FOR MORE  
INFORMATION  
ON AnaEE

#### PLEASE CONTACT:

*Evan O'Connell*

AnaEE Communication/Lobbying Officer  
[communication@anaee.com](mailto:communication@anaee.com)

+33 6 03 34 23 79

[www.anaee.com](http://www.anaee.com)

*This newsletter was drafted by Evan O'Connell and Abad Chabbi (INRA) with assistance from Jacques Roy (CNRS), Susanna Siitonen (University of Helsinki), Sonny Rathod (BBSRC), Nguyen Thi Minh Tu (University of Antwerp), Jane Hawkins (Rothamsted Research), Francesco Fracaro (Fondazione Edmund Mach) and Angela Baker (INRA Transfert).*

*External content was provided by Rudy Herman (EWI-Flanders), John Porter (University of Copenhagen) and Russ Lea and Hank Loescher (NEON).*

*Design by Emilie Guldner.*



AnaEE NEWSLETTER

AnaEE NL 1 | March 2014 | [www.anaee.com](http://www.anaee.com) | 8