

Regional Conference of the Regional Association VI on the Future role of National Meteorological and Hydrological Services: Leadership and Management

EU Research Infrastructure and collaboration of the academic and public sector

Jutta Thielen-del Pozo & Fabio Taucer
Joint Research Centre

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Operating at the *Science – Policy interface*

IN PRACTICE

- The Joint Research Centre is the science and knowledge service of the European Commission, with the mission to support EU policies with independent evidence throughout the whole policy cycle.
- For evidence to be relevant for policy and decision makers as a basis for best decisions, it must also be validated, robust and up to date

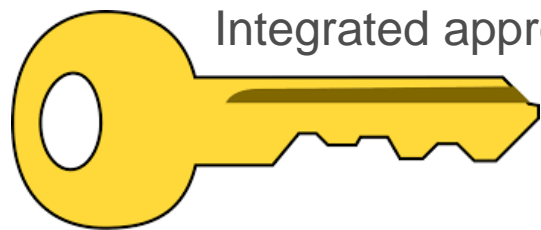
Achieving the right balance

State of the art

- evidence
- research
- data & data infrastructure
- Modelling & Algorithms
- Underlying business model

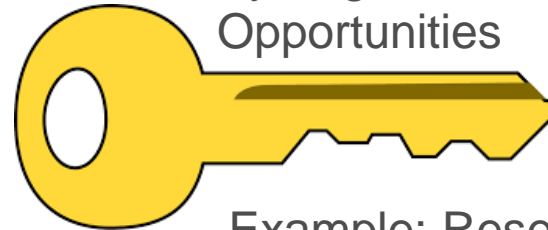


- Cost model & Investment
- Disruption to operations and existing infrastructures
- Uncertainty in success



Integrated approach

Example: Collaborative
Doctoral Partnerships



Synergies &
Opportunities

Example: Research
Infrastructures

JRC Collaborative Doctoral Partnership (CDP)

Strategic collaborations with Higher Education Institutions (HEIs) to co-supervise a new generation of doctoral students with a specific focus on the **science-policy interface** at JRC.

- **To strengthen the collaboration between the JRC and higher education institutions** in key scientific areas.
- **To train** a new generation of doctoral graduates in science and technology with a focus on the science-policy interface,
- **To co-develop, co-host and co-supervise doctoral studies** between higher education institutions and the JRC.

Win – Win Scheme

- **Higher Education Institutions** gain a better understanding of research needs throughout the policy cycle.
- **JRC** obtains innovative research input and exchange of information with leading academic institutions in the field.
- **PhD students** have the unique opportunity of gaining experience in higher education, research institutions and policy making.
- **Attracting talent**



Collaborative Doctoral Partnership (CDP) workflow



- **Strategic fields**
- **Evaluation and selection** by Scientific Committee and Units responsible of thematic field

- Definition **collaboration topics** and PhD project/s.
- **Negotiation and signature** of CDP agreement

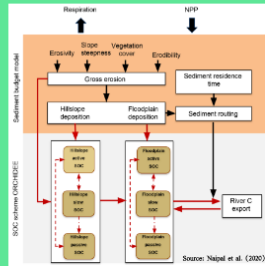
- PhD student is **co-selected**

- PhD student is **co-supervised and co-hosted** by JRC and HEI supervisors

Scalable scheme...

Carbon and nutrient balances as affected by soil erosion in Europe

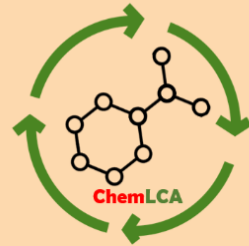
CE-DYNAM
Arthur FENDRICH



This project will evaluate how erosion, deposition, and sediment transport affect the stocks of carbon, nitrogen, and phosphorus in agricultural soils for Europe. For this purpose, it uses the latest state-of-the-art land surface and ecosystem models that include erosion processes and the European high-resolution erosion, land cover, and management data provided by the Joint Research Centre.

Life Cycle Assessment in chemical industry

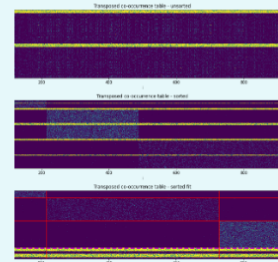
ChemLCA
Davide TOSCHES



The chemical industry is a crucial sector for reaching sustainability targets. This sector poses several challenges due to the quantity of different chemicals and chemical processes existing. Life Cycle Assessment (LCA) is a useful tool for addressing environmental sustainability and assisting in decision-making. On the other side, it requires an extensive amount of data to cover the chemical sector. The project will explore the LCA current coverage of chemicals, possible methods for selecting proxies when LCA and estimation techniques for impacts of missing chemicals.

Data Analytics and Statistical Modelling

DASM
Edoardo FIBBI



The main goal of the PhD project is to carry out research in the area of robust statistics and machine learning, with a focus on the mathematical methodologies and applications, in the area of fraud and disinformation detection. I will work on and evaluate various approaches for fraud or disinformation detection, in collaboration with other members of the Text and Data Mining Unit. Particular attention will be devoted to the robustness of the methods that will be developed, i.e., their ability to resist to the presence of outliers in the data. More specifically, during the initial part of the project I will be working on the robustification of certain co-clustering techniques.

- Flexibility of topics
- Flexibility in investment
- Time efficient
- Attracting talent for later jobs
- Bringing new ideas into operations

European Strategy for RIs (ESFRI)

- Support a coherent and strategy-led approach to policy-making on RIs in Europe
- Better use and development of RIs, at EU and international level
- Overcome the limits due to fragmentation of individual policies
- Provide Europe with the most up-to-date RIs
- Respond to the rapidly evolving Science frontiers

ESFRI's delegates are nominated by the Research Ministers of the Member and Associate Countries, and include a representative of the Commission.

DATA, COMPUTING & DIGITAL RESEARCH INFRASTRUCTURES

ENERGY

ENVIRONMENT

HEALTH & FOOD

PHYSICAL SCIENCES & ENGINEERING

SOCIAL & CULTURAL INNOVATION



ESFRI Roadmap (Environment)

Transnational Access to ESFRI RIs

ENVIRONMENT / PROJECT



DANUBIUS-RI
International Centre for Advanced Studies on River-Sea Systems

ENVIRONMENT / PROJECT



DiSSCo
Distributed System of Scientific Collections

ENVIRONMENT / PROJECT



eLTER RI
Integrated European Long-Term Ecosystem, critical zone and socio-ecological system Research Infrastructure

ENVIRONMENT / LANDMARK



ACTRIS
Aerosol, Clouds and Trace Gases Research Infrastructure

ENVIRONMENT / LANDMARK



EISCAT_3D
Next generation European Incoherent Scatter radar system

ENVIRONMENT / LANDMARK



EMSO ERIC
European Multidisciplinary Seafloor and water-column Observatory

ENVIRONMENT / LANDMARK



EPOS ERIC
European Plate Observing System

ENVIRONMENT / LANDMARK



EURO-ARGO ERIC
European contribution to the international Argo Programme

ENVIRONMENT / LANDMARK



IAGOS
In-service Aircraft for a Global Observing System

ENVIRONMENT / LANDMARK



ICOS ERIC
Integrated Carbon Observation System

ENVIRONMENT / LANDMARK



LifeWatch ERIC
e-Infrastructure for Biodiversity and Ecosystem Research



Atmospheric Observatory Tower at JRC Ispra site (Italy)

11 Research Infrastructures in the field of Environment

Landscape of JRC Research Infrastructures

JRC hosts **39 physical research infrastructures** with a potential of opening to external users

(out of a total of **56 facilities**)

17 are currently opening up



- **European Reference Laboratory for Air Pollution (ERLAP)** JRC has the legal obligation to organise quality assurance programmes with the MS competent authorities for air pollution measurements.
- **EC Atmospheric Observatory** (100 m tower at JRC Ispra Site) carries out optical and physical characterisation of aerosols, measures gaseous air pollutants and as well GHG.

The GHG part is part of **European Research Infrastructure Consortium** infrastructure on **Integrated Carbon Observation System (ICOS-ERIC)**. The aerosol part to become an ERIC research infrastructure soon, the latest next year.

Rationale

Opening access to JRC Research Infrastructures is part of the **JRC Strategy 2030**

Benefits to users and the ERA

- **Fair and transparent** method for allocating access
- Make JRC RIs available to external users in view of the **limited resources** in Europe
- Provide **training and capacity building**
- Bridge the **gap between science and Industry**
- **Dissemination** of knowledge, foster collaboration in Europe

Benefits to the JRC

- Expand JRC **networking** capabilities
- Enter into **new key areas** of research
- Maintain JRC **scientific excellence**
- Raise the **value and visibility** of JRC Ris
- Widen data and research base

Framework for Access

Based on the **Charter of Access to RIs of DG RTD**

Principles and guidelines when defining Access policies for RIs

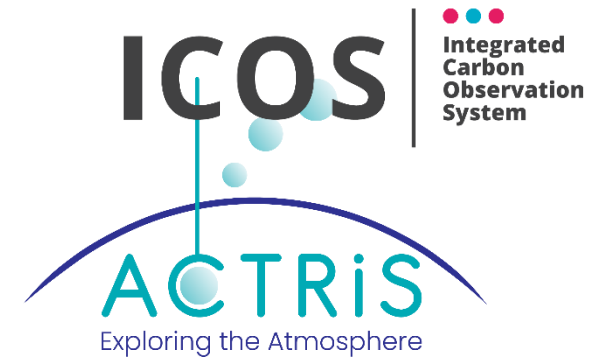
Access Modes

- **Relevance-driven**
 - **Peer-review selection** following a call for proposals: Scientific implementation, collaboration and access to new users, strategic relevance to the JRC, strategic importance for Europe
 - Mainly targeted to academia and research institutions, as well as to **SMEs**
 - Users charged the **additional costs**; nuclear RIs free of charge – Users pay for consumables
 - Open dissemination after an 18 month embargo period
- **Market-driven**
 - Selection by the JRC
 - Mainly targeted to industry
 - Users charged the full costs
 - Data not disseminated via open schemes

Open to

- ✓ EU Member States
- ✓ Countries associated to Horizon Europe

JRC Projects ICOS and ACTRIS



The JRC actively contributes to **ICOS** and **ACTRIS** with the **EC Atmospheric Observatory**:

ICOS and ACTRIS research infrastructures (currently and soon, respectively) under ERIC

- provide standardised, high-quality and long-term observations
- facilitate research and innovation

regarding the carbon cycle (greenhouse gases) and short-lived climate forcers + air pollutants, respectively.

Both RIs are key partners to the **WMO Global Atmosphere Watch (GAW)** programme (essential climate variables)

The JRC is also responsible for QA/QC activities for aerosol in-situ measurements in ACTRIS.

Conclusion

- Oxygenising administration and policy through research
- Balancing innovation, underpinning in house research and support for optimal operations
- Leveraging on synergies as a medium-long term strategy

