Collaboration for the impactful science
the ENVRIplus experience

Welcome
Magdalena Brus, Werner Kutsch

Introduction of the ENVRI community and the ENVRIplus project
Werner Kutsch
A complex pattern of environmental problems

Greenhouse gases and global warming
A complex pattern of environmental problems

Loss of biological diversity
A complex pattern of environmental problems

Pollution
A complex pattern of environmental problems

Latest CO₂ reading
June 02, 2019
Carbon dioxide concentration at Mauna Loa Observatory

413.91 ppm
and a youth that demands a future!

A list of rules and recommendations for those on school strike for climate:
- No violence
- No damage
- No littering
- No profit
- No hate
- Minimise your carbon footprint
- Always refer to science

Our demand:
- Follow the Paris Agreement and the IPCC report.
- Stay below 1.5°C.
- Focus on the aspect of equity and climate justice, clearly stated throughout the Paris Agreement. Because no manifesto can be more radical than that.
- Unite behind the science.

#FridaysForFuture #SchoolStrike4Climate
Collaboration is the key
In policy making and in science
and between them
ESFRI RIs are facilities, resources or services of a unique nature, identified by European research communities to conduct and to support top-level research activities in their domains. They include:

- major scientific equipment – or sets of instruments;
- knowledge-based resources like collections, archives and scientific data;
- e-Infrastructures, such as data and computing systems and communication networks;
- and any other tools that are essential to achieve **excellence in research** and innovation.
What is excellent science?
What is excellent science?

- had decades to think about his ideas,
- never worked for a university or research institution,
- was never evaluated by H-Index or H-Slope,
- never had to write a H2020 proposal.

1831 - 1836 1837 1859
Voyage of H.M.S. Beagle.

[Image of Charles Darwin]
What are institutions (research infrastructures)?
The infrastructure supporting Charles Darwin
The infrastructure supporting Charles Darwin

Data acquisition  Data services  Data curation

Metadata
The infrastructure supporting environmental science

Data acquisition  Data services  Metadata  Data curation

Who is the genius?

What are the requirements of the (genius) user?
The life cycle of a (distributed) Research Infrastructure

ESFRI Process

ESFRI Roadmap Proposal

ESFRI Landmark Evaluation

ESFRI Impact Evaluation

Infrastructure development

Construction

Standardisation

Data infrastructure

Governance

Stakeholder Interim Committee

ERIC

General Assembly

EU Support

Community building (IP, I3, IA)

Preparatory Phase Project

Landmark Project

Community building

Preparation

Operational

Obsolete

dismantle

The life cycle of a (distributed) Research Infrastructure

Environmental Research Infrastructures are often distributed and embedded into global efforts.
WHAT IS ENVRI?

It is the collaboration of European Environmental Research Infrastructures towards:

Science Integration
• a universal understanding of our planet
• a framework for science on all interactions within the Earth System, from solid earth to near space

Data Integration
• common data access policies and technologies

Resource Integration
• joint innovation, common technologies,
• co-location

Common Societal Impact
The ENVRI community

ESFRI Landmarks (ERICs)
ESFRI Projects
ESFRI Wannabes
Integrated Activities
The ENVRIplus project

Project duration: 1.5.2015 – 31.7.2019

15 Mio € budget

42 Beneficiaries

6 Themes / 19 Work Packages

92 Deliverables

4 Domains: atmosphere, terrestrial ecosystems, ocean, solid earth
HOW HAS ENVRIPLUS BEEN DESIGNED?

Experts → Reference Model Concept → Implementation → Experience of RIs

Reference Concept

Experience of RIs

Maturation of Research Infrastructures

Improved inter-operability
Today is to wrap up the impact of ENVRIplus on ENVRI collaboration

**Better Science**

**Enhanced Synergies**

**Societal Impact**

**Future Developments**

**Global Collaboration and Integration**
What have we achieved?

Shared technological developments
What have we achieved?

Common vocabulary:
- Reference model
- Identification/Citation
- Processing
- Optimization
- Curation
- Cataloguing
- Provenance

Meta information linking:
- Linking model

RI development:
- Architecture design

Technology:
- Storage, computing, networking and other technologies provided by underlying e-Infrastructures (EGI, EUDAT → EOSC)

Requirements Technology

Gap analysis

Validation

Customization and adoption

Deployment and operation

Improved data life cycles

Project Number: 654182
What have we achieved?

Multi-disciplinary Research Platforms
ENVRIplus use cases for access
What have we achieved? Ethical guidelines for RIs

STRUCTURE

• The EGs are structured in a main section, containing general ethical values, and a subordinate section, where some delicate matters of interest for RIs are discussed from an ethical perspective.

• Ethical values included in the EGs refer to 4 ethical domains, affecting both individual scientists and RIs.

• These domains relate to the ethical profile of each scientist/technician, to his/her relationships with colleagues, to the interaction with society, to the duties towards the Earth system.

• In addition, the EGs refer to several matters that are considered of particular importance for Ris (working environment, data life cycle, conflicts of interest, and relationship with decision-makers). These matters imply the construction of a respectful and responsible work-space and the projection of institutional activities and results towards society.
What we have not achieved?

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June 02, 2019

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413.91 ppm

Full Record ending June 2, 2019

Start of ENVRIplus

CO₂ Concentration (ppm)

310 320 330 340 350 360 370 380 390 400 410


Today
In Earth Science, international collaboration is not a 'nice to have', it's a question of

2° be or not 2° be

Thank you for your attention!