

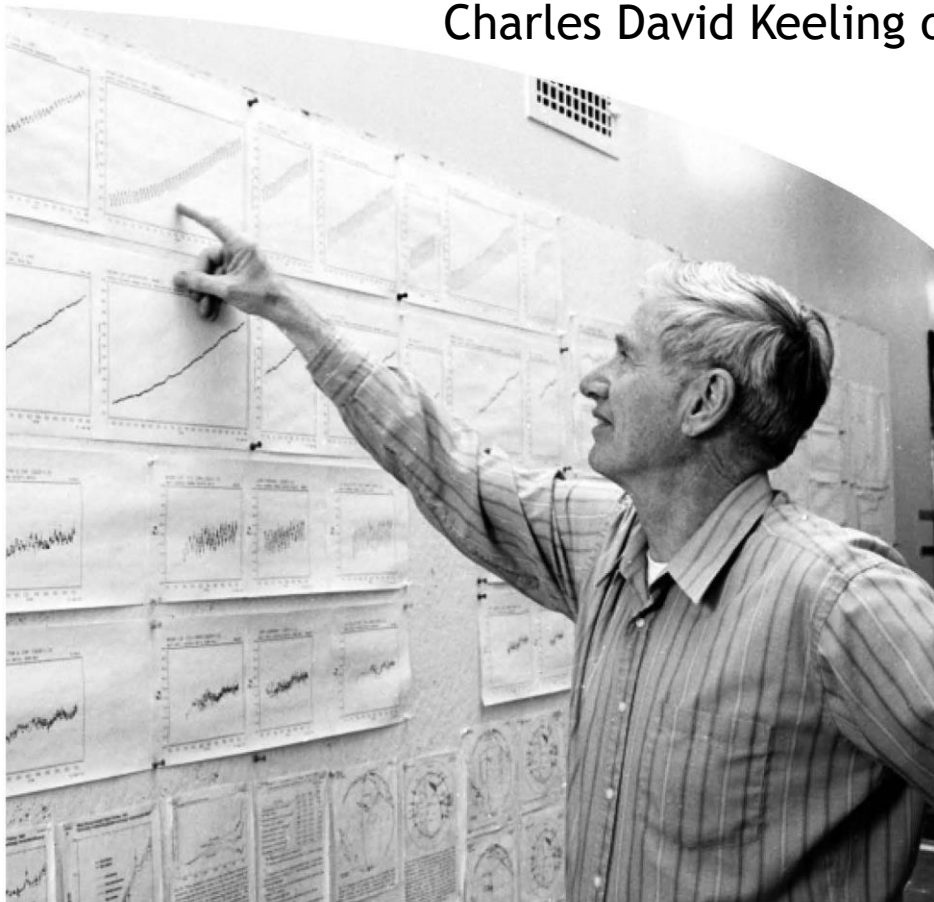


# Action towards Innovation Clusters and Spin-offs of Environmental RIs

Werner L. Kutsch, Director General, ICOS ERIC  
Lisbon 8. May 2017

# Introduction: the Keeling Curve and the Tesla or: who is the Innovator?

Charles David Keeling or Elon Musk?



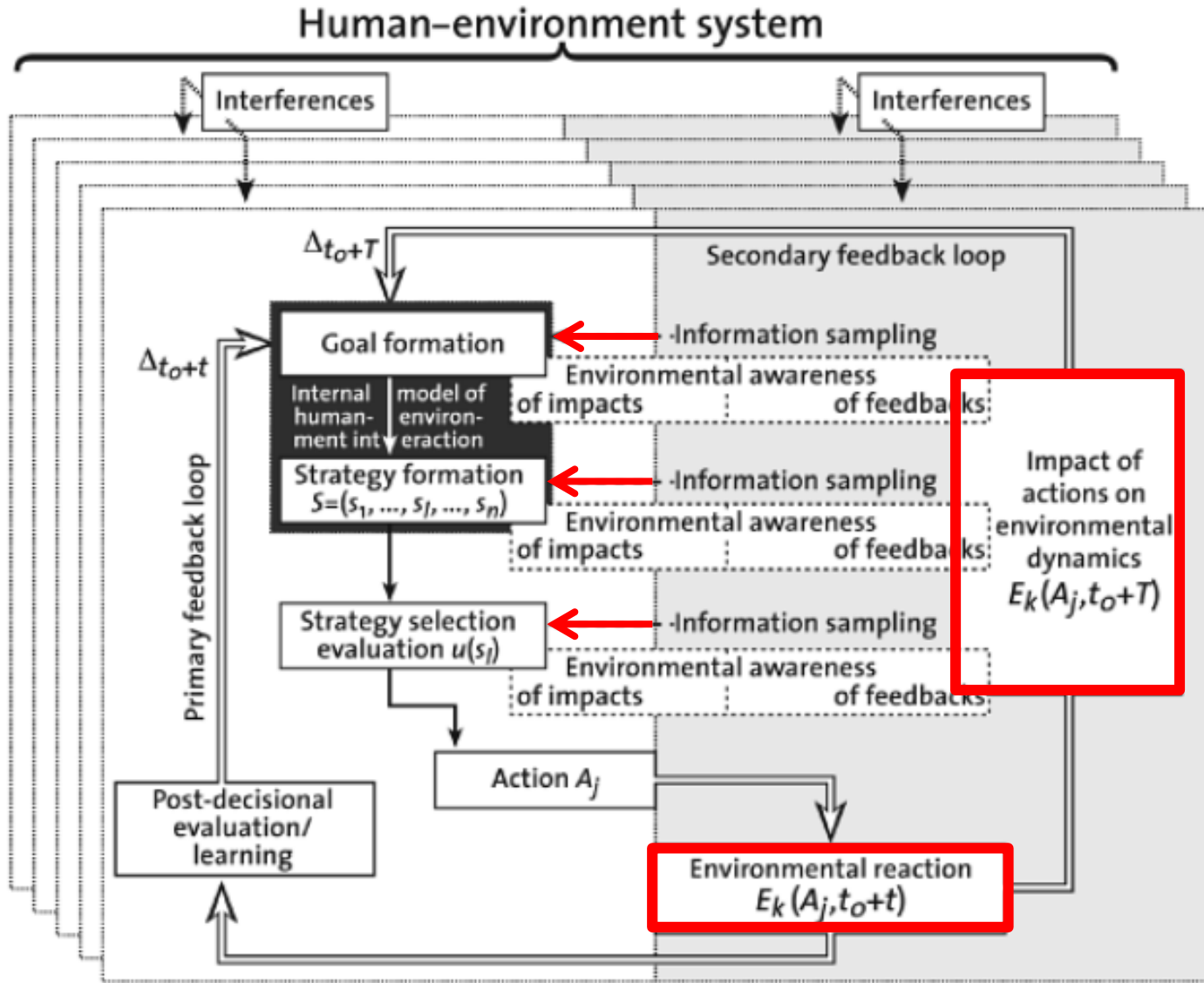
## The Keeling Curve

MAUNA LOA OBSERVATORY, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, APRIL 30, 2015  
SCRIPPS INSTITUTION OF OCEANOGRAPHY, UNIVERSITY OF CALIFORNIA, SAN DIEGO, JUNE 12, 2015

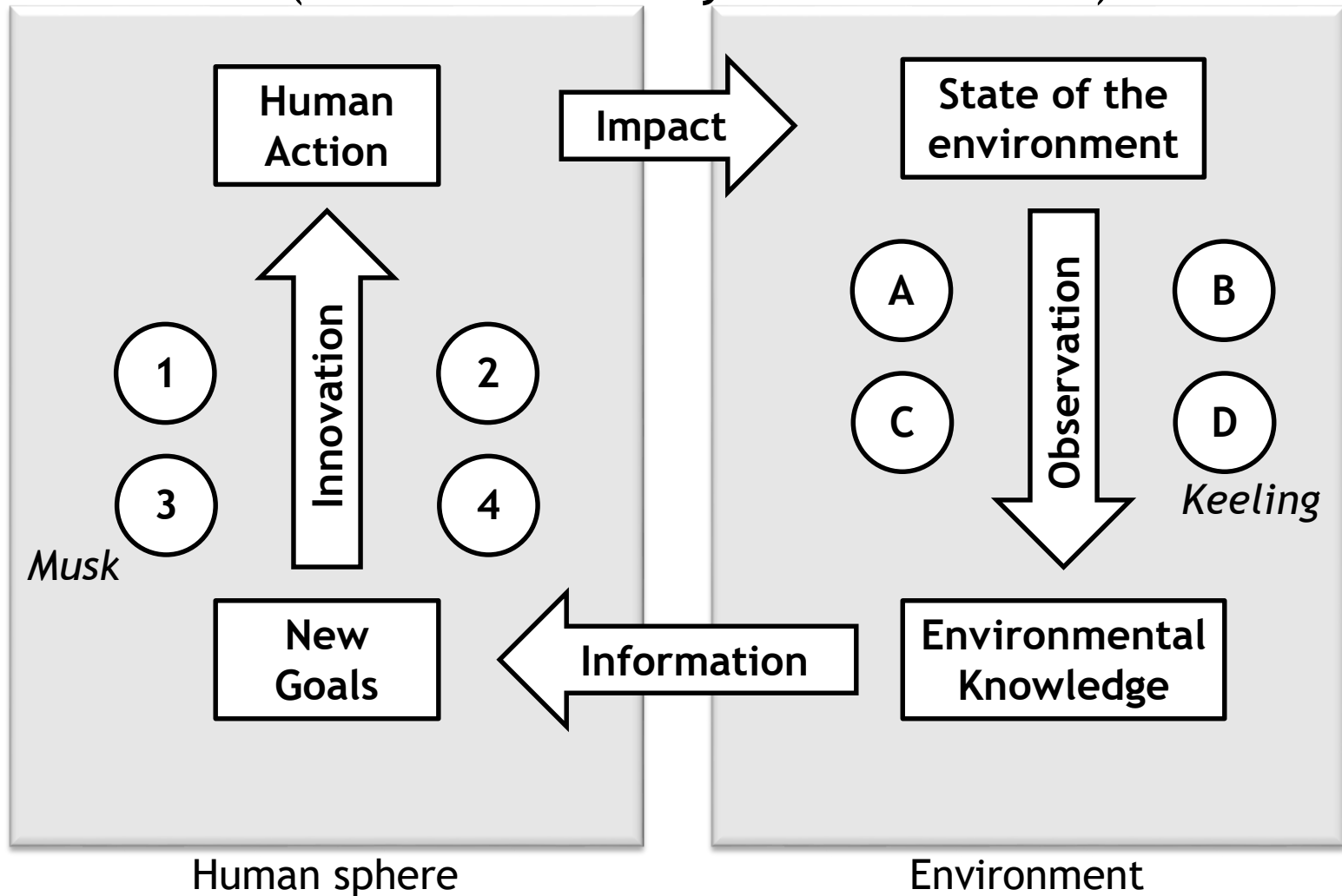
# Environmental Literacy

in Science and Society: From Knowledge to Decisions

By Roland W. Scholz, Claudia R. Binder

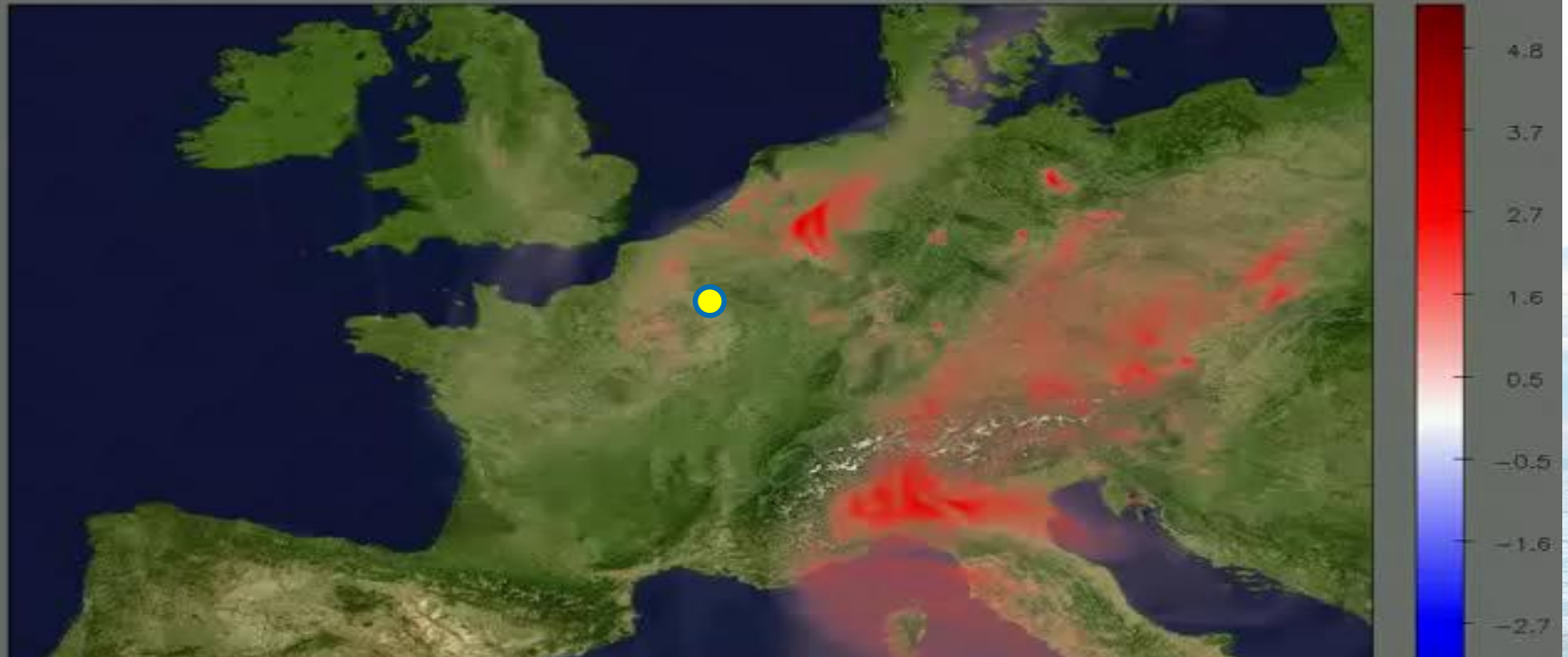


# Simplified human-environment Innovation Cycle (A - D and 1 - 4 symbolize actors)

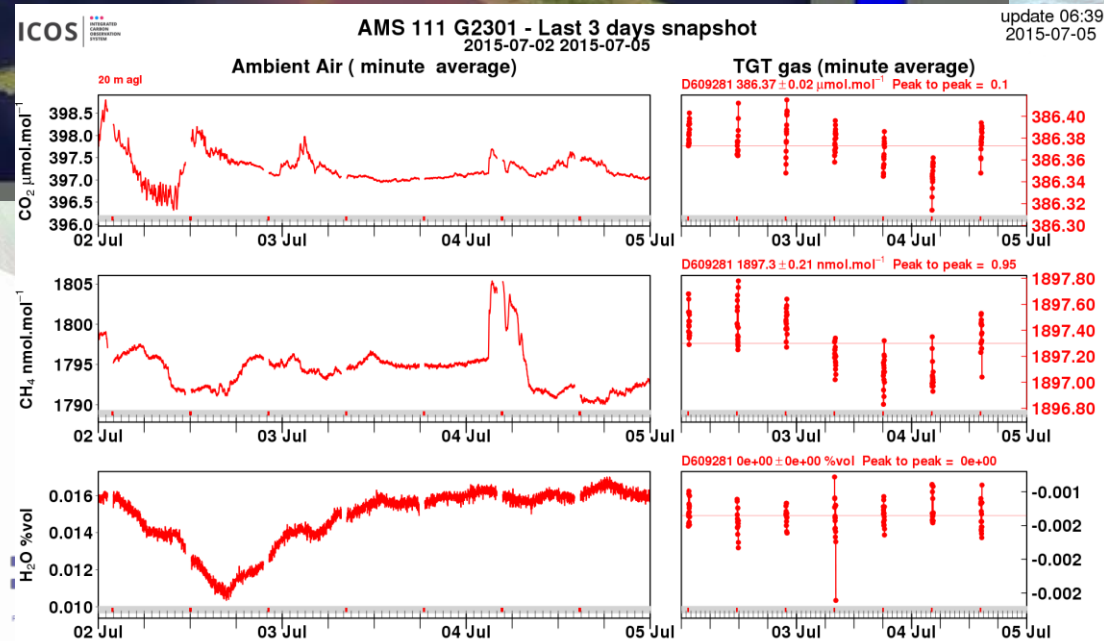




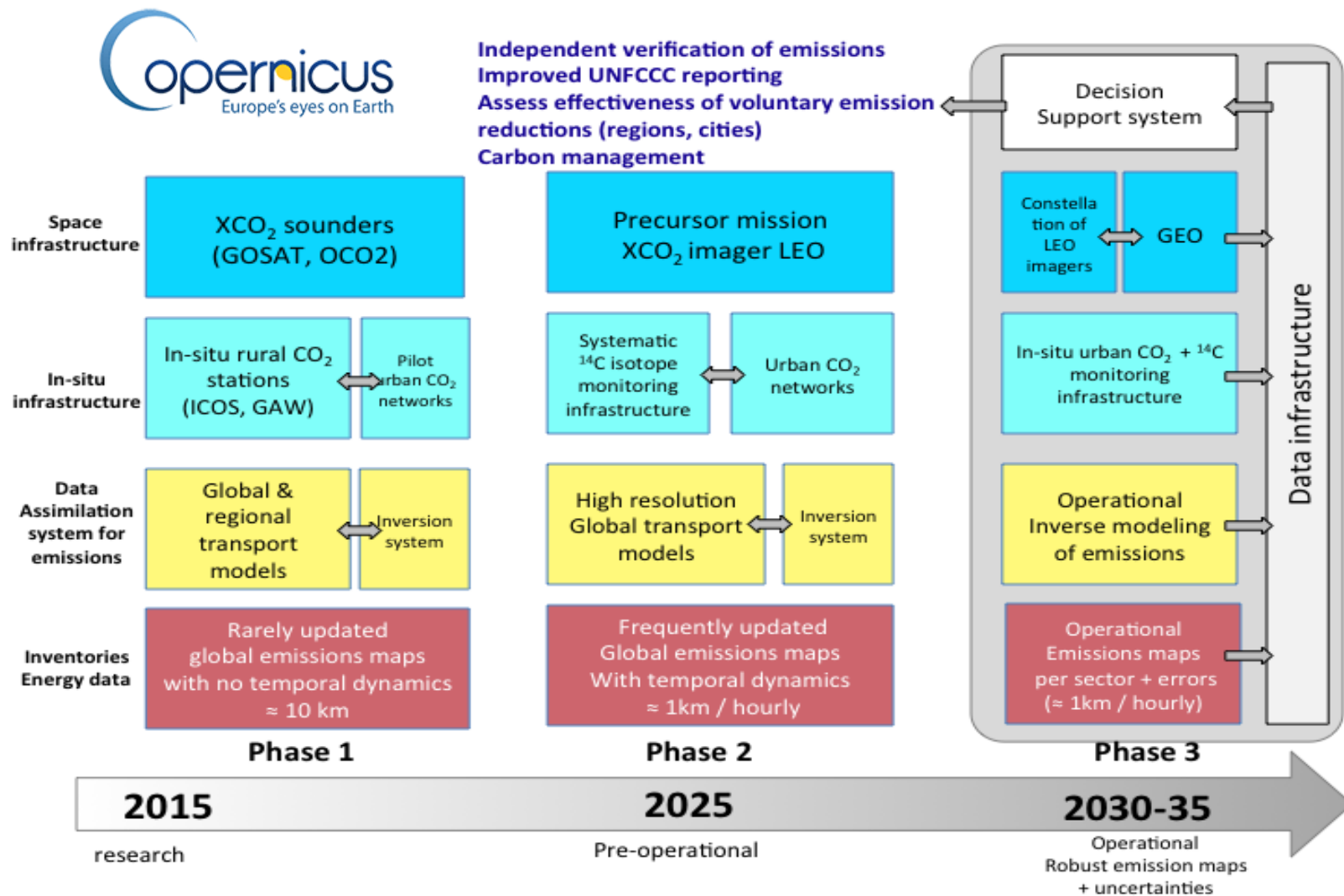
2008/03/24 00:00 UTC  
Biogenic + anthropogenic XCO<sub>2</sub> [ppm]



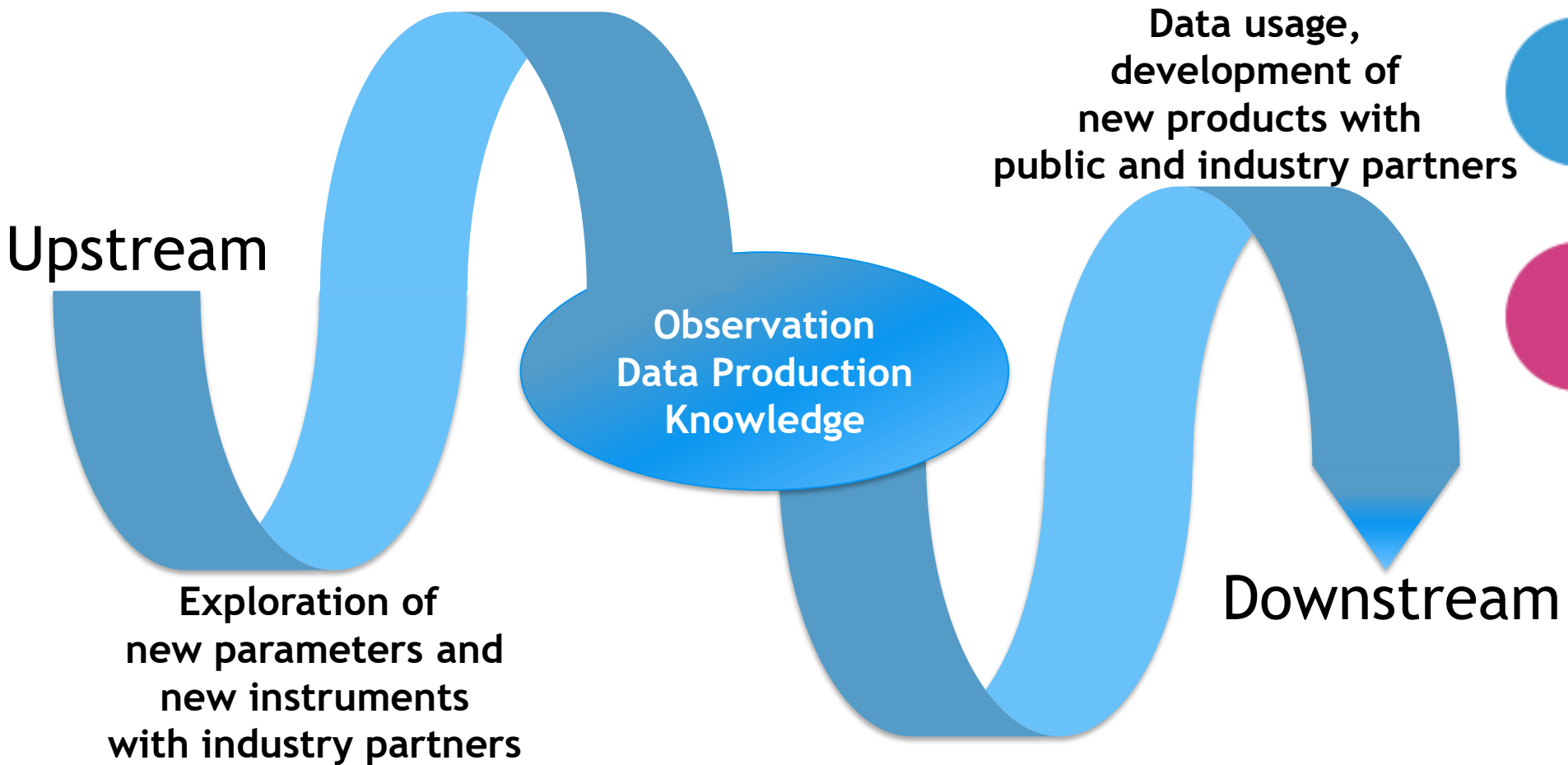
Simulation of total column CO<sub>2</sub> (XCO<sub>2</sub>)  
over Europe 20 Mar - 30 Apr 2008 at  
7 km x 7 km resolution  
Animation by Dominik Brunner (Empa),  
model simulation by Yu Liu and Nicolas Gruber (ETH)



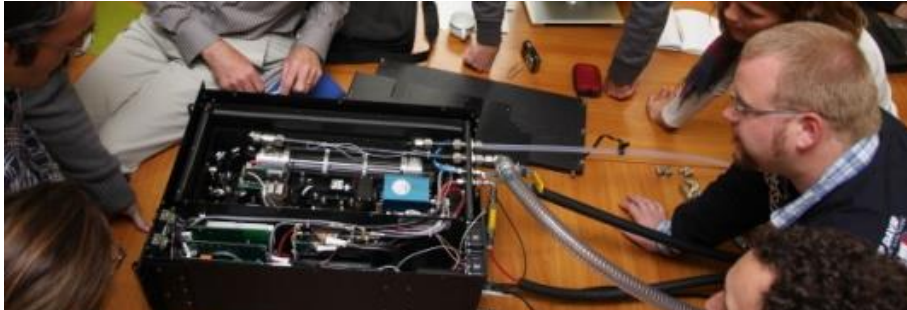
# COPERNICUS CONCEPT FOR A VERIFICATION SYSTEM (CIAIS ET AL. 2015)



# Upstream and downstream Innovation



# Upstream Innovation: Cooperation with Supplier Industry



Common instrument development,  
Standardisation, Metrology



Access to field test facilities



Spin-off from own developments



# 1<sup>st</sup> EU Environmental Research Infrastructures - Industry joint innovation partnering Forum

18 - 19 May 2017

MINATEC / Grenoble, France



23 European environmental Research Infrastructures (ENVRI RIs) meet with Private Industry Partners to explore directions and opportunities for new joint innovation projects.

→ More info on [ENVRIplus website](#)

# 1st EU Environmental Research Infrastructures— Industry Joint Innovation Partnering Forum

## PROGRAMME

### Session 1: Emerging technologies

**Keynote** *Dr Anders Tengberg*: Development of optode sensor technology for oceanographic applications

### Session 2: Standardization, conformity and certification

**Keynote** *Paul Quincey*: International Equivalence of Measurement Standards in Support of Environmental Monitoring  
*Dr Paul Quincey is a Principal Research Scientist for Gas and Particle Metrology at the National Physical Laboratory in United Kingdom.*

### Session 3: RI-industry innovation cooperation case studies & success stories

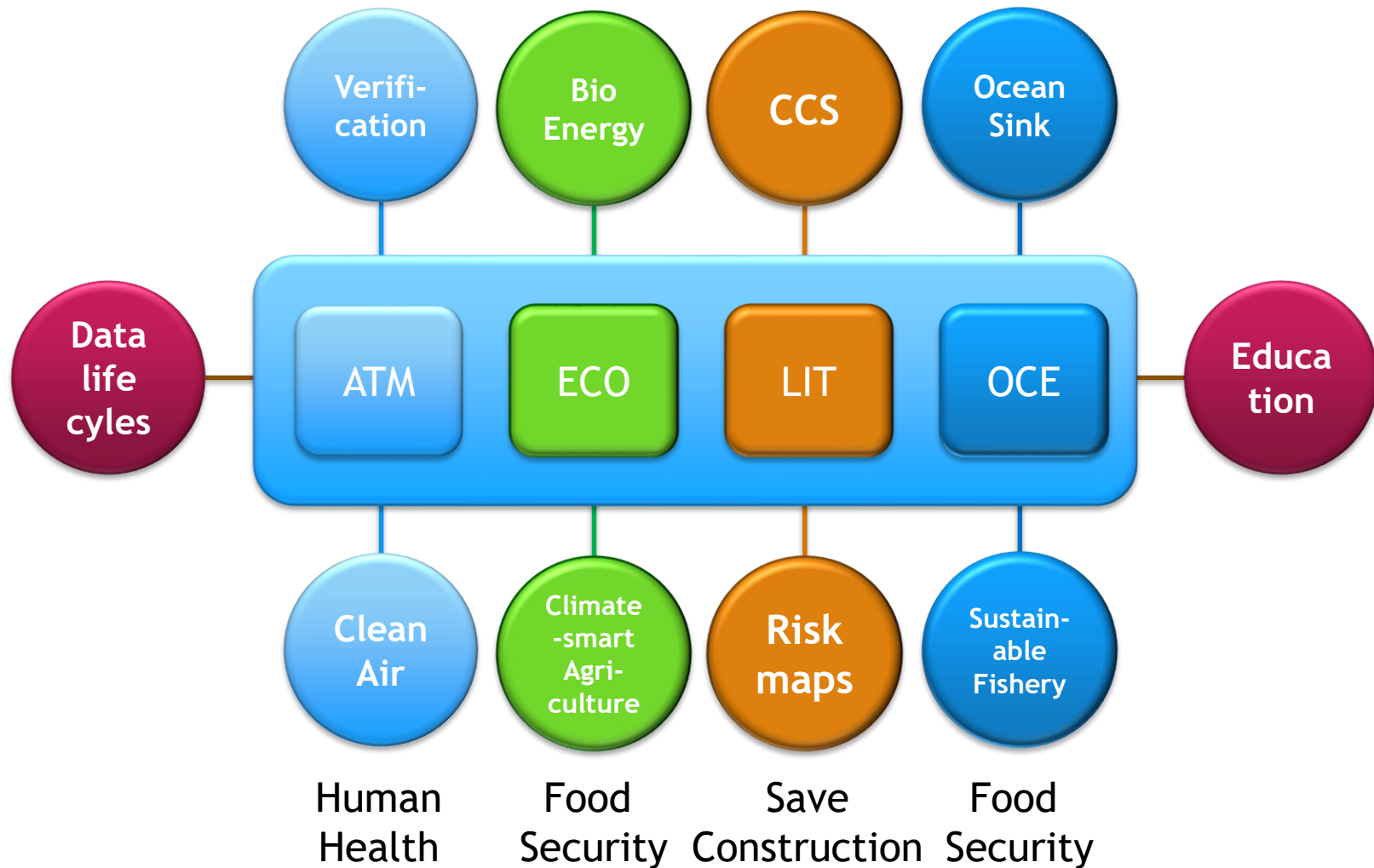
**Keynote** *Geoff Sawyer*: The challenge for geo-spatial service providers in the Digital Economy  
*Geoff Sawyer is a Secretary General at the European Association of Remote Sensing Companies (EARSC).*

### Session 4: Cooperation in new EU research programs and projects

\*Please note this session is dedicated to the industry partners' 3-5 minutes PICO-type presentations only

# Examples for downstream Innovation based on Environmental RIs

## Fossil Fuel Reduction and Decarbonisation of Industry



# Barriers

- Divergent interests of industry and environment,
  - Internal vs external costs,
  - „old“ industries are not very innovative,
  - „new“ industries also have environmental impact
- Innovation in Europe slower than in e.g. in US,
- Complex expectations to Research Infrastructures,
- Legal uncertainties (tax regulations),
- Scientists like science.



# Conclusions

- Education, encouragement, and support for entrepreneurship is needed,
- New careers for bridging from data to thinking in innovative solutions,
- Reflexion about infrastructures: is Keeling's job to construct a Tesla?,
- If yes: where is the risk capital,
- Clearer legislation and tax regulations on RIs.