



United Nations

Department of Economic and Social Affairs



System of Environmental Economic Accounting



ARIES
Artificial Intelligence for Environment & Sustainability



k.LAB
Knowledge Integrated Modelling

bc³

BASQUE CENTRE FOR CLIMATE CHANGE
Klima Aldaketa Ikergai
Sustainability, that's it!



EXCELENCIA MARIA DE MAEZTU



science for a changing world

ARIES for SEEA

Semantic technology to streamline, facilitate and support SEEA accounting

Advancing Earth Observation for Ecosystem Accounting

Ferdinando Villa, Stefano Balbi, Ken Bagstad, Alessandra Alfieri, Bram Edens

The ARIES Team @ bc3research.org

Revolutionizing access to and use of data and methods



SEMANTICS
a shared, easy-to-learn **language** used to describe and query scientific observations



OPEN, LINKABLE DATA
an immediately actionable **resource layer**, streamlining publishing, review and curation of semantically annotated data

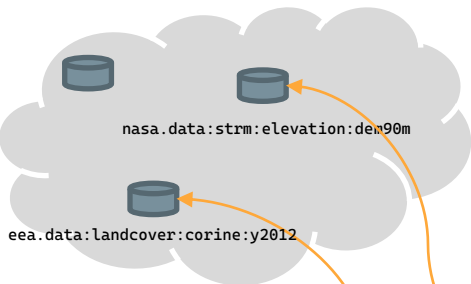


OPEN, LINKABLE MODELS
a fully connected **information landscape** using open, safe, accurate, “Wikipedia-like” sharing of linkable model components

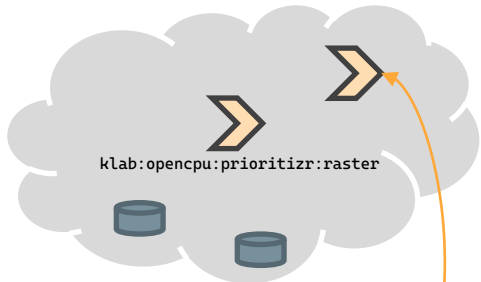


AI-POWERED INTEGRATION
a **software technology** supporting coding, publishing and distributing data and models, linking and generating new knowledge from existing building blocks

ARIES: a semantics-driven, AI-assisted model and data federation

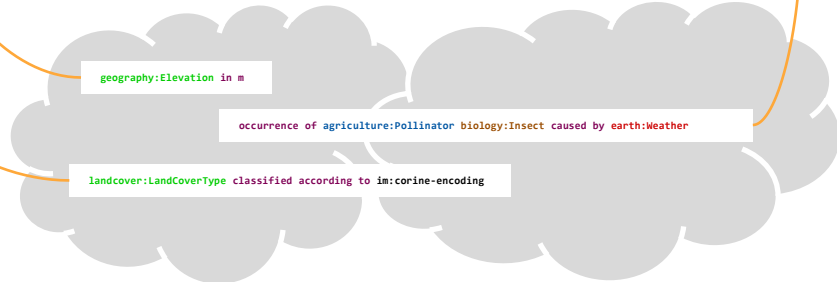
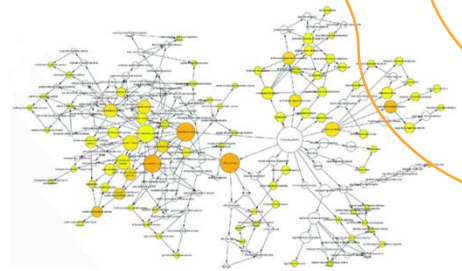


federated, open source servers managed by partners



RESOURCE layer

- **Assets** identified by URNs
- Include “conventional” data, models, and access metadata for external services and computational platforms

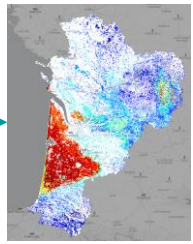
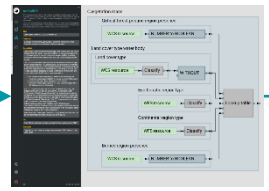
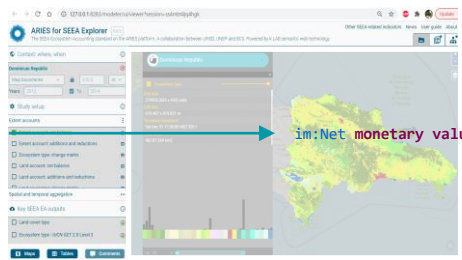


SEMANTIC layer

- **Worldview**: shared **concepts** and relationships, communally curated
- **Semantic assets**: associate resource URNs to their meaning in terms of the worldview

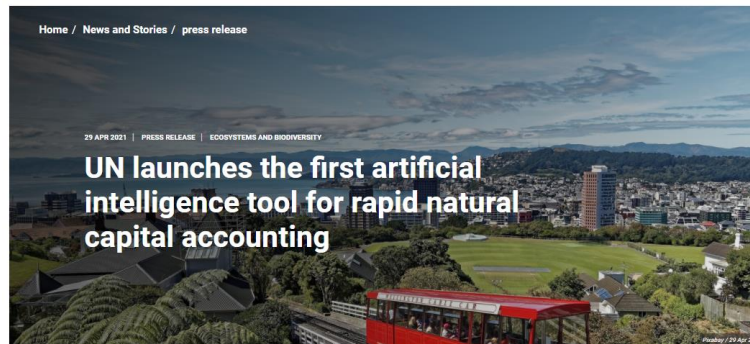
ARIES AI and modeling engine

- **User queries** (“observe *concept in context*”) asked through **API** or **applications** - such as **ARIES for SEEA**
- AI assembles the best-case algorithm and runs it to produce **observations: data, tables etc**



ARIES for SEEA: Rapid, standardized environmental-economic accounting

- **Globally available, customizable data and models** enable SEEA EA compilation anywhere & improvement with local data where available
- **Minimal learning curve** without compromising correctness and method articulation
- **Automate production** of maps & tabular output, guaranteeing compliance with SEEA standard
- An opportunity for the community to share & **reuse interoperable data & models**



New tool will make it easier for countries to measure ecosystems

New York, 29 April 2021 – An innovative artificial intelligence (AI) tool that will make it easier for countries to measure the contributions of nature to their economic prosperity and well-being was launched today by the United Nations and the Basque Centre for Climate Change (BC3).

Further Resources

[ARIES for SEEA](#)
[Ecosystem Accounting](#)

Table 1. Occurring ecosystem types (selected level 3 Ecosystem Functional Groups of the IUCN Global Ecosystem Typology 2.0)

	Identified forest equivalent	Coastal subwatershed method	Openland	Urban-industrial ecosystems	Terrestrial
Start of year of 2012 (BvT)	158.25	340.39	1807.02	465.57	394.46
Start of year of 2014 (BvT)	158.25	340.81	1819.72	462.57	403.51
Net change	0.00	0.54	12.70	-3.00	9.05

Table 2. Occurring ecosystem types (selected level 3 Ecosystem Functional Groups of the IUCN Global Ecosystem Typology 2.0)

	Identified forest equivalent	Coastal subwatershed method	Openland	Other
Opening extent (at start of 2012)	158.25	340.39	1807.02	650.1
ADDITIONS to extent				
Expansions	0.00	0.00	32.39	42.41
Reductions to extent				
Regressions	0.00	0.00	71.69	0.00
Net change in extent	0.00	0.00	59.10	42.41
Closing extent (at start of 2014)	158.25	340.81	1819.72	692.51



SEEA interoperability strategy

- ▶ Current state of interoperability & vision for the future
- ▶ Roles & responsibilities (data providers, modelers, institutions incl. NSOs)
- ▶ Implementing the strategy (pilot testing, engaging key stakeholders, governance, training/capacity building)

https://seea.un.org/sites/seea.un.org/files/interoperability_strategy_draft.pdf

2021
AN INTEROPERABILITY STRATEGY FOR THE NEXT GENERATION OF SEEA ACCOUNTING



UN Sector Hub

- **Development of data science methodologies** aimed to support new statistical approaches and methods in the domain of environment and sustainability
- **Capacity building and training** for researchers, statisticians and data scientists
- **Further development and maintenance of the ARIES for SEEA application** as part of the UN Global Platform as an authoritative source of data, methods and learning resources among the community of official statistics and its stakeholders
- **Implementation of the interoperability strategy that describes roles and responsibilities of all stakeholders** (data providers, research and model developers, and platform hosts) to support global implementation of the SEEA Ecosystem Accounting standard.



Thank you!

