

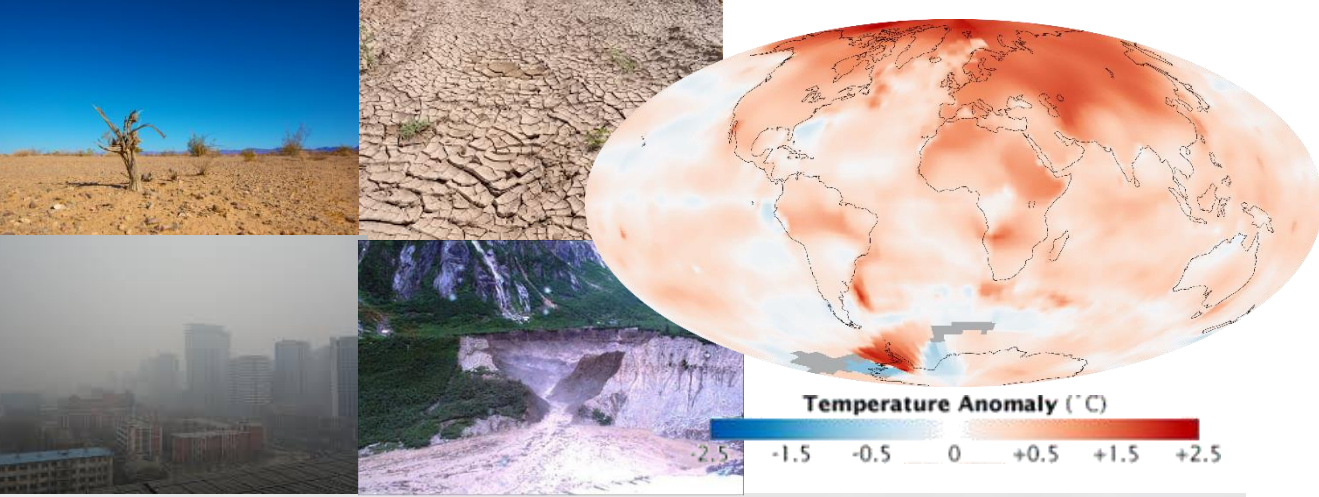


Socio-ecological system : semantic and modelisation

Danielle ZIEBELIN

Professor in Computer Science

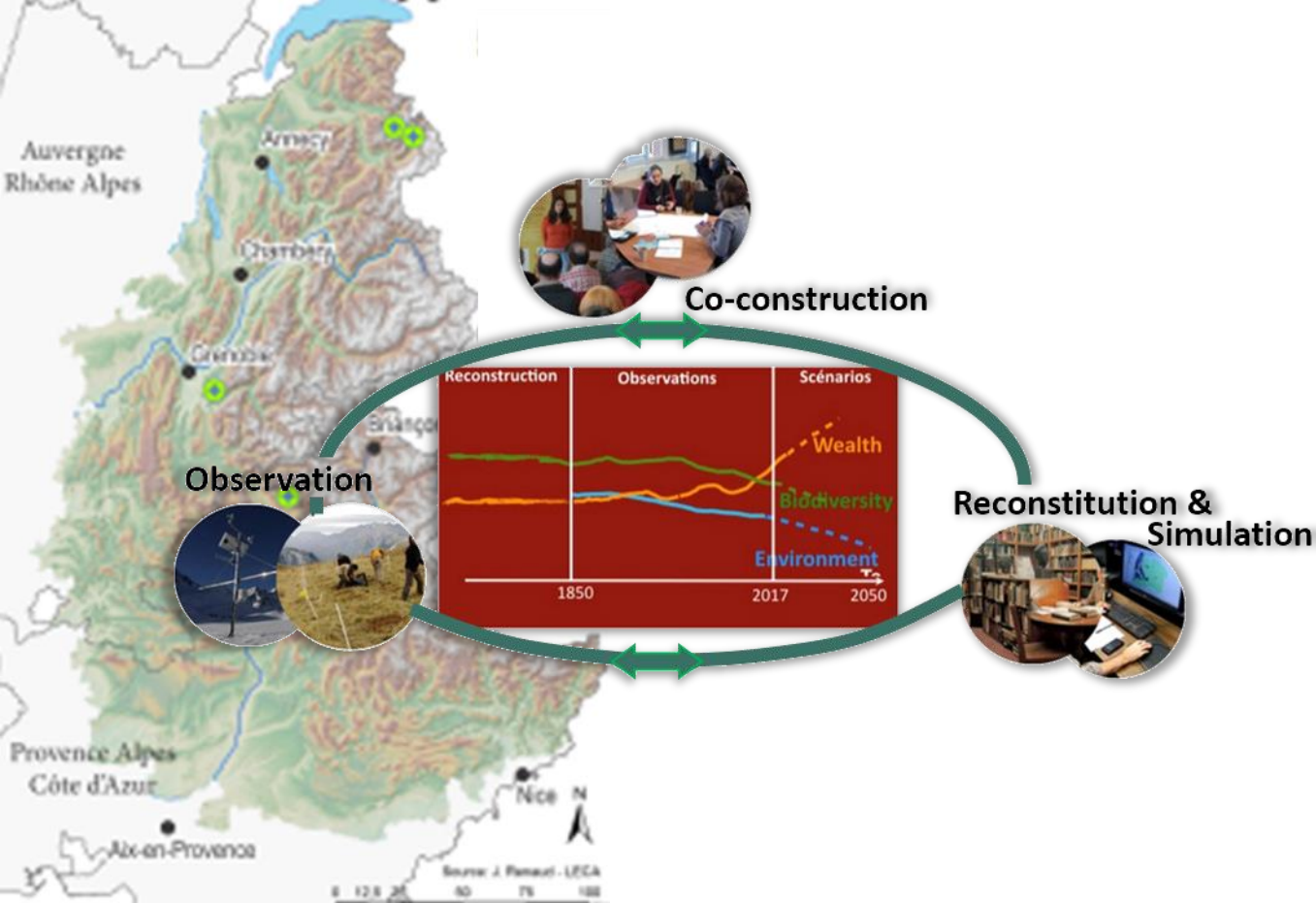
LIG (Laboratoire d'Informatique de Grenoble)
Grenoble Alpes University



Context

- Global Warming and Climate Change
- China and France are very involved in the fight against global warming





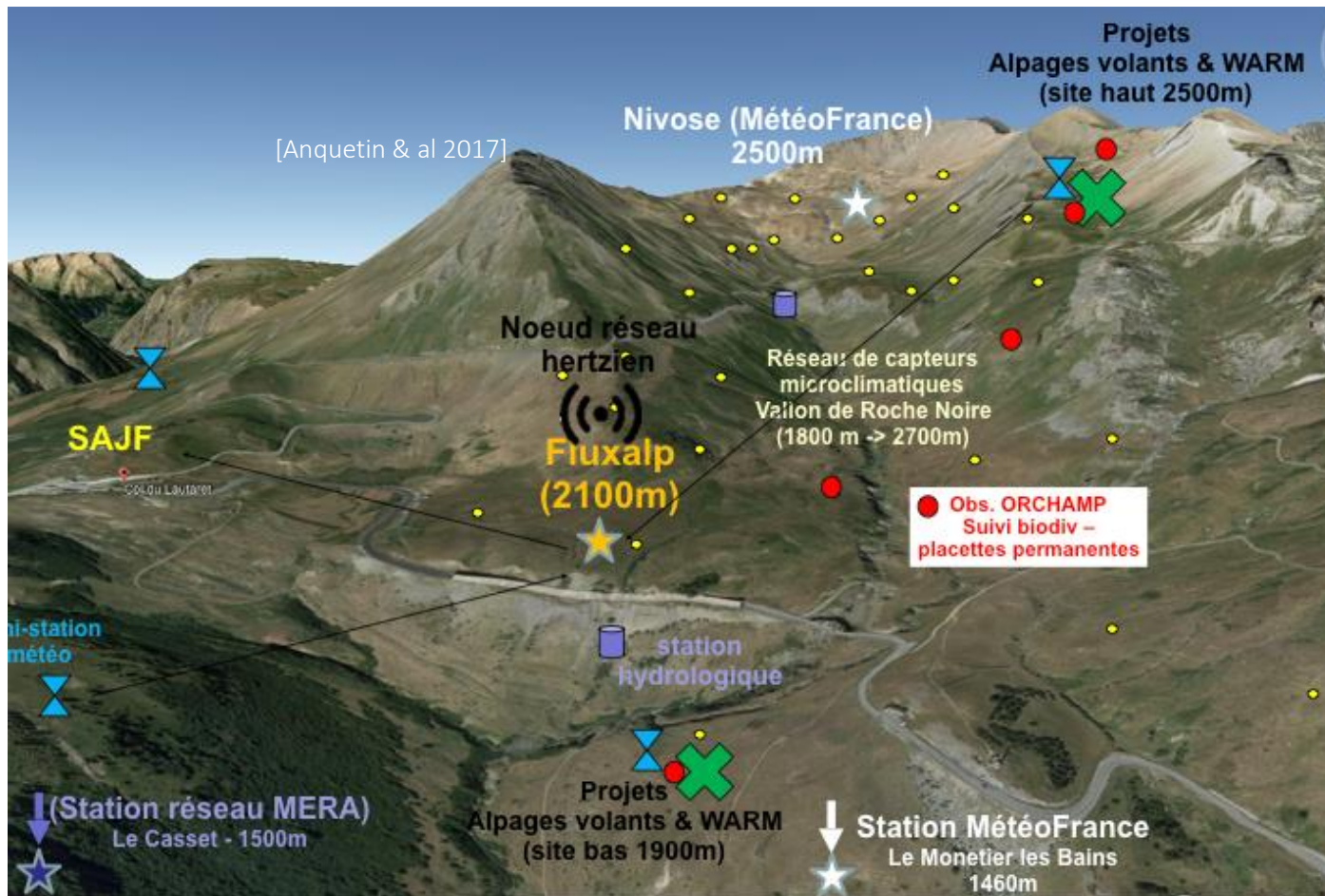
Development of multidisciplinary research programs

Trajectories project at
Grenoble Alpes University



<https://trajectories.univ-grenoble-alpes.fr/>

- 12 research groups : 70 people
- Area of interest
 - 2 alpine valleys (Chamonix Mont-Blanc, Maurienne, Romanche)
 - 2 alpine National Parks (Vanoise, Ecrins)
- Creating fully integrated socio-environmental data acquisition and management system
 - Make interoperable the existing observation platforms
 - Identify relevant observations for dealing with adaptation of territories to climate change
 - Provide novel observation system linking multidisciplinary data



- Context of multidisciplinary research programs

- Scientific Domains

- Climatology
 - climate & microclimate
- Hydrology
- Biology
 - biodiversity
- Meteorology
 - atmospheric
 - precipitation
- Glaciology
 - snow
 - Ice
- Sedimentary Archive

- Many Data Bases

[Anquetin & al 2017]



Kalideos
(CNES)
satellite
images



CEN
(Météo France)
meteorology



GLACIOCLIM
glaciology



IGE
hydrologic data
Arve valley



Lacs Sentinel
Alpine
lakes data



Alpages Sentinel
Pastoral
land uses



Refuges Sentinel
Tourism
land uses

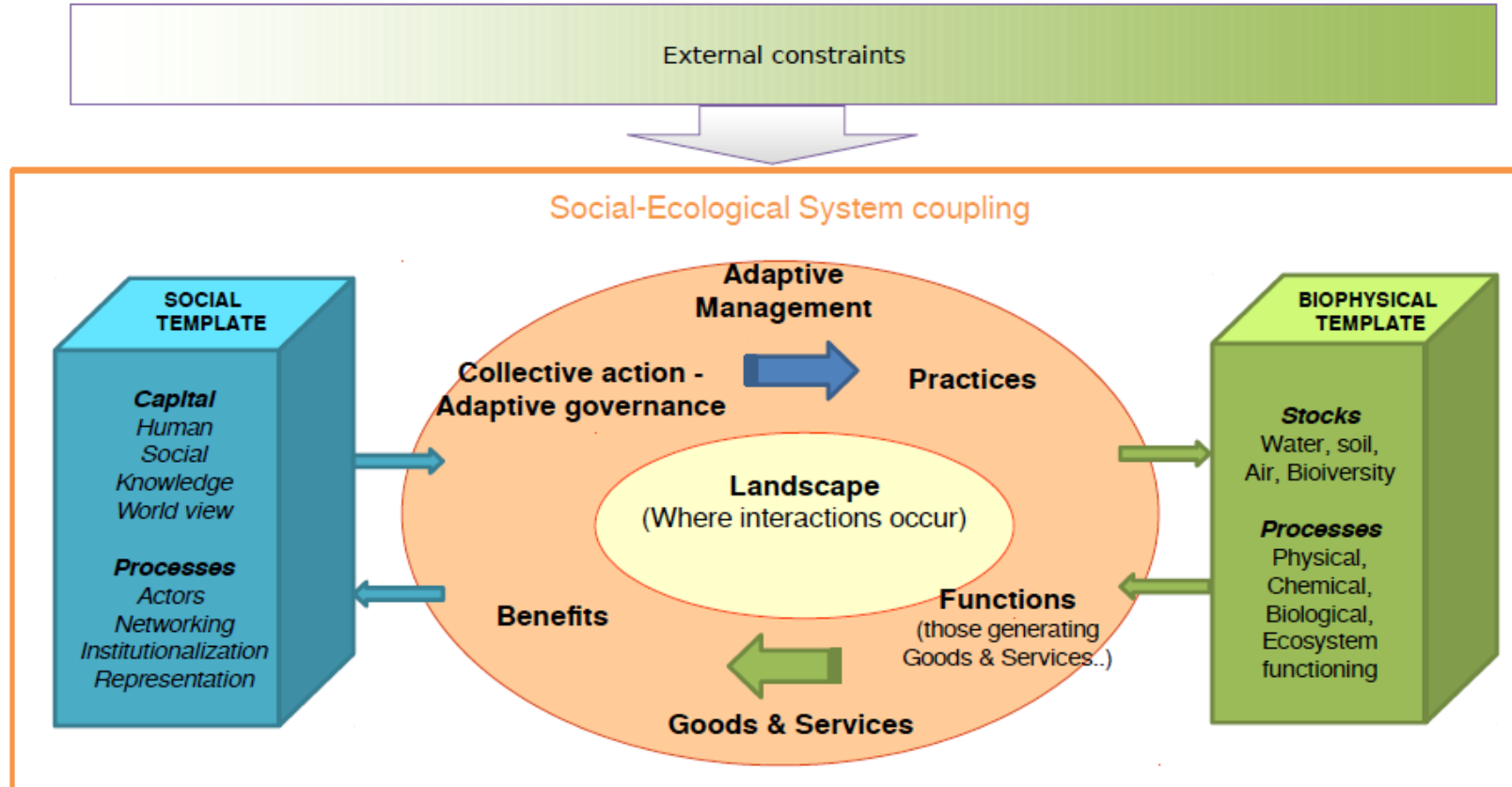


ZA-Alpes ORCHAMPS
Biology



Zones Ateliers RoZA
Sedimentary
Archive

Socio-Ecological System



Source: Gardner et al. A social and ecological assessment of tropical land uses at multiple scales: the Sustainable Amazon Network. 2013. *Phil. Trans. R. Soc. B*. DOI: 10.1098/rstb.2012.0166

Socio Ecological model

GCW glossary:

<https://globalcryospherewatch.org/reference/glossary.php>



la Muzelle Glacier



GLACIOCLIM
glaciology



**CUAHSI
HIS**
Sharing hydrologic data

Variable Name	Code	Method	Variable	Variable	Component
scd	scdps12004	surface water	selected	Mapping	alpine
ph	scdps12005	surface water	selected	Search	alpine

CUAHSI ontology

<https://hiscentral.cuahsi.org/startree.aspx>



**Lacs
Sentinel**
Alpine
lakes data

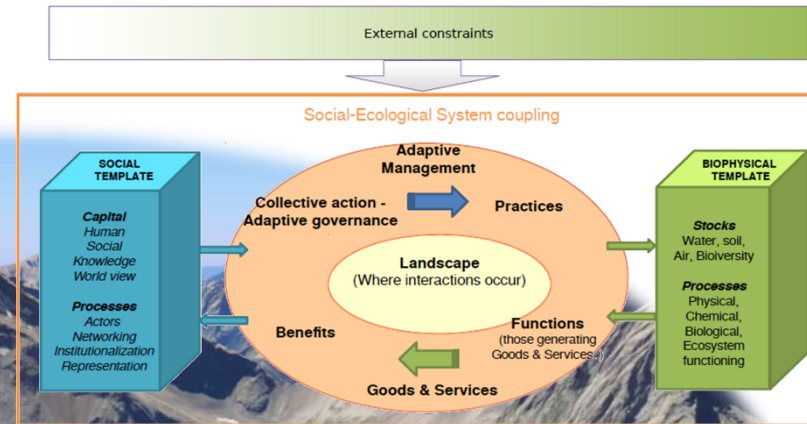


**Zones Ateliers
RoZA**
Sedimentary
Archive



The LiPD Ontology: lake sediments,

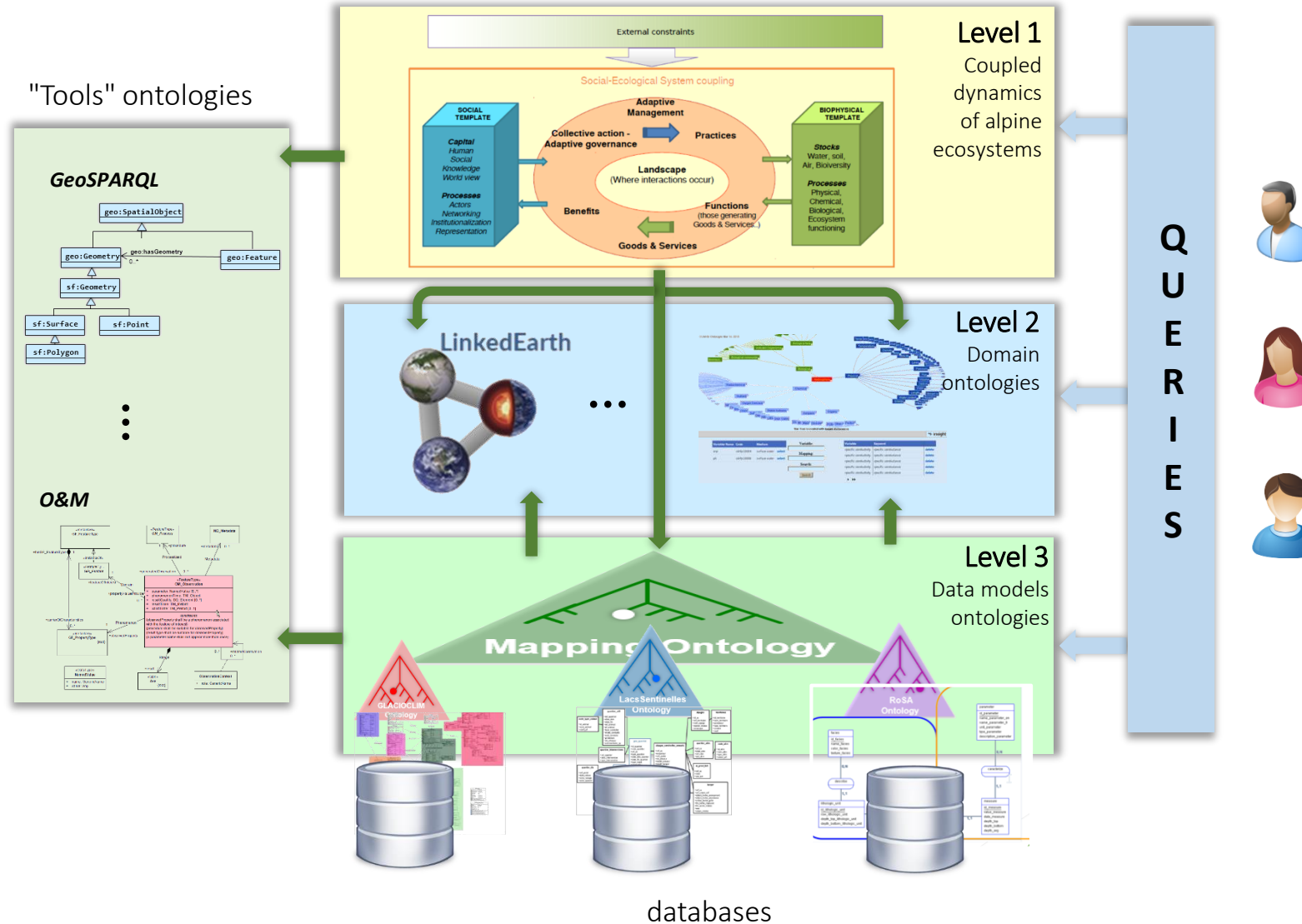
<http://linked.earth/ontology/>



la Muzelle Lake

Combe des Ruines

Links with ontologies and models



Mutual benefits and interactivities

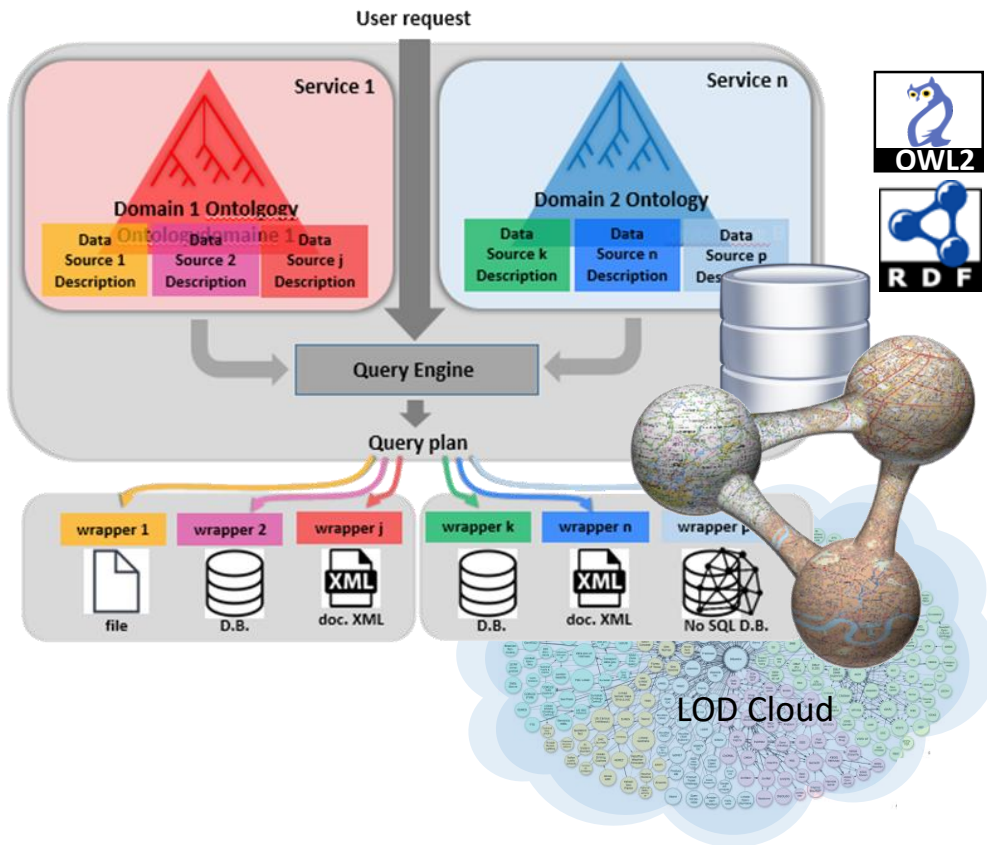


- Common objectives :
 - sharing, processing, analysis and visualization of data linked to global warming
- Grenoble group's expertise :
 - semantic interoperability of the data, models and processes, which are available in a web of data platform
- LIESMARS group's expertise :
 - know-how in geospatial services to support geoprocessing modelling and environmental monitoring based on GeoJModelBuilder platform

UNIVERSITÉ
Grenoble
Alpes



Trajectories platform (LIG)



GeoModelBuilder (LIESMARS)





Expected contributions

- Long-term partnership
- Multidisciplinary consortium between our two countries
- Franco-Chinese environmental data analysis and processing network