Climate services for the industrial sector

Céline Déandreis, colloque services climatiques

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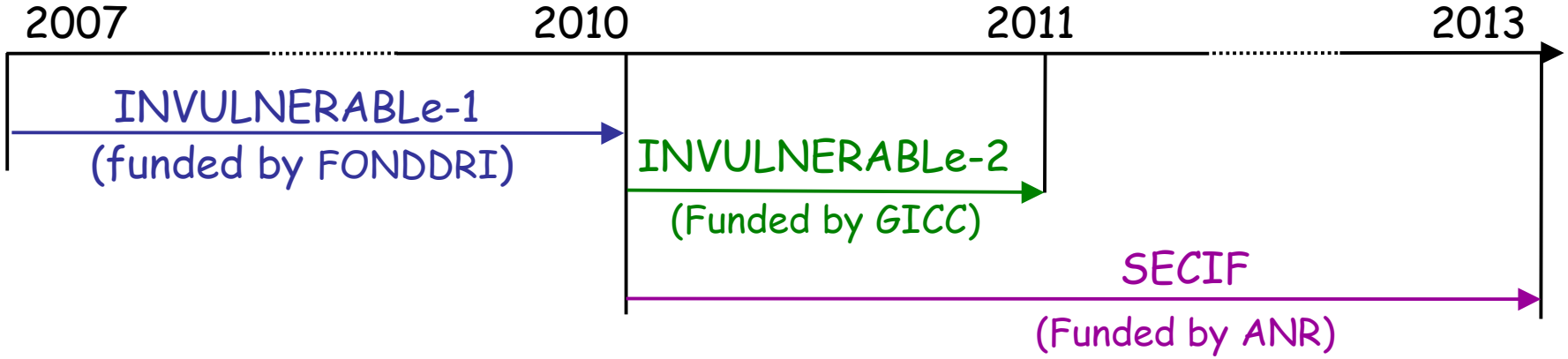
Invulnerable & SECIF



Context:

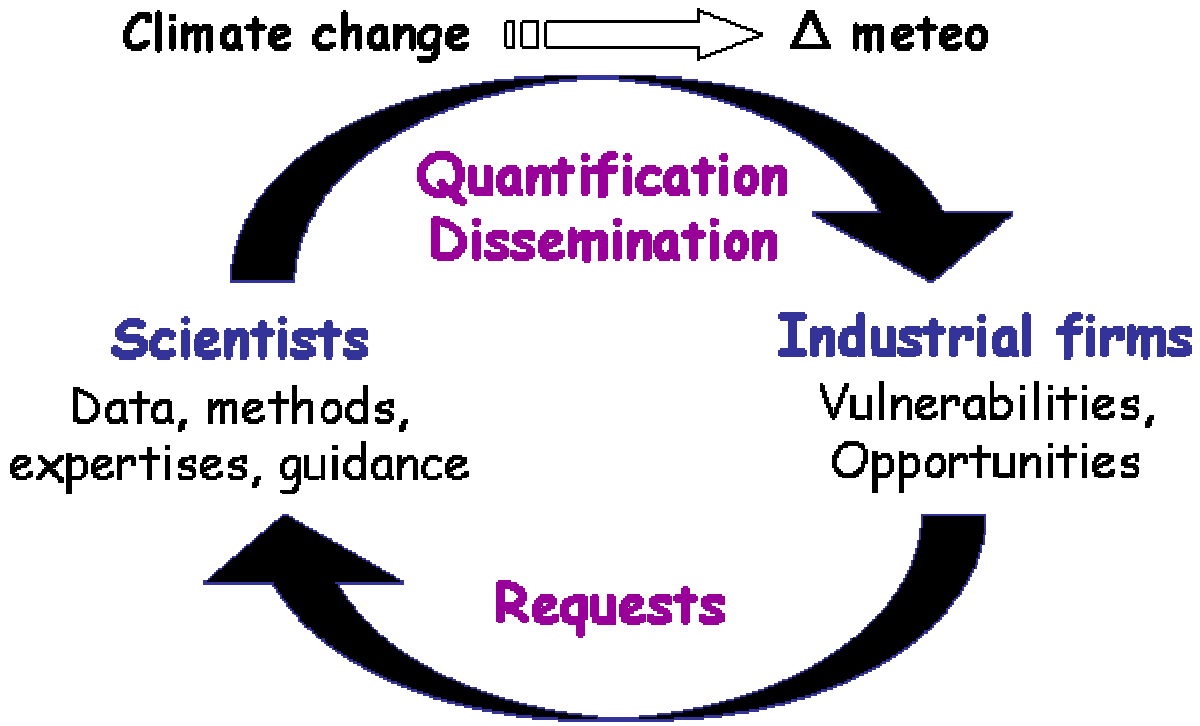
- Information on climate: multiple, diverse, under-used
- Industrial activities affected by meteorological factors

Goals:

- Using scientific knowledge to assess adaptation strategies
- Reevaluating industrial activity while climate is changing

Problem: 2 communities independently working

Need: foster the dialog between research and industrial communities



Methodology

1. Inciting industrial requests

➔ 4 propositions to help questioning:

- ✓ Statistics used to build infrastructures are they robust if climate is changing?

  Dam, hydroelectric plant, wastewater treatment plant…
- ✓ How factors that drive goods/services demand will change?

  Cooling, Heating, water demand…
- ✓ Will climate change modify the environment that affects the management of industrial processes and tools?

  Desalination plant
- ✓ Will climate industrial incident increase in the future?

  Heat-wave, floods…

2. Move industrial requests towards issues that can be addressed by climate models

- ✓ Time and spatial scales
- ✓ Study area (Asia vs Europe)
- ✓ Parameters (T vs Pr), processes…

3. Develop vulnerability indices

- ✓ Translating industrial vulnerabilities in climate terms
- ✓ Defining vulnerability thresholds
- ✓ Understandable by non-expert
- ✓ Used for intercomparison with sectorial indices

3 kinds of services

Generic services:

Fact sheets on diverse climate features (mean, variability, extrem value and uncertainties) for different regions

Analysis of generic indices :

Don't match industrial expectations

Specific case studies

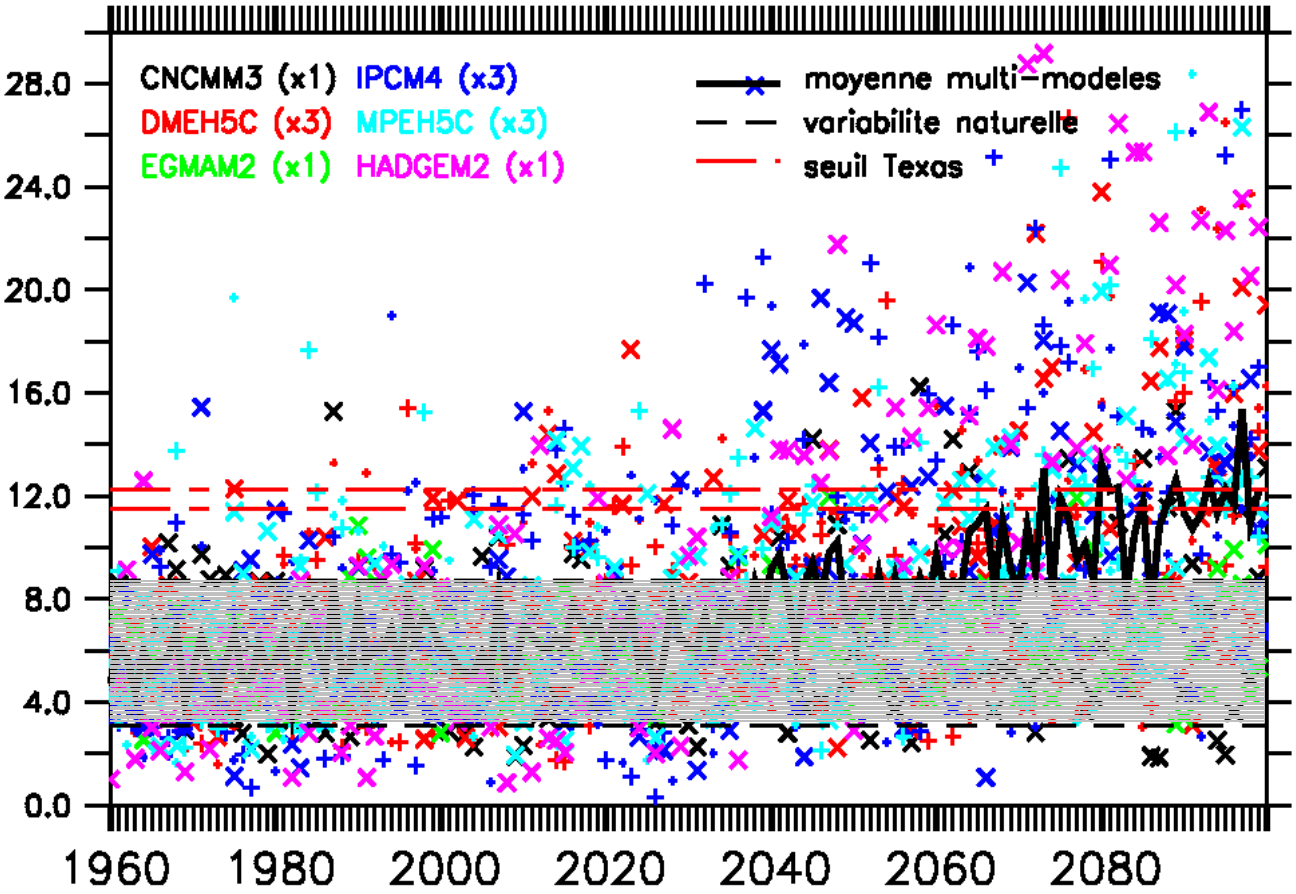
Dalkia	Heating network and temperature variations	Europe and China	Diurnal Temperature Range
GDF SUEZ	Gas supplying and cold waves	France	Temperature anomalies
VEOLIA EAU	Sewer system and precipitation regime	Romans-sur-Isère	Sub-daily precipitaion

Some successful results

Development of a specific index for the heating network case defined by

- analogy to Texas
- operational criteria

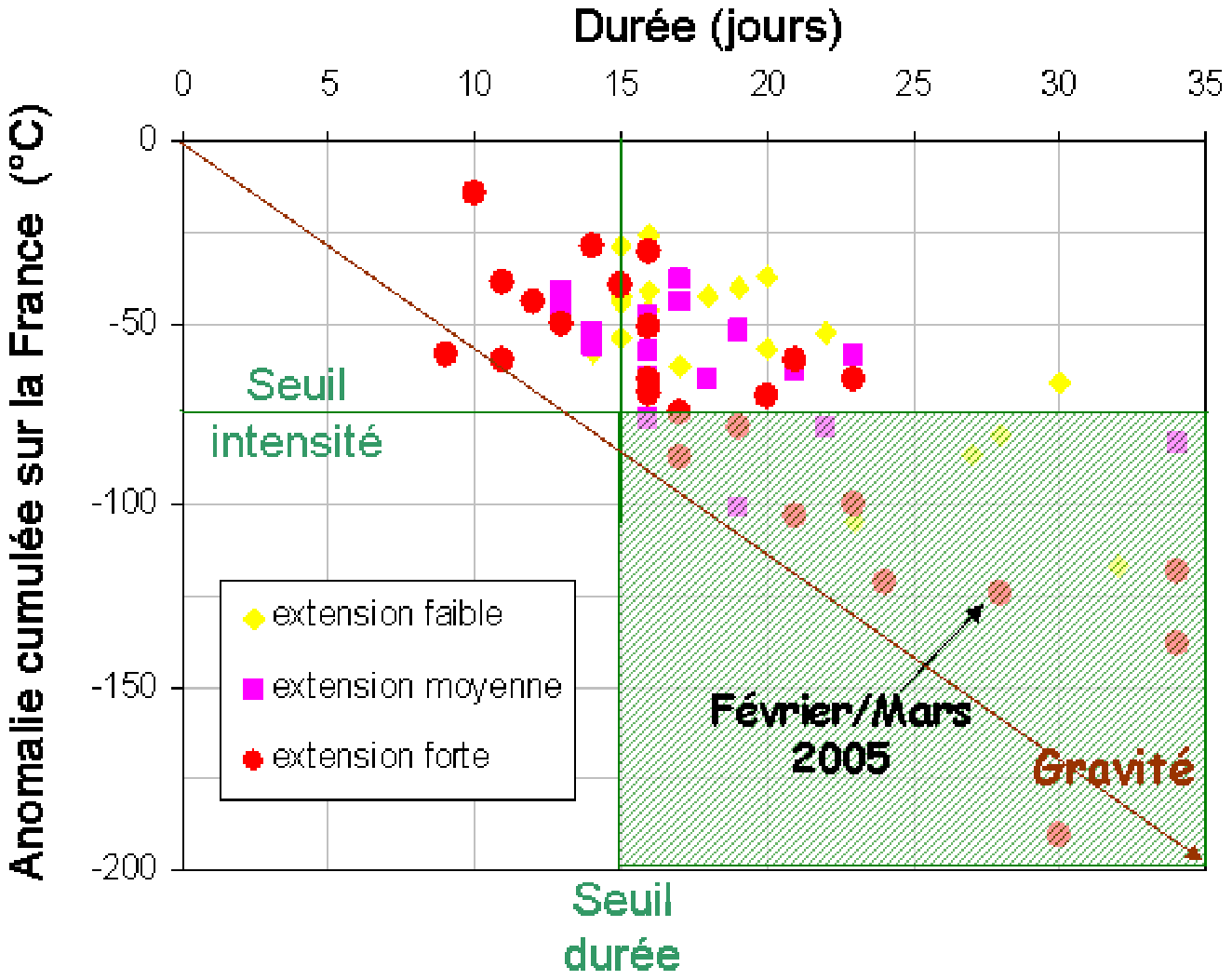
Analysis:
Interesting results for Europe



Some successful results

Development of a specific index for the gas / cold wave case based on :

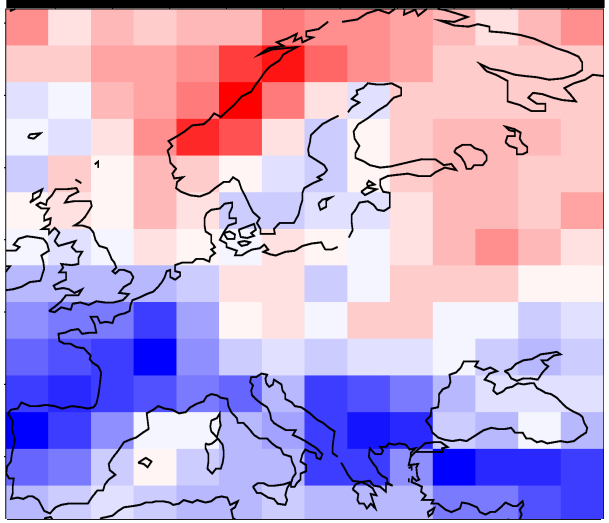
- duration
- intensity
- geo. ext.



Some difficulties

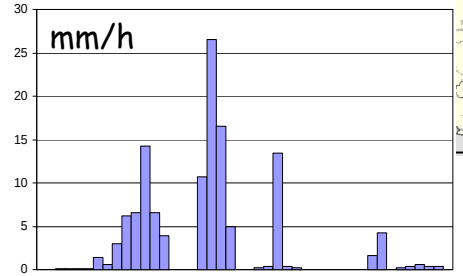
?????

Global climate scenarios

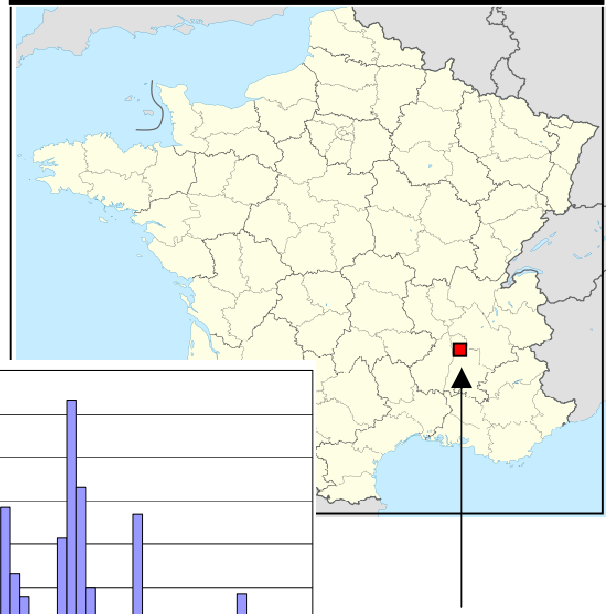


- Precip. in mm/day
- resolution of 200km
- Period: 2100

Requests



Evolution of rain shower at hourly timestep



Romans-sur-Isère in 2020

Lessons

Defining vulnerabilities/opportunities : a long and complex process

- ✓ Far from industrial priorities
- ✓ Needs knowledge on climate and climate change
- ✓ Needs operational knowledge
- ✓ Vulnerabilities are confidential information

Difficulties to conciliate industrial and research requirements

	Researchers	**Industrial companies**
Time scale	100 years	10 years or less
Spatial scale	50 km on a large zone	1 km on restricted area
Working mode	Generic questions	Case by case studies
Uncertainties management	Maximized (several models, scenarios, analysis methods)	Minimized: one reference scenario, one value

Lessons

Answering vulnerability/opportunity requests :

- ✓ Involves basic research aspects
- ✓ Uncertainties assessment. How manage products with low quality levels?
- ✓ Time-consuming because many various requests

Needs for practitioners (consultancy, engineer) to bridge the gap :

- ✓ Improve dialog
- ✓ Carry out case by case studies

Questions to address

1. Are there a real need from the industrial sector?

   SECIF: surveys and interviews of a large number of industrial firms (operational workers, decision-makers) and other stakeholders.

2. Can we answer industrial requests? Which quality requirements?

   INVULNERABLE-2: attempt to answer scientific questions related to the 3 case studies.

   + development of good practices and guidance

3. Which organisation to cope with a growing demand and provide reliable information?

   Not a research task / Not only data delivering

   SECIF: analysis of different type of organisation including scientists, practitioners and companies

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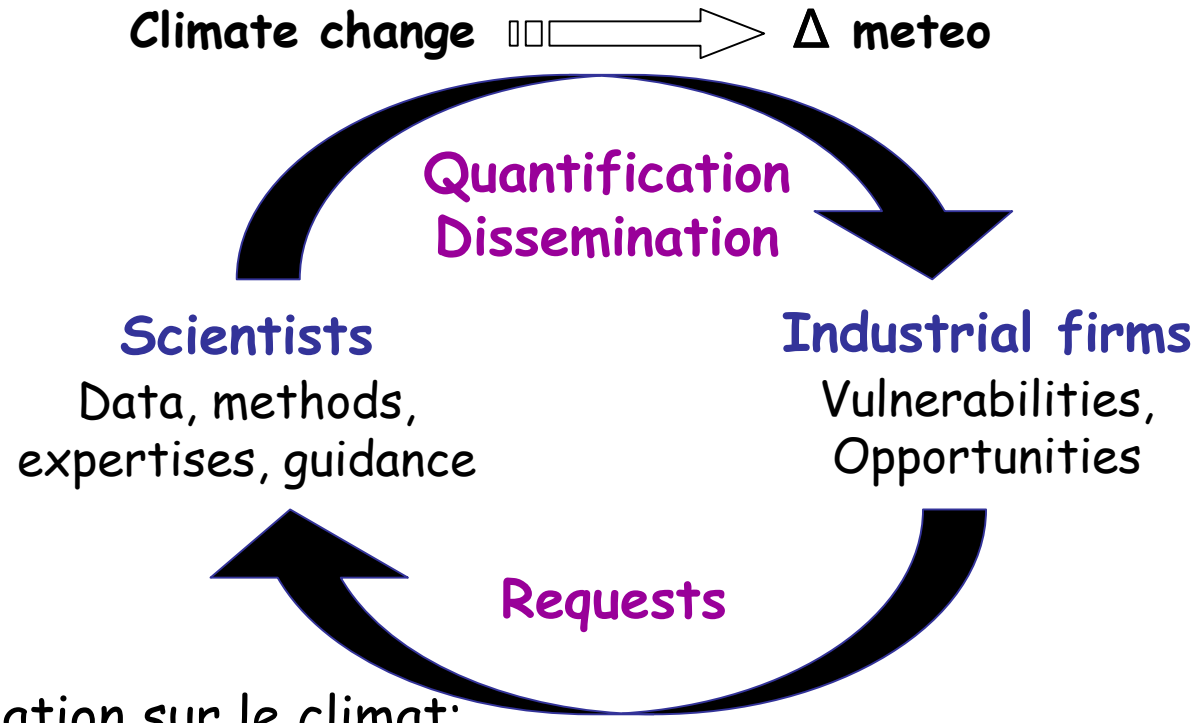
and to our industrial partners.

Needs: foster the dialog between research and industrial communities



Information sur le climat:
riche, variée mais peu utilisée

- Des activités industrielles sensibles aux facteurs météorologiques