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## **Contribution of a systematic and long-term observation method to improve the understanding of flood impacts**

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# CONTRIBUTION OF A SYSTEMATIC AND LONG TERM OBSERVATION METHOD TO IMPROVE THE UNDERSTANDING OF FLOOD IMPACTS

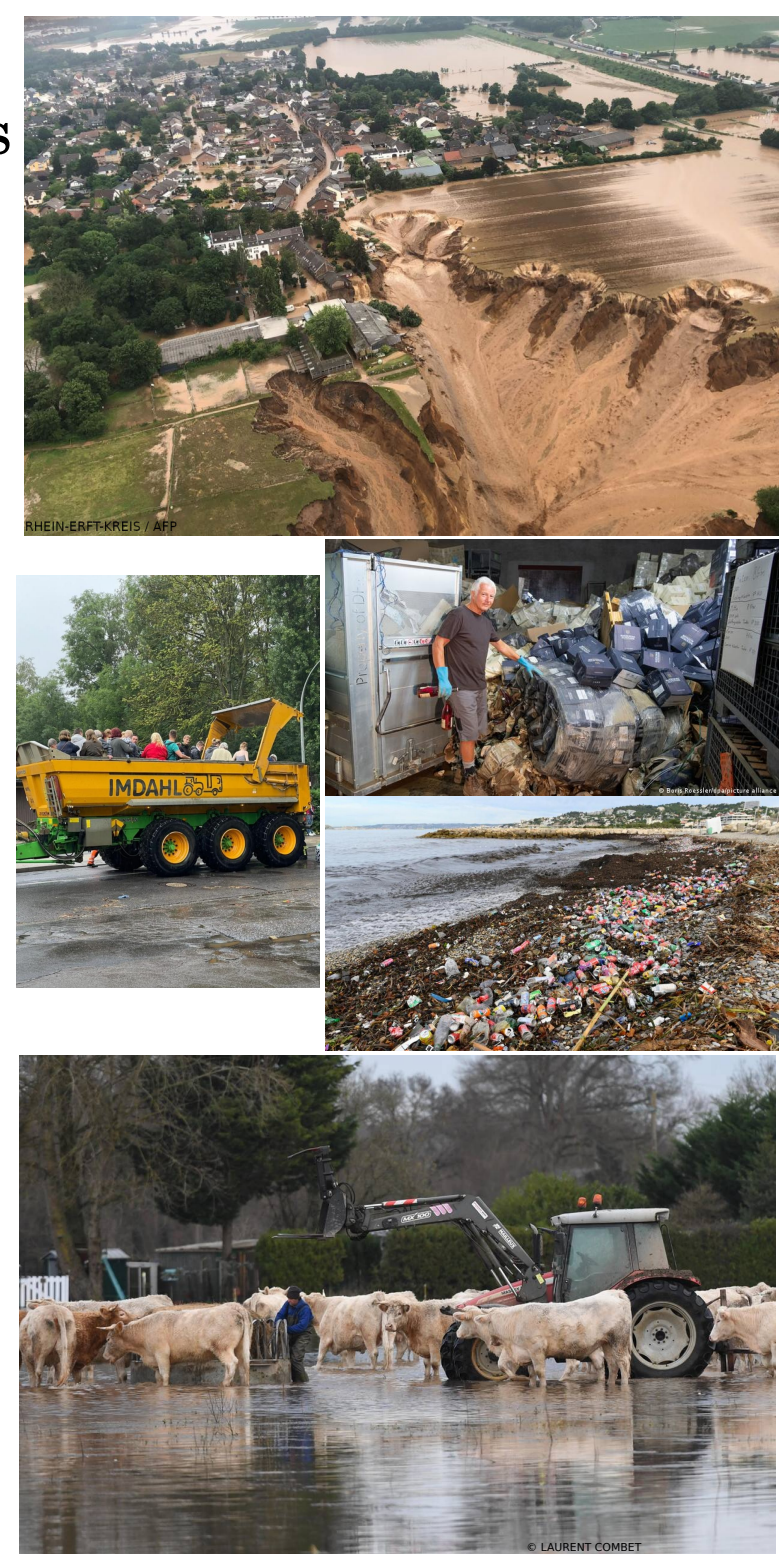


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## 1. Background and objectives

### Challenges on the question of flood impacts

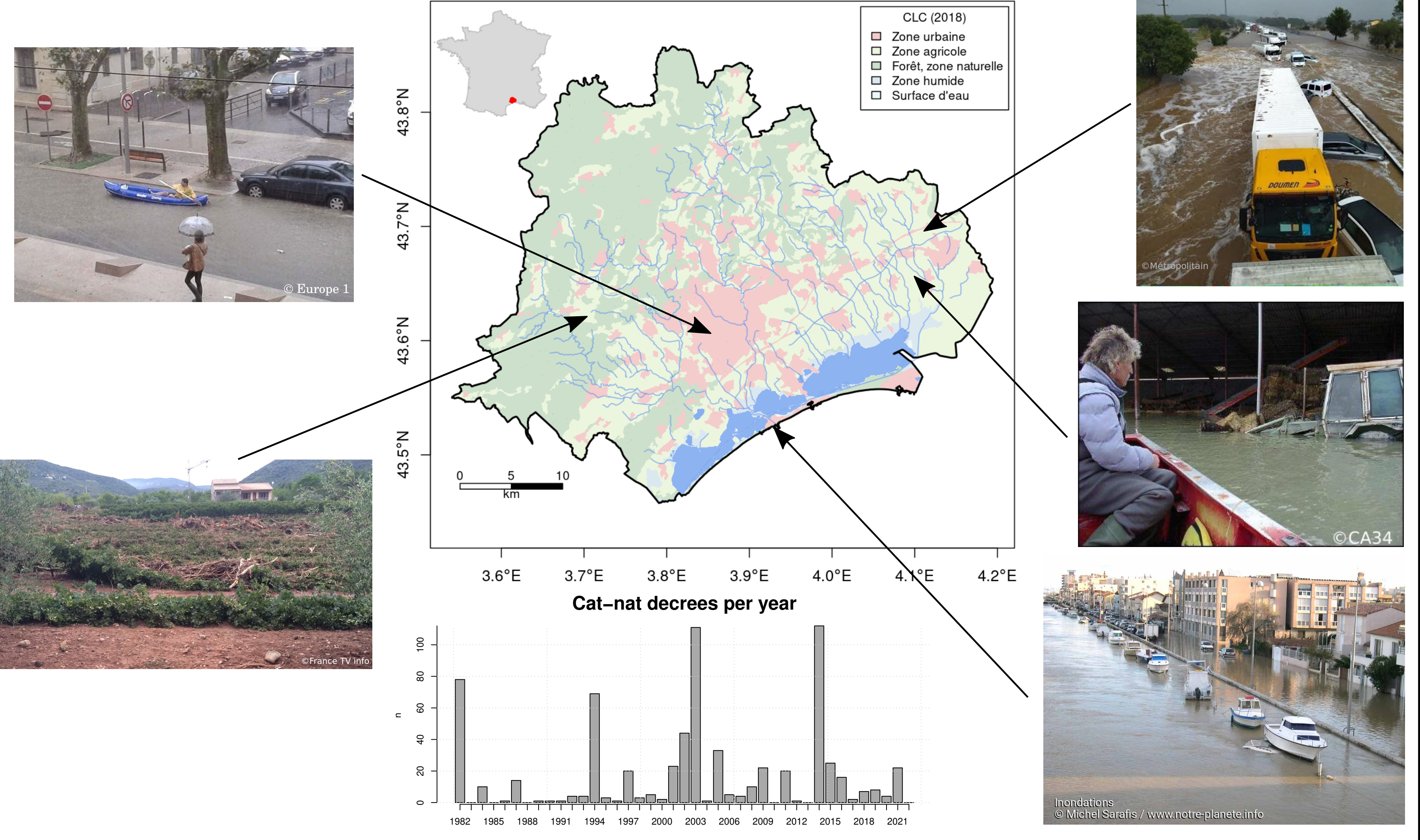
- Floods affect a wide range of stakes: households, economic activities, agriculture, infrastructure, networks
- How the damage occurs is poorly understood in particular for small-scale or small intensity events
- Damage is the result of complex phenomena:
  - diversity of impacts: fatalities, health, material, loss of activity, environmental...
  - biophysical processes and human actions
  - propagation through the society
  - persistence in time
  - link between impacts : material, psychological and environmental
- Better understanding flood impacts is crucial to
  - better evaluate flood damage
  - define relevant management policies
- Current approaches to collect post flood data:
  - focuses on extreme events and on the short term
  - focuses on damage more than processes



### Our objectives

- Systematic and long term monitoring of flood impacts on the so-ii observatory
- Qualify the impacts due to hazards of different types, intensities and on various stakes
- Exhaustivity of types of impacts, persistence over time and adaptation

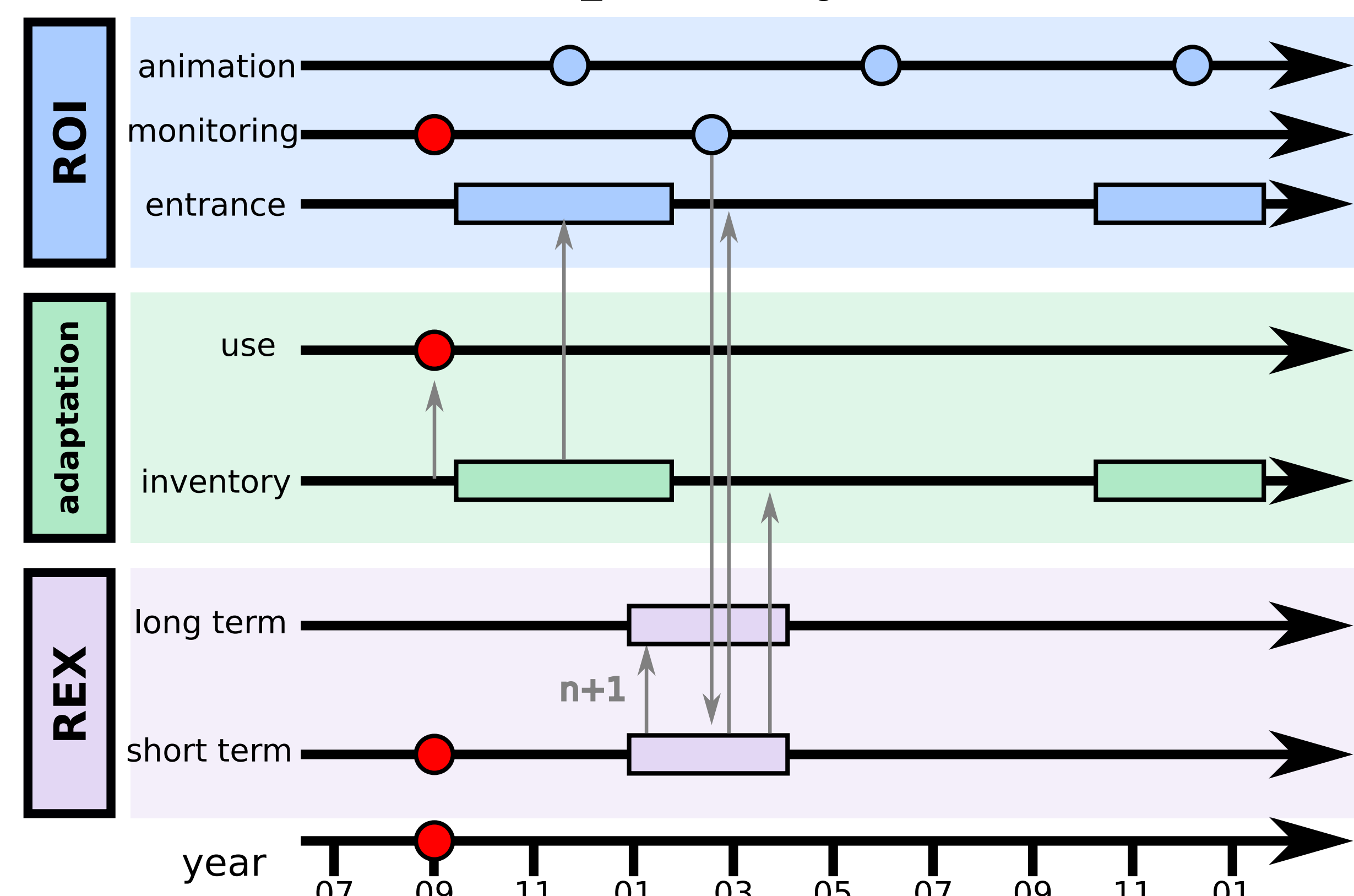
## 2. The so-ii observatory



## 3. Methodology and outputs

	TO REX Collection of post-flood impact data	TO ADAPTATION Inventory of buildings adaptation	TO ROI Monitoring vulnerability of people																								
Methods	<b>1. Identification of flood event</b> Gaspar - Meteo France - Press  <b>2. Secondary data</b> <ul style="list-style-type: none"> <li>- Capitalisation of data from providers</li> <li>- Contractualisation with providers</li> <li>- Departmental Fire and Rescue Service (SDIS34)</li> <li>- Prefecture</li> <li>- Local water managers</li> <li>- Department of Hérault</li> <li>- Chamber of Agriculture</li> </ul>	<b>Exhaustive inventory of adaptation</b> <ul style="list-style-type: none"> <li>- structural adaptation on buildings and fences visible from public areas</li> </ul>	<b>Long term partnership with people involved in networks</b> <ul style="list-style-type: none"> <li><b>1. Characterisation of the relationship of members to the flooded territory in which they live or work</b> <ul style="list-style-type: none"> <li>- Qualitative surveys at different time steps</li> <li>"Exposure, place attachment, adaptive capacities..."</li> </ul> </li> <li><b>2. Modelling vulnerability</b> <ul style="list-style-type: none"> <li>- Use flood damage models</li> <li>- <b>floodam.building</b></li> <li>- <b>floodam.agri</b></li> </ul> </li> <li><b>3. Collective animation</b> <ul style="list-style-type: none"> <li>- Participatory workshops</li> </ul> </li> </ul>																								
	<b>3. Primary data</b> Quantitative post-flood field surveys: households, farmers, economic activities  Short term surveys 6 months to 1 year  Long term surveys 2 to 4 years	BAN (french postal address database) → field survey → BAN extended : presence or not of protection at each postal address																									
First results	<b>REX 2020 interviews</b>   Cleaning and restoration time for farmers <table border="1"> <thead> <tr> <th>Time (h)</th> <th>Plot</th> <th>Road/path</th> <th>Ditch</th> </tr> </thead> <tbody> <tr> <td>Min</td> <td>40</td> <td>40</td> <td>38</td> </tr> <tr> <td>Max</td> <td>1600</td> <td>280</td> <td>200</td> </tr> <tr> <td>Mean</td> <td>571</td> <td>173</td> <td>119</td> </tr> <tr> <td>Median</td> <td>280</td> <td>200</td> <td>119</td> </tr> </tbody> </table>	Time (h)	Plot	Road/path	Ditch	Min	40	40	38	Max	1600	280	200	Mean	571	173	119	Median	280	200	119	<b>Field campaigns :</b> <ul style="list-style-type: none"> <li>- in 2020: observation of 10 649 addresses and 301 adaptations</li> <li>- in 2021: observation of 11 058 addresses and 370 adaptations</li> <li>- upcoming campaigns in order to observe the 168 000 addresses of the territory</li> </ul> Photo of the adaptation devices: to identify their type and state of degradation  Evolving protocol and method based on the campaign experience  Open and free access customized tool: Open Data Kit	<b>Monitoring of members</b> Flood type for the ROI members   <b>Collective animation</b> <b>Themes of common interest</b> <ul style="list-style-type: none"> <li>- communication on flood risk management</li> <li>- urban planning in relation with flood risk</li> <li>- individual adaptation</li> <li>- the place of inhabitants in flood risk management</li> </ul> <b>Themes of local interest</b> <ul style="list-style-type: none"> <li>- warning system on the Mosson river</li> <li>- specificities of the Etang de l'Or or Lantissargues river</li> </ul>				
	Time (h)	Plot	Road/path	Ditch																							
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<b>Average damage (k€) in function of the recovery status</b> <table border="1"> <thead> <tr> <th>recovery</th> <th>full</th> <th>partial</th> <th>not yet</th> <th>total</th> </tr> </thead> <tbody> <tr> <td>buildings</td> <td>4</td> <td>14</td> <td>34.5</td> <td>13</td> </tr> <tr> <td>vehicles</td> <td>2</td> <td>0</td> <td>3</td> <td>2</td> </tr> <tr> <td>landplots</td> <td>5.5</td> <td>3</td> <td>NA</td> <td>5</td> </tr> <tr> <td>total</td> <td>6</td> <td>11</td> <td>37.5</td> <td>12</td> </tr> </tbody> </table> Full: the recovery is complete Partial: the recovery was partially done when the interview was conducted Not yet: the recovery was not done yet when the interview was conducted	recovery	full	partial	not yet	total	buildings	4	14	34.5	13	vehicles	2	0	3	2	landplots	5.5	3	NA	5	total	6	11	37.5	12		
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## 4. Links and temporality



## 5. Take home messages

- Innovative observatory of flood impacts
- Fill the gaps in terms of comprehensive knowledge of impacts, processes and adaptive capacities on different types of issues and in the long term
- Observation of impacts resulting from different types of flooding: river flood, runoff, marine submersion, rising water table
- Development of complementary methods and tools for monitoring these impacts: field surveys, quantitative and qualitative methods, participatory workshops
- Production of primary data of different types: physical, quantitative and qualitative data
- Capitalization of data over time

**We are interested in sharing experiences and building an international network!**

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