PhD defense in Disaster risks and environment

Post-disaster watershed-restoration processes in Japan

Done at **Université Paris Cité** (France) on **January, 30th 2026**

École doctorale **624 Sciences des sociétés**

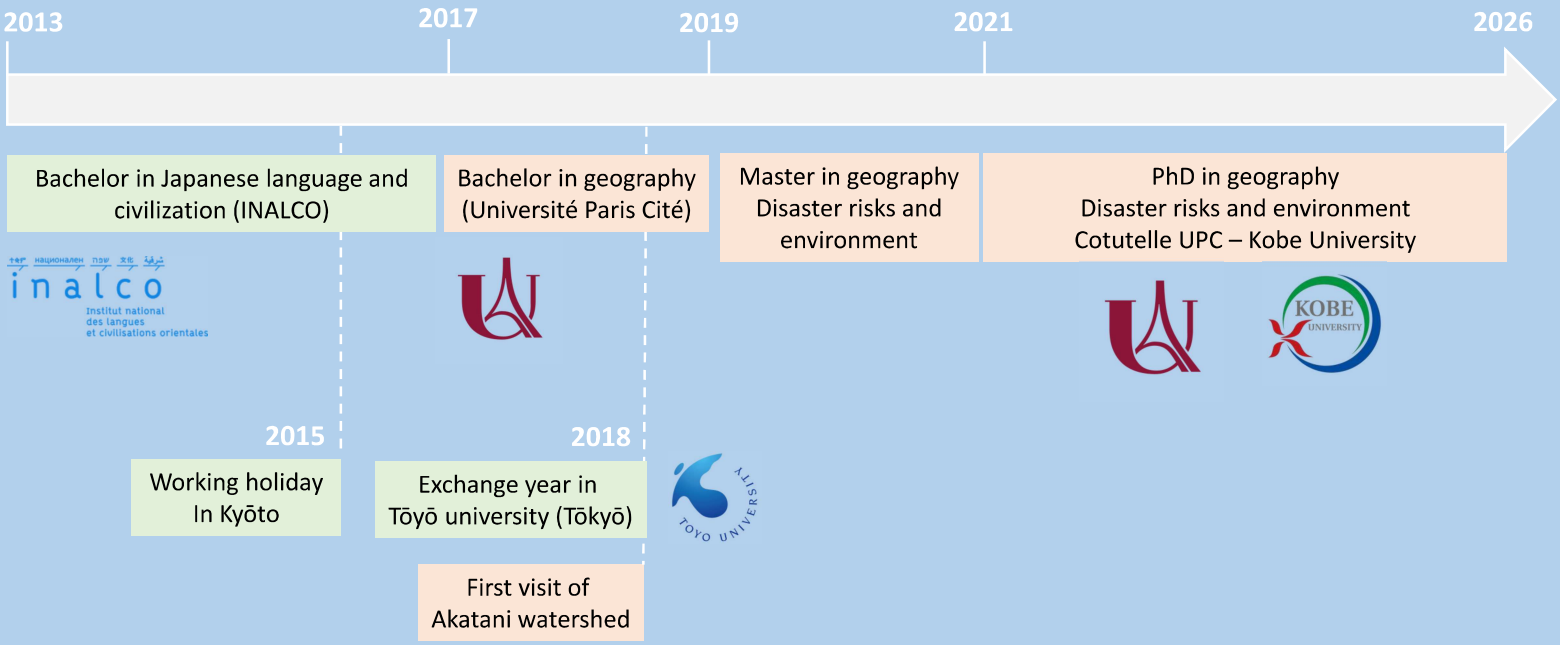
Presented by **Mélody Dumont**

Supervised by **Gilles Arnaud-Fassetta** and **Christopher Gomez**

Asakura, 2023

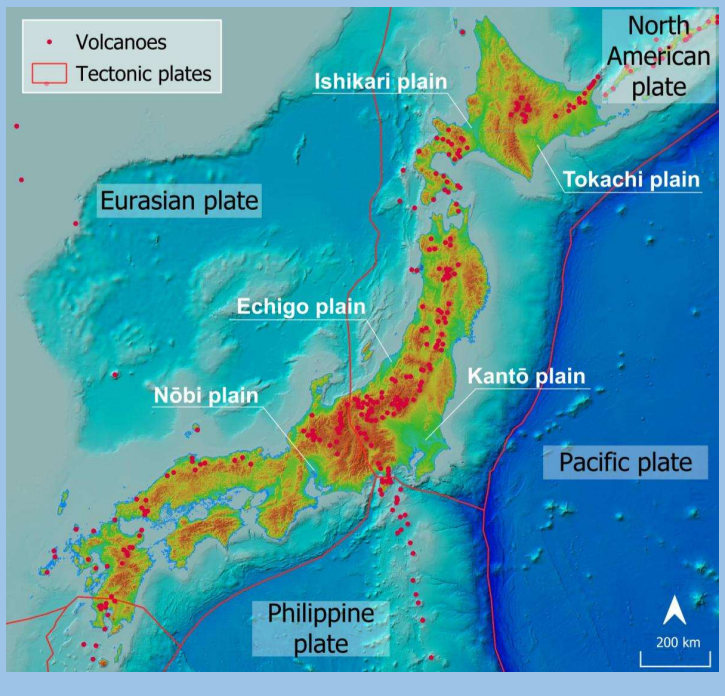
Summary

Academic and research backgrounds



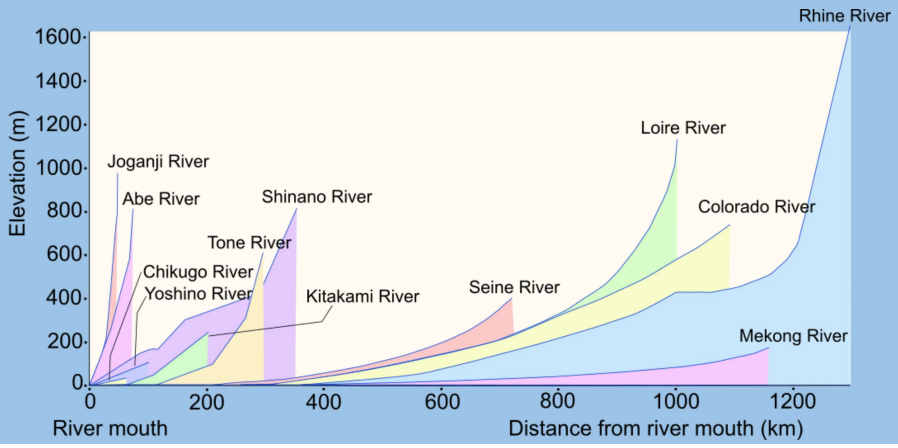
Context of the research : Japan and disaster management

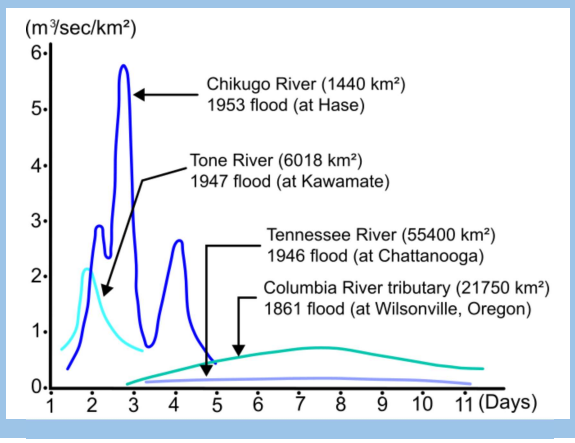
- **Location in cyclonic basin**
  - Monsoon season
  - Typhoon
- **Location on the Pacific Ring of Fire**
  - Seismic region
  - 70% mountainous country
  - Steep slopes



Context of the research : Japan and disaster management

- **High responsive watershed**
  - Steep longitudinal profiles
  - Relative small watersheds
  - Rapid connection to sea
- **Concentration of population and goods**
  - Concentration in deposit areas
  - Elderly population

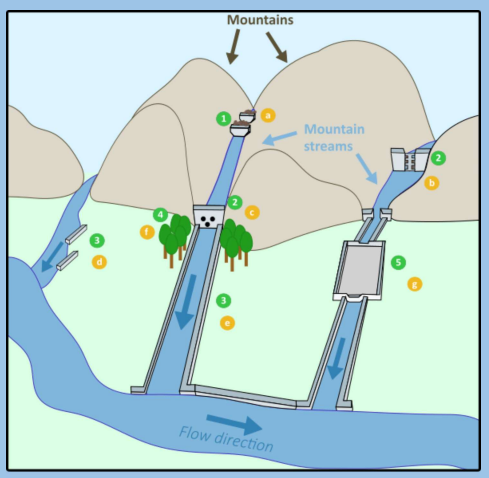


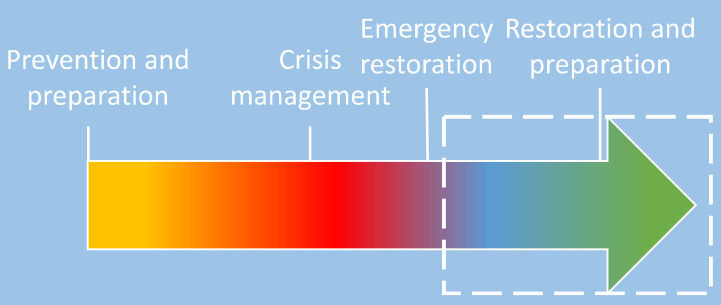


Preambule **Introduction** Methodology and data Results Discussion Conclusion

Context of the research : Japan and disaster management

- **Development of sabō system**
  - Imported from Europe and adapted to Japanese context
  - Control and prevent hydrological and gravitationnal hazards
  - Multiplicity of roles in the society (economic, political, social)





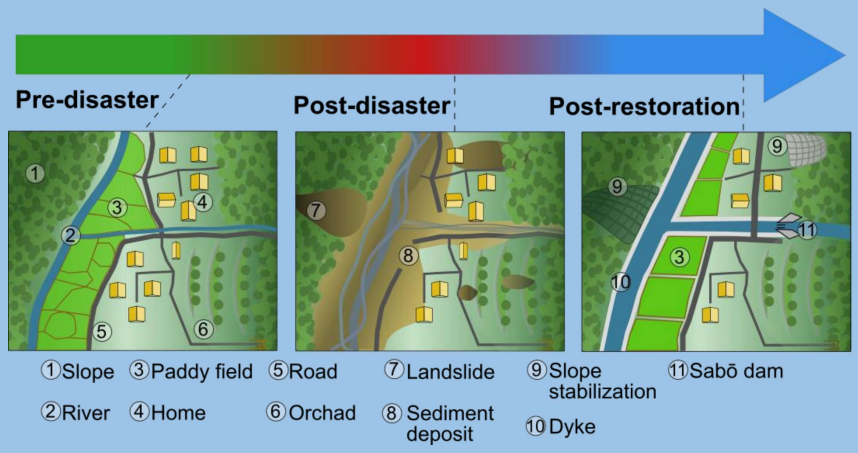
Sabo work functionnalities	
1	Debris flow occurence controlling work
2	Debris flow capturing work
3	Debris flow direction controlling work
4	Dispersion work
5	Depositing area work

Sabo work categories	
a	Check dams
b	Open-type sabo dam
c	Close-type sabo dam
d	Training dyke
e	Excavated training dyke
f	Forest zone
g	Settling basin

Context of the research : Landscape evolution as the entry

How high-responsive mountainous watersheds are restored in Japan ?

→ **Landscape** understood as physical and sensitive components.



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Context of the research : Landscape evolution as the entry

How high-responsive mountainous watersheds are restored in Japan ?

→ **Landscape** understood as physical and sensitive components.

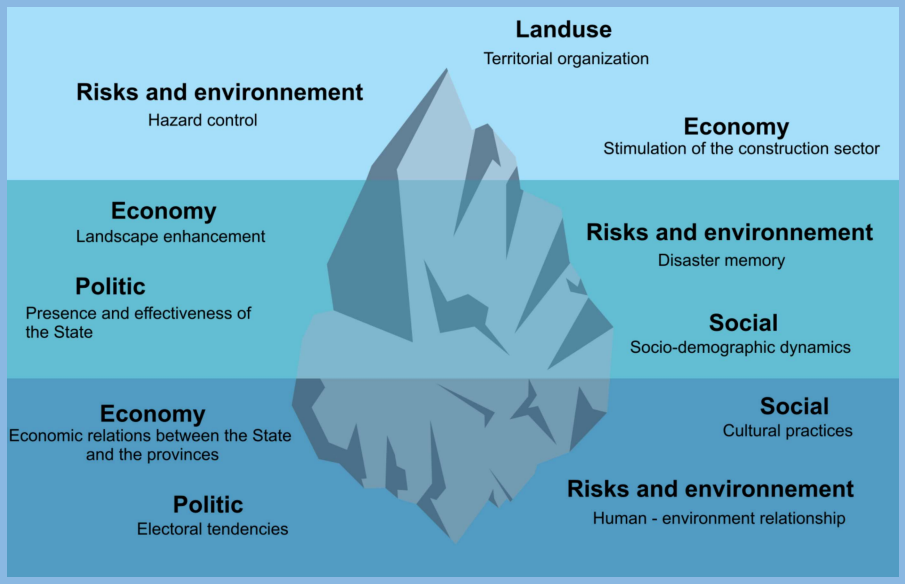
What are the effects of restoration policies on the society-nature interaction at the watershed scale?

Satoyama – socio-ecological context and landscape dimension

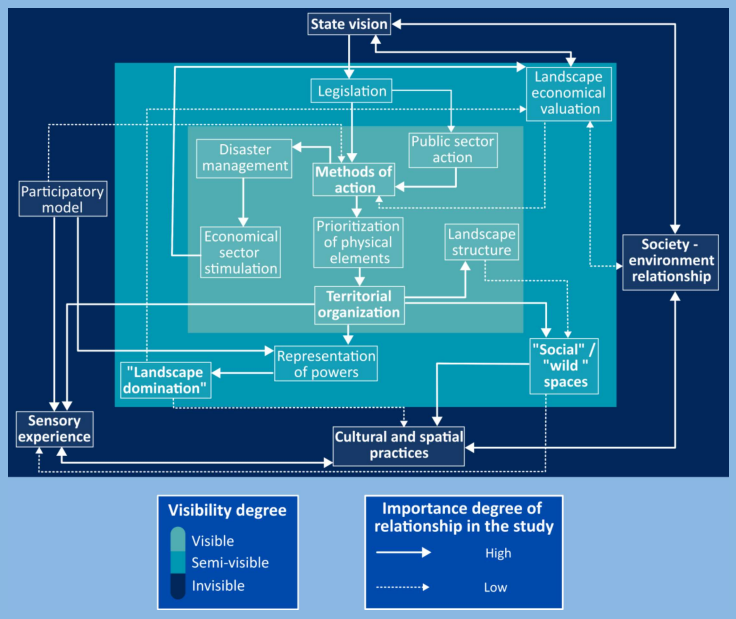
From the visible to the invisible – conceptual model

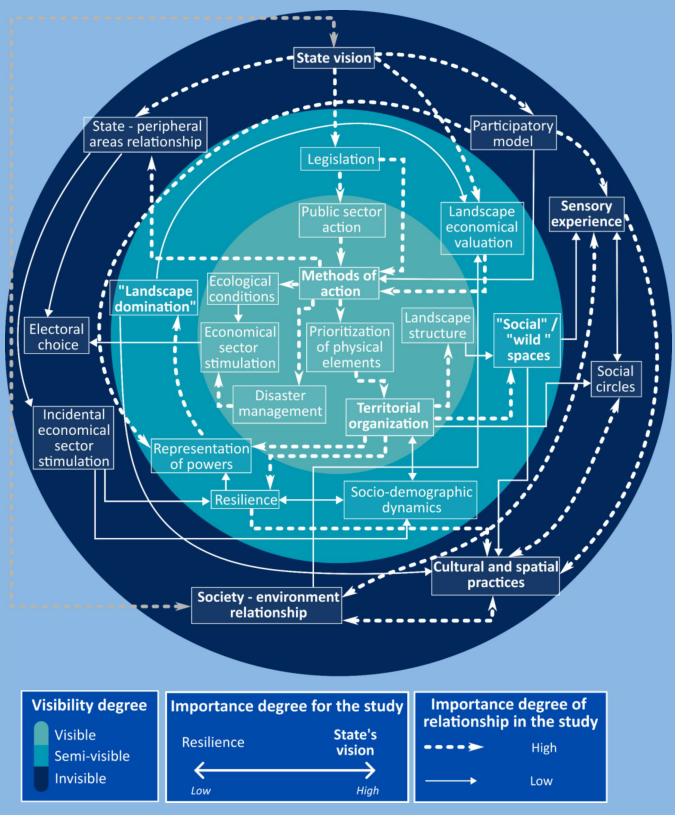
Model from davis and alexander:

- Psychosocial
- Environmental
- Economic
- Institutionnal
- Physical



From the visible to the invisible – conceptual model





Hypothesis and methodology

Hypothesis n°1
Changes to the river system caused by the events of 2017 and the emergency flood restoration project.

→

Results 1
Significant change in the hydrographic network and its place in the landscape → Important element.

→

Hypothesis n°2

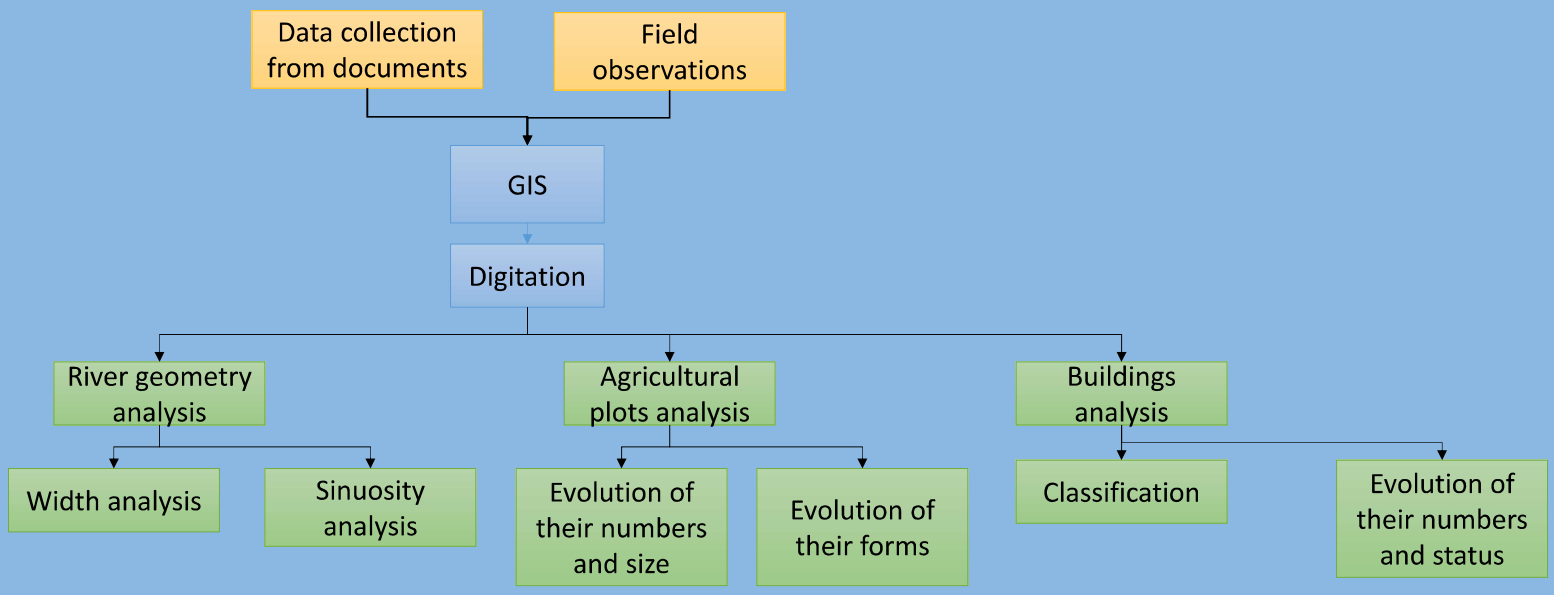
Other landscape elements impacted by the restoration of the hydrographic network.

→

Results 2

- Modification of the spatial structure of the elements studied.
- Standardization of agricultural plots.
- Loss of built-up space in favor of protective structures.

Quantify the evolution of landscape in watersheds



Preambule Introduction **Methodology and data** Results Discussion Conclusion

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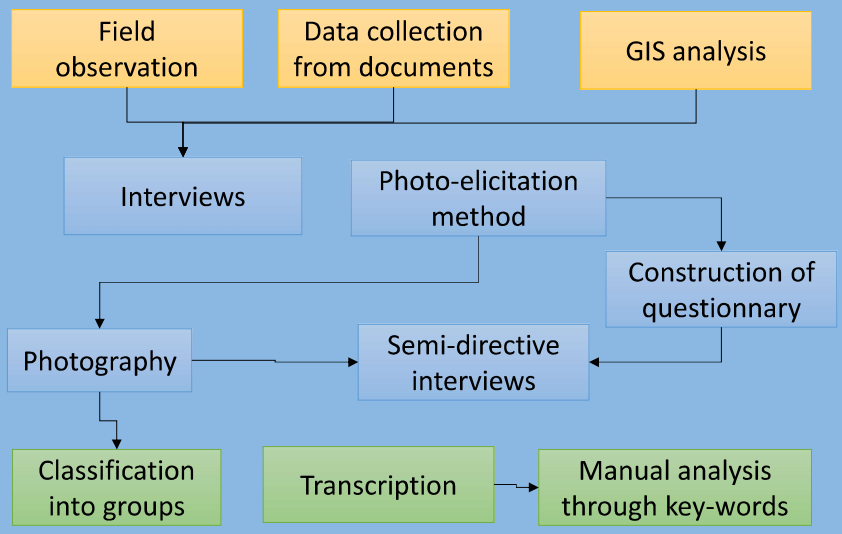
Hypothesis n°3
Beyond visible physical changes, restoration projects influence people's relationship with their living space.

Results 3
- Changements dans les pratiques spatiales / culturelles
- Recul de l'espace « social » au profit de l'espace « sauvage »
- « Domination paysagère » par l'État
- Capitalisation différente sur les paysages « ordinaires » et « remarquables »

Effects of disaster and restoration on society- nature interactions

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Preambule Introduction **Methodology and data** Results Discussion Conclusion

Effects of disaster and restoration on society- nature interactions

Field observation
Data collection from documents
GIS analysis
Interviews
Photo-elicitation method
Construction of questionnary
Photography
Semi-directive interviews
Classification into groups
Transcription
Manual analysis through key-words

神戸大学
海事科学研究科・海事科学部

Université Paris Cité
PRODIG laboratory

インタビューについて

この書類はメロディー・デュモンの博士論文の一環としてインタビューの手続きを説明します。

インタビューの背景

- 神戸大学とパリ・シテ大学の博士課程の大学生です。博士のテーマは平成29年の九州北部豪雨に関して復旧・復興です。どのように自然と生活が変わったを分かるために被害者にインタビューをしました。
- 今年黒川と松末の復興に関して研究しています。そのために災害後で引っ越した人と開業した人にインタビューをする予定です。

- 独自で研究をしているので政府に関わりがありません。
- 学術会議や学術論文や博士論文等を書くために調査結果を使う予定です。
- 論文や発表するの際は個人情報を使うのは可能です(名前、在住期間、職業、年齢、店の名前　etc.)。匿名化をしたいければ教えてください。

□匿名化をしたい　　□匿名化をしたくない

インタビューのテーマ

- 黒川か松末に引っ越しして開業したの理由はなんですか。
- どのような状況で開業をしましたか。
- 黒川か松末の復旧・復興の意見はなんですか。
- 開業はどのように復興に参加すると思いますか。

インタビューの進展

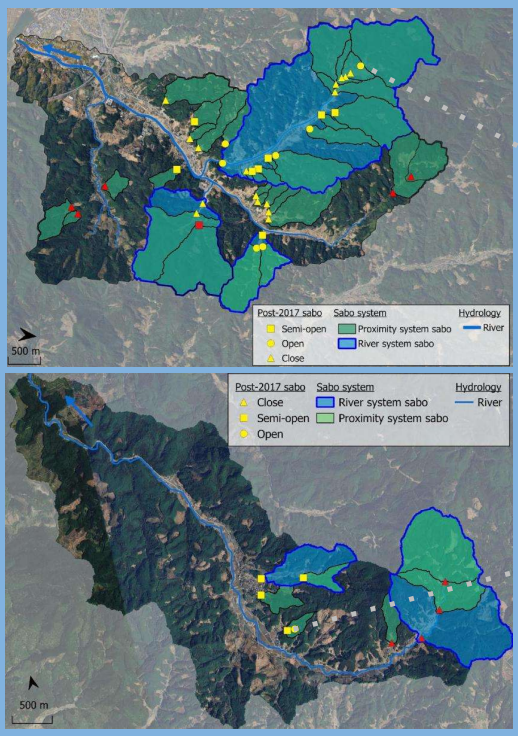
- インタビューは日本語で話します。
- ノートを書かないでインタビュイーの説明に専念するために会話を録音する予定です。よろしいですか。

□同意する　　□同意しない

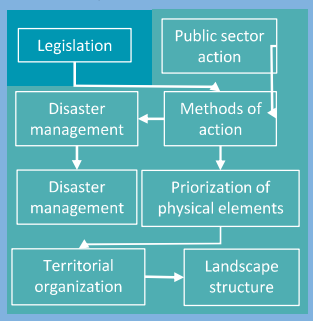
- いつでも録音を停止することができます。

インタビューの背景と内容と進展が分かります。インタビューをすることに同意します。	
日付：	メロディー・デュモン
名前	サイン

Example of semi-invisible effect: the evolution of « wild » and « social » spaces



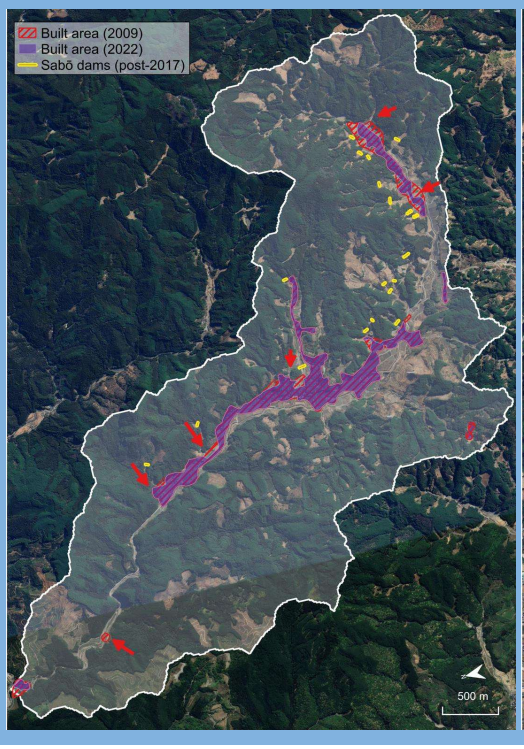
Elements of the model

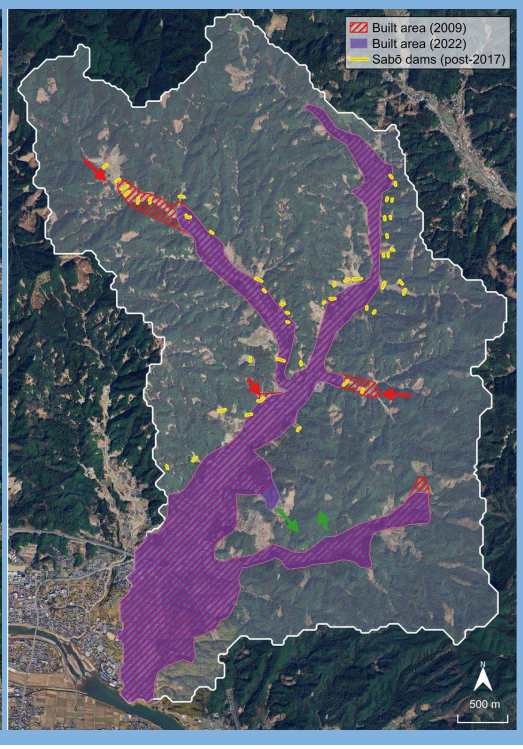


Definition of social and wild space and its understanding here

Preambule Introduction Methodology and data **Results** Discussion Conclusion

Example of semi-invisible effect: the evolution of « wild » and « social » spaces





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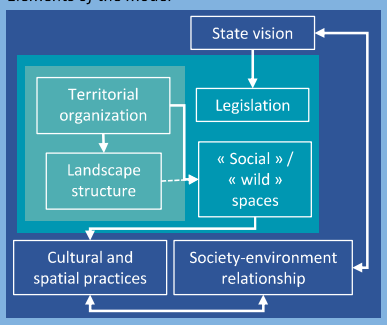

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