



Présentation / Intervention

2013

Open Access

This version of the publication is provided by the author(s) and made available in accordance with the copyright holder(s).

---

## Transboundary management of the Rhône : Governance analysis and climate modeling as tools to support policy making processes in a climate of change

---

Brethaut, Christian

### How to cite

BRETHAUT, Christian. Transboundary management of the Rhône : Governance analysis and climate modeling as tools to support policy making processes in a climate of change. In: University College workshop on Integration of Spatial Decision Support Systems and Evidence Based Modelling in National/Regional Policy Applications and Regulatory Systems: Scientific and Policy Challenges. Dublin (Ireland). 2013.

This publication URL: <https://archive-ouverte.unige.ch/unige:28930>

Workshop : Integration of Spatial Decision Support Systems and Evidence Based Modelling in National/  
Regional Policy Applications and Regulatory Systems: Scientific and Policy Challenges

Dublin, 10-12 July 2013

# Transboundary management of the Rhône

Governance analysis and climate modeling as  
tools to support policy making processes in a  
climate of change

Dr. Christian Bréthaut  
UNIGE – Institute of Environmental Sciences  
Group Policy, Environment and Territories  
[christian.brethaut@unige.ch](mailto:christian.brethaut@unige.ch)



**UNIVERSITÉ  
DE GENÈVE**

**INSTITUT DES SCIENCES  
DE L'ENVIRONNEMENT**

# The Rhône: context

- A river basin shared between France (90'000 km<sup>2</sup>) and Switzerland (7'800 km<sup>2</sup>)
- Great diversity of profiles → from an alpine torrent to the wide river flowing into Mediterranean Sea
- Great diversity of uses → agriculture / hydroelectricity / cooling of nuclear plants / production of drinking water / etc.
- No institutionalised transboundary management of the river (only sectorial agreements)



# A climate of change (I)

- **Environmental changes**

- Models tend to show modifications of river flows due to climate changes (Explore 2070\_French Water Agency, ACQWA project\_University of Geneva)

- Increase of extreme events:  
water scarcity and flooding
- Increase of water temperature with effects on ecosystems and on different sectors of activity (fishery, cooling of nuclear plants, drinking water production)

→ Importance of the upper part of the river basin (especially during scarcity periods) to secure water uses (anthropic and ecosystems)

# A climate of change (II)

- **Economic changes**

- Liberalisation of European electricity market
  - On the French side, a river managed only by the private sector through a concession contract granted in 1933 for 99 years
  - 2032 : renewal of the concession : competing operators and uncertainty
- Instability within the configuration of actors and attempt by the central State to come back to the front stage
- Increasing tensions and rivalries among industrial users of the Rhone with different needs (peak versus base load supply)



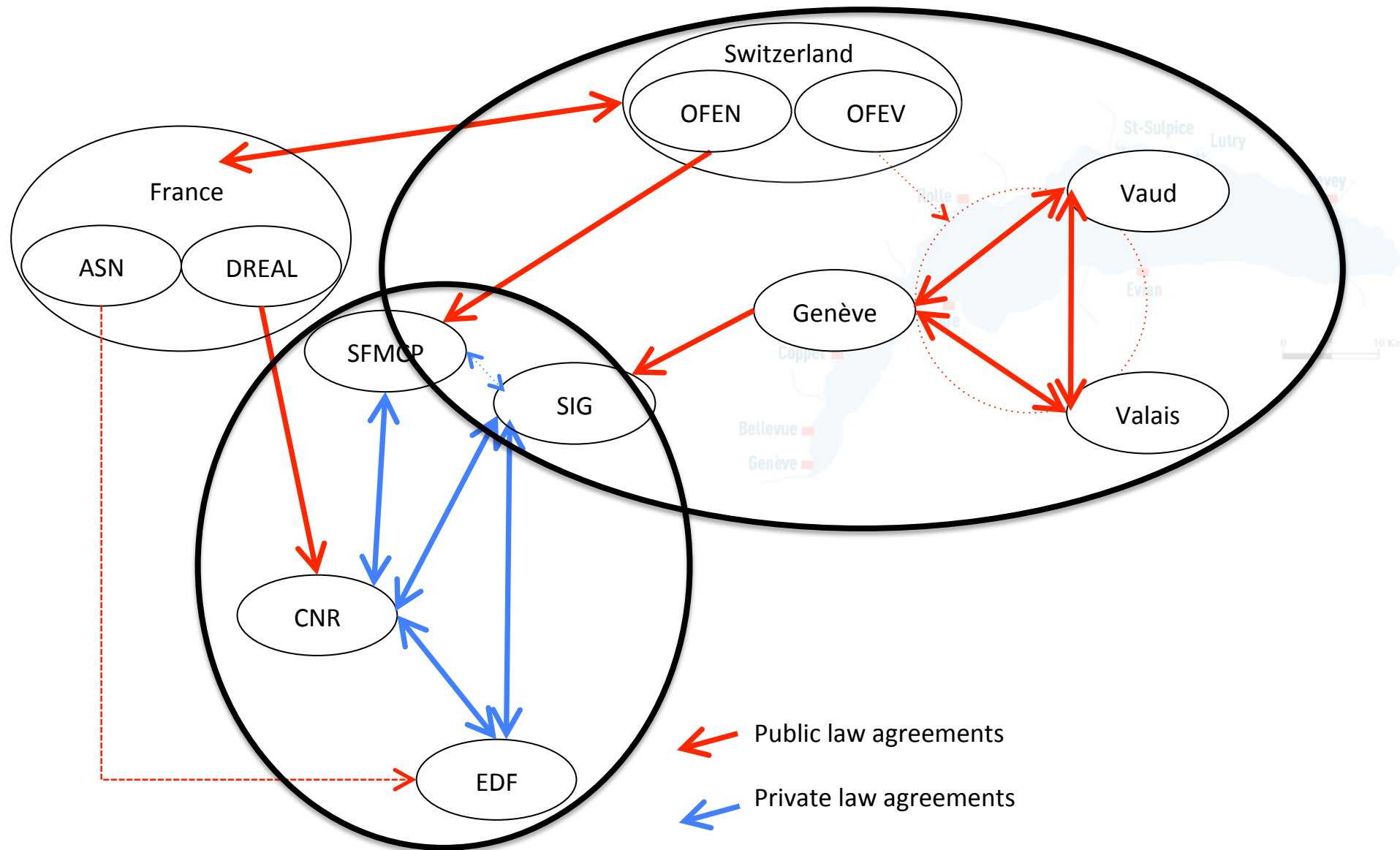
# A climate of change (III)

- **Legal framework evolution**
  - Increase of environmental concerns within the legislation
    - European water framework directive / French Grenelle's Laws
    - Emergence of new policy instruments: SDAGE / SAGE / Natura 2000
    - International conventions on environment: Espoo (in force since 1997)
  - Increased complexity of river management and transboundary cooperation
    - e.g. sediments discharges

# A climate of change (IV)

- **Evolution of the Political agenda**
  - Climate change as an ever growing political concern
  - Dependence to national energy strategic choices → renewable energy production
  - The « post-Fukushima » effect
- New perception of hydropower as a strategic source of electricity

# What kind of governance structure? (I)





# What kind of governance structure? (II)

- Strong fragmentation of the governance structure
- Agreements depending on the stability of actors and on stable hydrological conditions
- Few actors (no actor?) with a global view of the river's governance
- No regulatory institution at the river basin scale
- Two jurisdictional frameworks targeting the same goals (IWRM) but offering few policy instruments for cases such as the Rhone
- Few discussion / negotiation arenas (informal discussion within the International Commission for the Protection of Lake Geneva)

**Question :** Is the current governance structure able to cope with major changes?

- Change of operator or change of concession contract?
- Changes in energy prices?
- Changes in water flows?

# Research project GOUVRHONE

- Project started in May 2012 for 36 months within the Institute for Environmental Sciences (UNIGE) / Group Policy Environment and Territories

## **Researchers :**

Dr. Géraldine Pflieger (UNIGE) / Dr. Christian Bréthaut (UNIGE) / Dr. Markus Stoffel (UNI-Bern) / Dr. Virginia Ruiz-Villanueva (UNI-Bern)

## **Project partners:**

Swiss Federal Office for the Environment / French Water Agency / Canton of Geneva / Canton of Vaud / Industrial Services of Geneva / Electricité de France (EDF) / International Commission for the Protection of Lake Geneva's Water

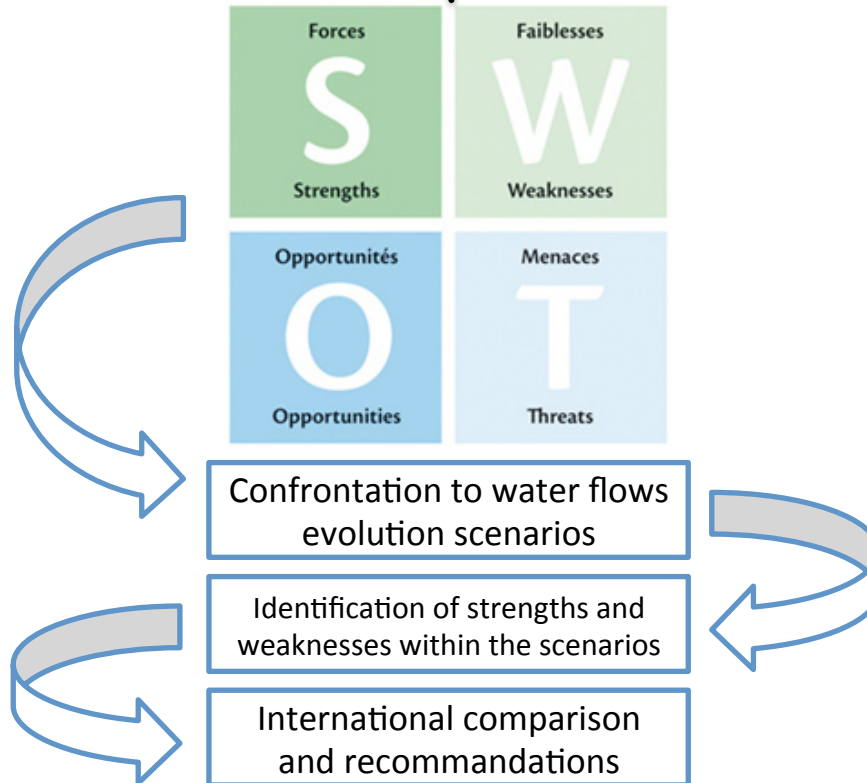
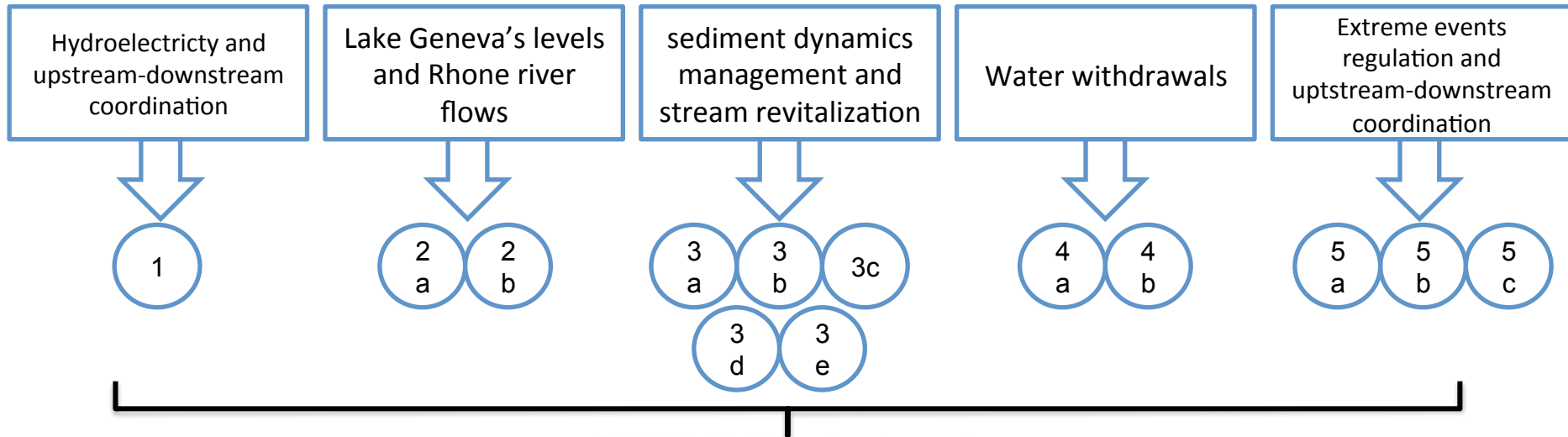
A political science approach of the Rhône governance... →

- Analysis of actors configuration (what kind of agreements?), analysis of regulatory frameworks, semi-structured interviews with key stakeholders

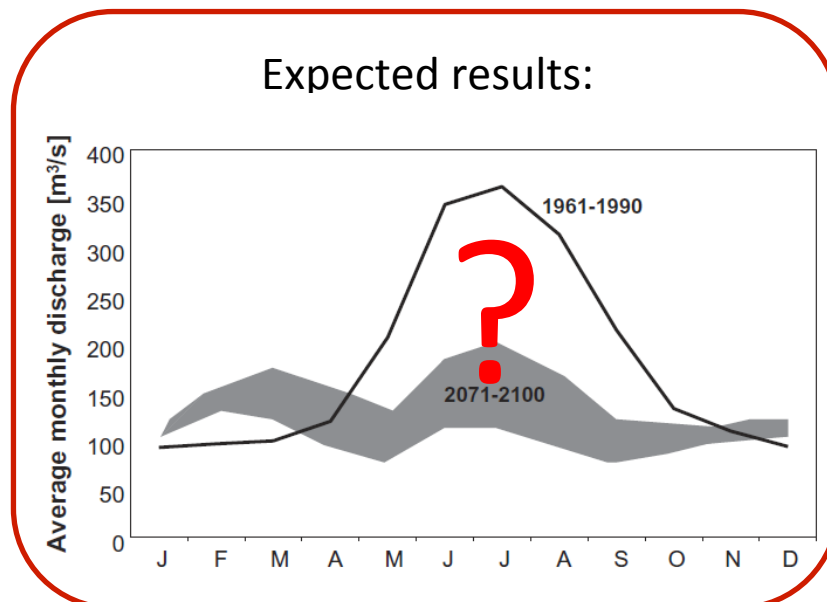
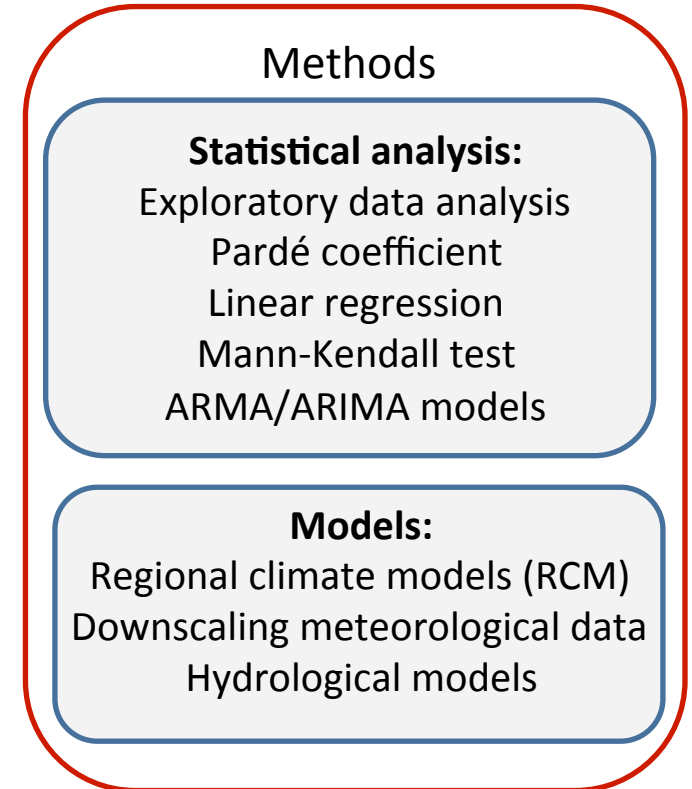
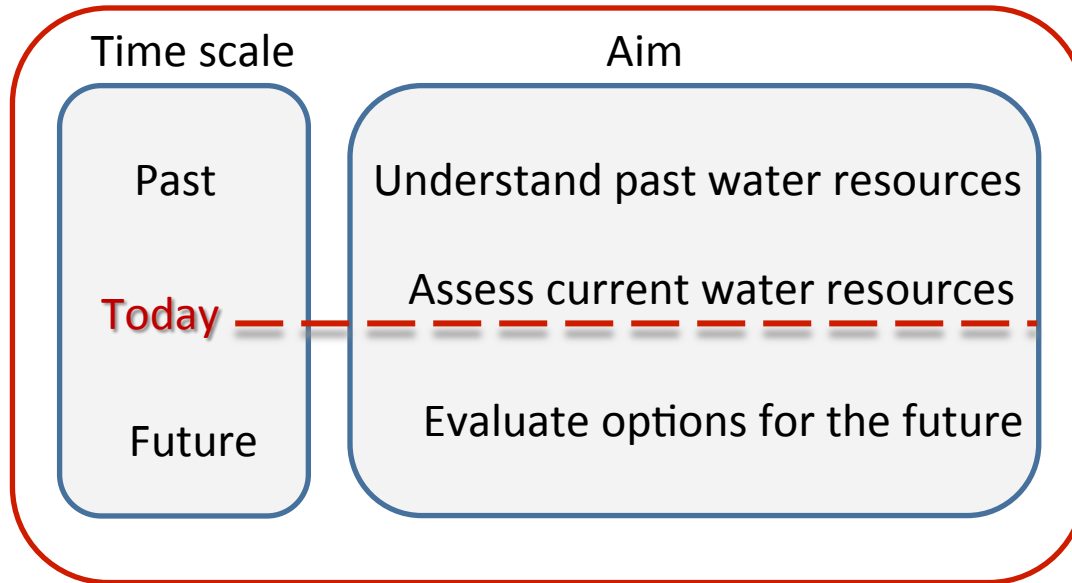
...combined with water flows evolution modelling →

- Definition of water flows evolution scenarios from Lake Geneva to Lyon

# Research agenda



# climate modeling



Changes in monthly discharge of the Rhone river close to its mouth in the Lake Geneva, from current (1961–1990) to future (2071–2100, IPCC A2 emissions scenario). From Beniston, 2010.

# Tools for Policy making

- Increase of instabilities and rivalries among users of water
- A need for a better comprehension of governance mechanisms
- Aims of the project :
  - to combine governance analysis and water flows evolution modelling
  - Identification of institutional mechanisms / settings able to cope with these evolutions (where do we need flexibility ? What are the tensions which tend to increase?)
  - Provide policy makers with practical advises on implementation options within the different legal frameworks (Swiss, French, Transboundary)
  - Reflection on institutional mechanisms showing adaptive capacities and able to reconcile legal robustness and flexibility





# THANK YOU FOR YOUR ATTENTION

[christian.brethaut@unige.ch](mailto:christian.brethaut@unige.ch)

[http://www.unige.ch/environnement/polet/index\\_en.html](http://www.unige.ch/environnement/polet/index_en.html)