

# From a white paper to an adventure gamebook: engaging practitioners in climate change impact studies on hydrology

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LIFE19 GIC/FR/001259

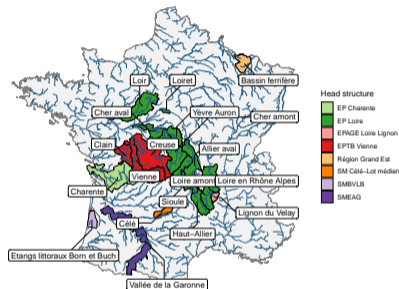
## Supporting long-term local decision-making for climate-adapted water management

### EU LIFE project (2020-2024)

- ▶ Co-funded by French Water agencies
- ▶ Scientific partners and **local partners**

### Implementation Action C4

“Strengthen exchanges between researchers and water managers”



21 Water development and management schemes

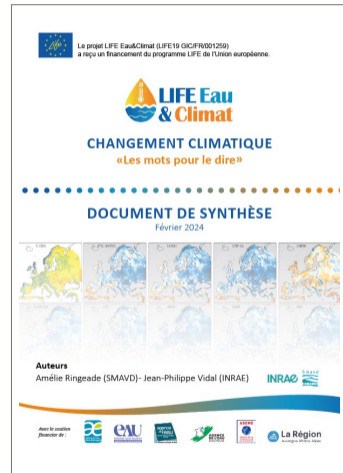


# Transferring expertise from researchers to practitioners

How to best use hydroclimatic data and models to inform climate change adaptation strategies?

## First step: Short online course tailored to practitioners

- ▶ On concepts related to climate change impact studies (GHG emissions scenarios, GCM, downscaling, bias-correction, uncertainty, ...)
- ▶ Effective, but time-consuming, hardly upscalable, and not on "how-to"
- ▶ Larger audience version through 8 fact sheets (Ringeaude & Vidal, 2024)



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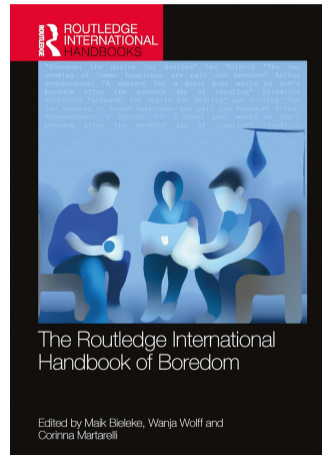
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## Second step: Methodological guide

- ▶ From a white paper...
  - ▶ Usually quite useful
  - ▶ Usually quite boring



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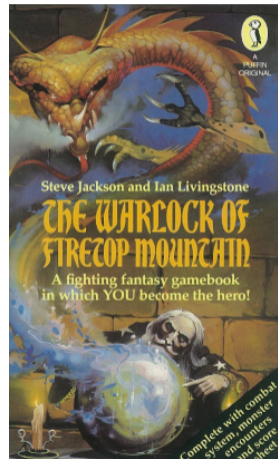
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## Second step: Methodological guide

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- ▶ ... to **an adventure gamebook**
  - ▶ Well, written in the literary style of



Jackson and Livingstone (1982). *The Warlock of Firetop Mountain*. Harmondsworth: Puffin. 170 pages. ISBN: 978-978-0-14-031538-7

# Perform a retrospective and prospective study on water resources

The choose-your-own-adventure white paper

## Capitalizing on

1. Cutting-edge expertise from scientists
2. Real-life experience of local practitioners in defining and running climate change impact studies

## Tailored for

- ▶ (French) **Water managers** to design and assess studies
- ▶ (French) **Consultants** to run them

## Aimed at

- ▶ Guiding practitioners through concepts, datasets, and methods
- ▶ Being read, i.e. hopefully less boring

The screenshot shows the landing page for the book "Mener une étude rétrospective et prospective sur la ressource en eau". The page is in French and features a search bar, a table of contents, and a list of chapters. The title is prominently displayed in the center. On the right side, there are links for "View source" and "Edit this page". At the bottom, there is a footer with the book's title and a note that it was built with the bookdown R package.

**Mener une étude rétrospective et prospective sur la ressource en eau:**  
Le livre blanc dont Vous êtes le héros

Search

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**Mener une étude rétrospective et prospective sur la ressource en eau**  
Avertissements

Définir l'objet de la quête  
1 Contexte institutionnel  
2 Contexte de l'étude

Préparer son équipement  
3 Recenser les connaissances existantes  
4 Collecter les données  
5 Identifier les modélisations hydrologiques disponibles

Mission première : Retrouver l'évolution passée de la ressource en eau  
6 Analyser et calculer des tendances  
7 Réaliser ou utiliser une modélisation hydrologique

Mission seconde : Composer le futur des ressources en eau  
8 Appréhender le climat futur sur la France  
9 Exploiter les projections climatiques  
10 Appréhender l'hydrologie future sur le territoire

Références

**Mener une étude rétrospective et prospective sur la ressource en eau**  
Le livre est rédigé dans le cadre de l'action d'implémentation C4 : Renforcer les échanges entre gestionnaires et chercheurs du projet LIFE Eau&Climat. Le projet LIFE Eau&Climat (LIFE19 GIC/FR/001259) a reçu un financement du programme LIFE de l'Union européenne.

La version que vous avez sous les yeux date du **04 avril 2024**.

**Avertissements »**

On this page  
Mener une étude rétrospective et prospective sur la ressource en eau  
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# Perform a retrospective and prospective study on water resources

## The choose-your-own-adventure white paper

### Technical card

- ▶ Webbook to be included in the web portal for water managers: <http://www.gesteau.fr>
- ▶ Technology **R bookdown** : <https://www.bookdown.org>
- ▶ Clicking hyperlinks to replace turning pages

### Features

- ▶ Modular
- ▶ Flexible tool to adapt to rapid changes in
  - ▶ existing hydrological and climate datasets
  - ▶ analysis tools
  - ▶ web portals to worlds with a changing/changed climate (see Kirk & Sangster, 2023)

### Mener une étude rétrospective et prospective sur la ressource en eau:

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# Perform a retrospective and prospective study on water resources

*Fighting fantasy* features

Second person point of view



# Perform a retrospective and prospective study on water resources

## Fighting fantasy features

### Second person point of view

#### Contents

- ▶ Foreword warnings
- ▶ Defining the quest
- ▶ Packing the bag
- ▶ Quest 1: Finding the past evolution of water resources
- ▶ Quest 2: Composing the future of water resources

### The traditional warnings to the adventurer

***Third warning: Where this book comes from and how much you can trust it***

*This book attempts to compile the experiences of the many past questers who have tried to survey this hitherto little-known territory of the evolution of hydrology in a changing climatic context. It is thus based on these incomplete travel accounts, rich in encounters, unfinished quests and coded messages, which have come down to us through the ages. [...] Finally, this book is written at a given moment, and reflects the expertise and knowledge acquired and shared at that moment. Fortunately, and this is the magic of it all, the content of this book is constantly evolving to keep pace with the twists and turns in the history of the land you are about to explore.*

*Now that you've read these three warnings carefully, you can define the object of your quest.*

# Perform a retrospective and prospective study on water resources

## Fighting fantasy features

### Second person point of view

### An introduction to the land to be explored

#### Contents

- ▶ Foreword warnings
- ▶ **Defining the quest**
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#### ***Institutional context***

*Before you begin your quest, you need to know the rules and regulations in force in the land and time you'll be exploring. To this end, the following paragraphs provide a non-exhaustive list of national regulatory and institutional contexts in which a retrospective and/or prospective study can be carried out.*

*[...]*

#### ***Study context***

*[...]*

*If you now have a clear idea of the type of study your quest falls into, then you can start by interviewing the adventurers who have gone before you, and using them to take stock of the state of knowledge before embarking on your quest. To do this, go to the next section.*

# Perform a retrospective and prospective study on water resources

## *Fighting fantasy* features

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### Live updates during the quest

[...]

*An adventurer you meet in a tavern tells you that all these data sets have been made available free of charge by Météo-France since January 1, 2024. And he hands you the recently published edict [\[link to press release\]](#). You decide to tuck away your purse and treasure its contents which you may find useful as you continue your quest, in particular to pay the people who will be able to help you with your two quests.*

[...]

# Perform a retrospective and prospective study on water resources

*Fighting fantasy features*

Second person point of view

Path depending on previous experience

## Contents

- ▶ Foreword warnings
- ▶ Defining the quest
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- ▶ Quest 2: Composing the future of water resources

[...]

*If the above studies on climate change observed in France are sufficient for you, then you can move on to the next section to look at existing studies on hydrological trends. If not, get ready to carry out a trend study and start by selecting the variables to be studied.*

[...]

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### Difficult choices to be made

[...]

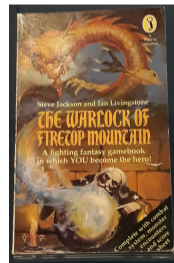
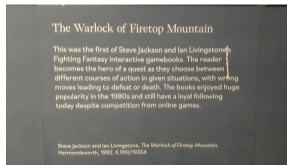
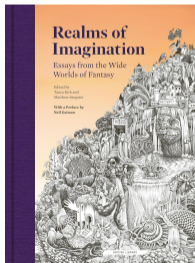
*To access the datasets, you can choose between two doors: the first is marked Custom selection, the second Simplified access (full domain). So you'll have to make several choices, depending on the skill points you have left at this point in your quest. The following sections will hopefully enable you to explore the rooms of this labyrinth with full knowledge of the facts. If you decide to open the Custom Selection door, go directly below to section 9.1. If you choose to open the Simplified Access (full domain) door, go to section 9.2. Warning: the term simplified access has already misled many an adventurer.*

[...]

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## Take-home messages

- ▶ Positive first feedbacks from project local partners
- ▶ Scientific guidelines/advice/recommendations much needed and appreciated
- ▶ Maybe not more efficient than traditional methodological guides, but much more fun to write!



## End words

to be avoided!

*You have not managed to integrate the decline in water resources in your climate change adaptation strategy. Your land has suffered from a 5-year-long drought which reduced harvests to zero, and you starved to death. Your quest ends here.*

*You have not managed to integrate the increase in flood risk in your climate change adaptation strategy. A flood with unseen intensity has ravaged your entire land including your house, and you drowned in your basement. Your quest ends here.*

Thanks for your attention

Jean-Philippe Vidal

INRAE, RiverLy

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