

European Geosciences Union General Assembly, Vienna, Austria, 23 – 27 May 2022

Review papers in hydrology for linking research to practice:

a reflection on the why's and how's



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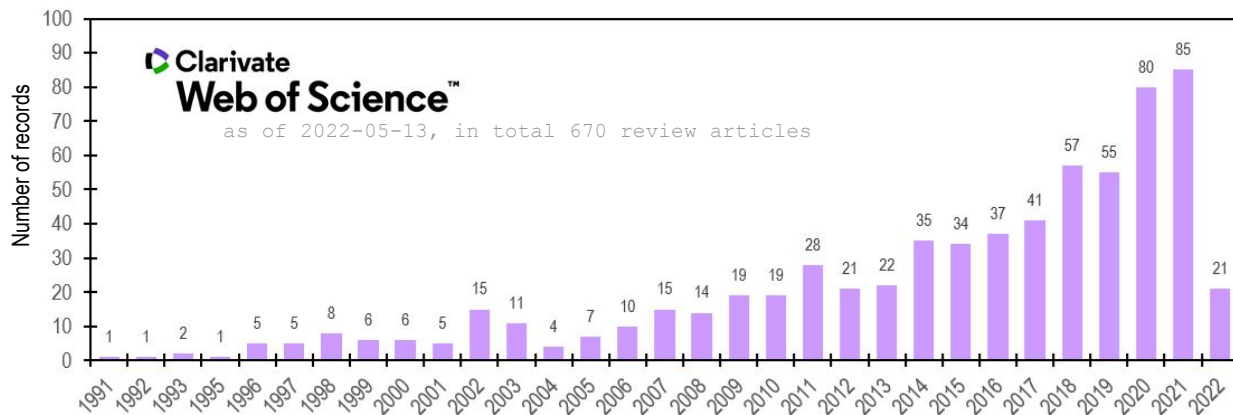
Maria-Helena Ramos - *INRAE, UR HYCAR, Antony, France*

HS1.1.2 Role of hydrology in policy, society and interdisciplinary collaborations:
across disciplines and beyond scientists

Wed, 25 May | EGU22-8748 (10:35–10:40)

Review papers in hydrology

- ★ **Database:** Web of Science Core Collection (1975-present)
> Science Citation Index Expanded (SCI-EXPANDED) --1980-present
- ★ **Search within:** Article Title, Abstract, Author Keywords and Keywords Plus
- ★ **Search string:** (review* OR overview* OR synthesi* OR literature OR systematic OR "literature review" OR "systematic review*") AND (river* OR stream* OR basin* OR catchment* OR watershed* OR lake*) AND (streamflow* OR runoff* OR discharge* OR "river flow*" OR freshwater*) AND (hydrology OR hydrologic* OR "water resource*")
- ★ **Filter criteria:** Only review papers (*document type*) in English (*language*); unrelated subject areas are excluded.



There has been large & continuous increase in the number of review papers published in the hydrology literature.

Review papers

#1
INTRO

- ★ ***Objective, focus theme, methodology***
- ★ To synthesize and compare evidence
- ★ Research questions: specific vs. broad
- ★ Search strategy: traditional vs. systematic
- ★ Qualitative (narrative) vs. quantitative
- ★ Synthesis vs. critique

EGU Hydrological Sciences Blog post

Authored by Nilay Dogulu & Edited by Maria-Helena Ramos

<https://blogs.egu.eu/divisions/hs/2021/06/30/listening-to-a-bouquet-of-articles-review-papers/>

Review papers

SC2.9 How to write
a review paper in Hydrology
Thu, 26 May, 13:20–14:50
-2.61/62 & online

#1
INTRO

★ Review types

- Traditional literature review
 - Scoping review
 - Overview
 - State-of-the-art knowledge
 - Critical review
 - Systematic review (P.R.I.S.M.A.)
- (exploratory)
(historical)
(research agenda)
(opinion)
(qualitative)

★ Literature analysis approaches

- Bibliometric analysis
- Context analysis
- Meta-data analysis/synthesis

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333-339.
<https://doi.org/10.1016/j.jbusres.2019.07.039>

Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, 26(2), 91-108.
<https://onlinelibrary.wiley.com/doi/full/10.1111/j.1471-1842.2009.00848.x>

Review papers in hydrology



#1
INTRO

- ★ It is not clear if and how these review papers can be **helpful beyond academia**.
- ★ This is particularly important for **tackling water-related issues in collaboration with water practitioners and stakeholders** working towards providing operational hydrology services.

Our objective



To highlight the role of **review papers in hydrology** for improving the **science-practice-policy interface**.



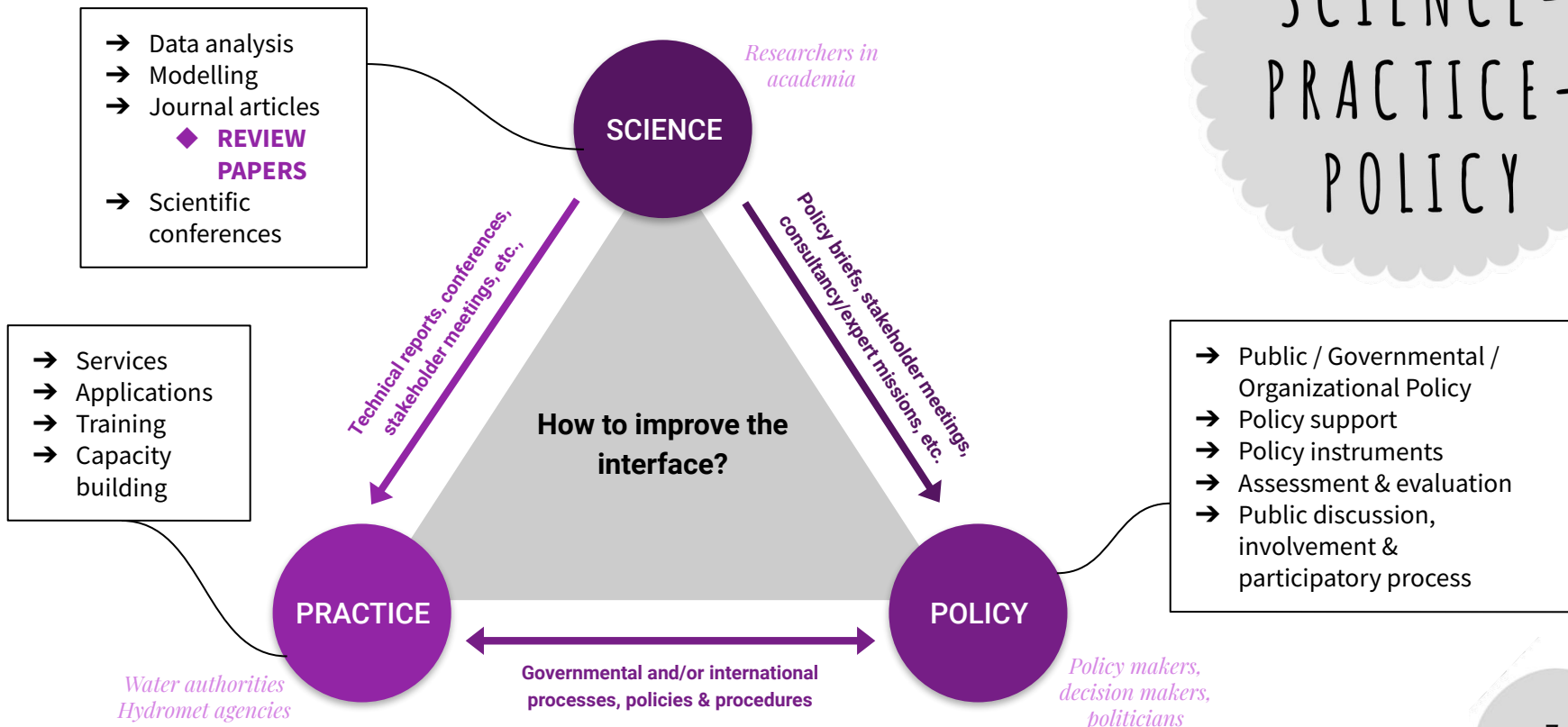
To give recommendations on how to make review papers **readable and actionable for practitioners & policy makers**.

#1
INTRO

Dogulu, N., M. Mosquera, G., and Ramos, M.-H.: *Review papers in hydrology for linking research to practice: a reflection on the why's and how's*, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-8748, <https://doi.org/10.5194/egusphere-egu22-8748>, 2022.

Science-practice-policy nexus

#2 SCIENCE- PRACTICE- POLICY



Science-practice-policy nexus and review papers in hydrology

#2
SCIENCE-
PRACTICE-
POLICY

- ★ Condensed information in the form of synthesis, overview, etc.
- ★ Critical perspective
- ★ Recommendations for future research
- ★ Practical implications for operational hydrology services

TRANSLATION OF RESEARCH INTO PRACTICE

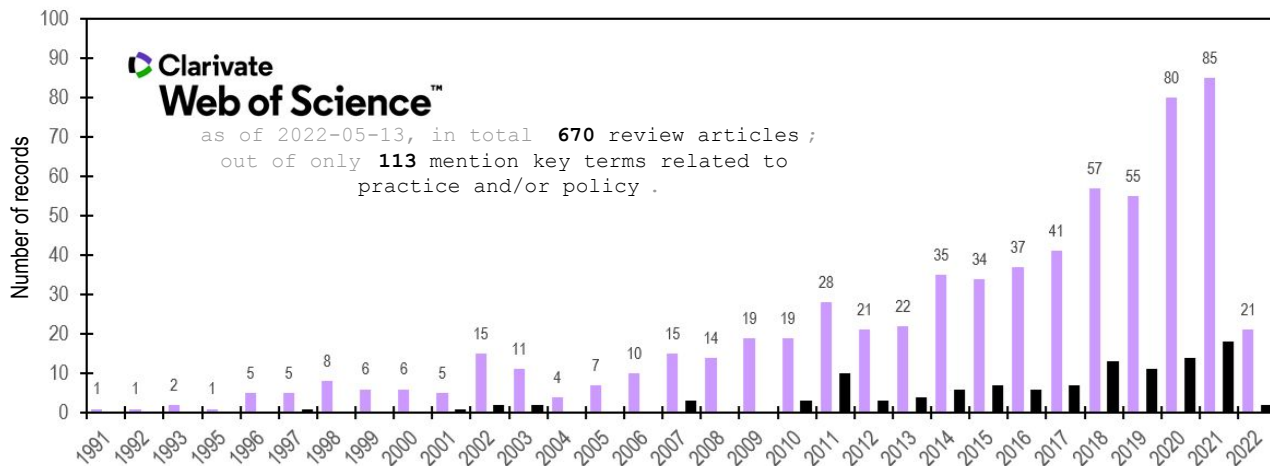
(e.g., data collection and management,
modelling, prediction, hydroinformatics, decision support)

Science-practice-policy nexus and review papers in hydrology

(review* OR overview* OR synthesi* OR literature OR systematic OR "literature review" OR "systematic review*") AND (river* OR stream* OR basin* OR catchment* OR watershed* OR lake*) AND (streamflow* OR runoff* OR discharge* OR "river flow*" OR freshwater*) AND (hydrology OR hydrologic* OR "water resource*")

AND (stakeholder* OR practitioner* OR politician* OR maker* OR policy* OR policymaking OR policy-making OR "policy making" OR decisionmaking OR decision-making OR "decision making" OR "water polic*" OR "water directive*" OR "flood directive" OR "climate polic*" OR "environment polic*" OR "operational hydrology" OR "hydrological service*" OR "water service*" OR "ecosystem service*" OR "environmental service*" OR "climate service*" OR "meteorological service*")

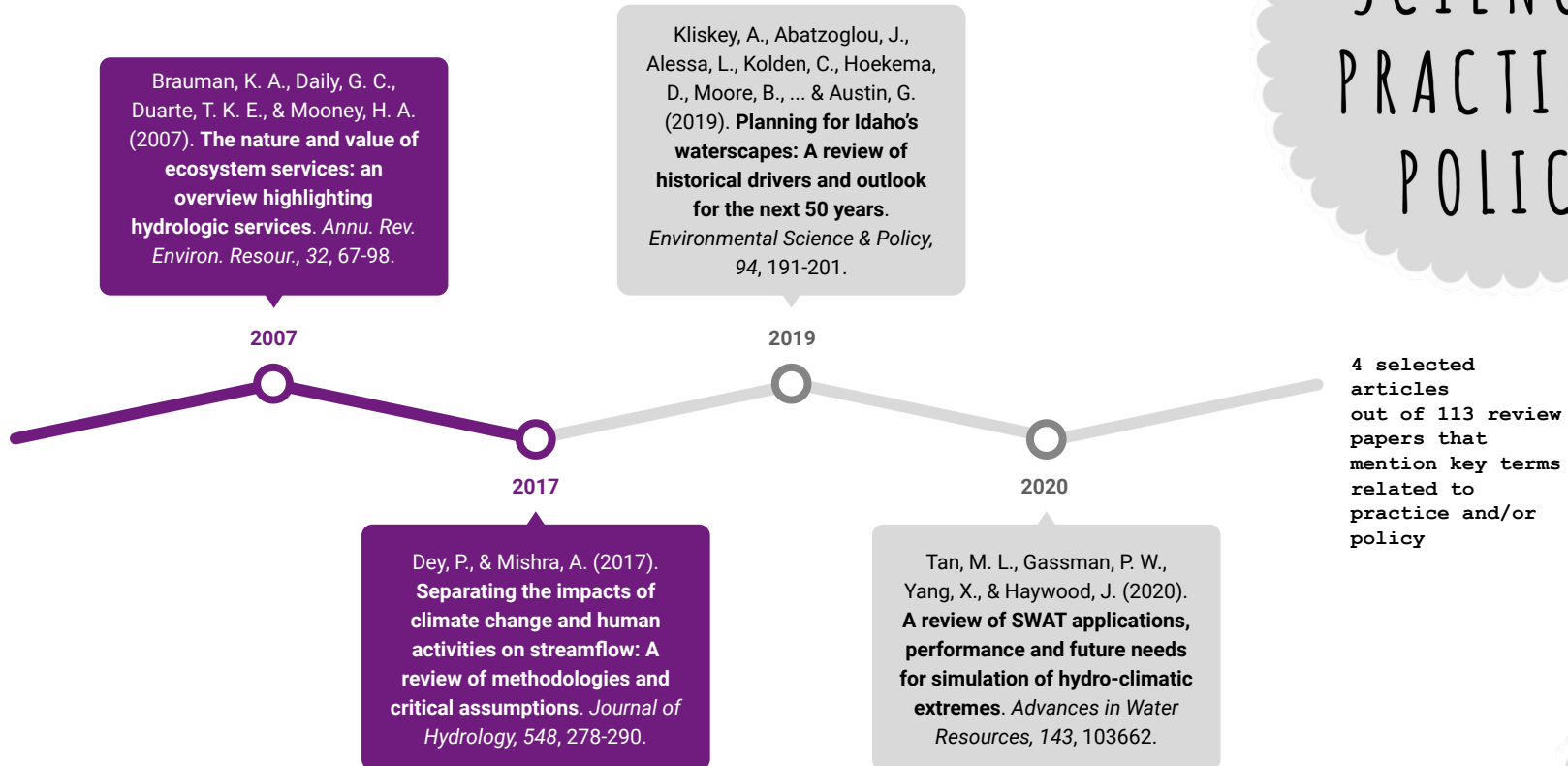
#2 SCIENCE- PRACTICE- POLICY



**Relatively low (17%),
yet slow steady
increase in the number
of review papers that
mention **key terms**
related to practice
and/or policy.**

Example review papers (highly cited)

#2 SCIENCE- PRACTICE- POLICY



Have these review papers contributed to hydrology practice (and policy)?

#2
SCIENCE-
PRACTICE-
POLICY

- ★ We don't know if these review papers were **impactful beyond academia** – such assessment is **complex** and **challenging**.
- ★ However, we would like to take the opportunity to present some **recommendations to guide future review papers to create more impact**.

Principles and recommendations

- ★ How to write and communicate a scientific paper with practitioners & policy makers in mind?

#3 PRINCIPLES

01	Effective writing (language, format)	<ul style="list-style-type: none">• Add operational language & terms (avoid scientific jargon)• Avoid interrupting every sentence with long lists of references: focus on the message not on "who's who"• Avoid methodological details: focus on resources needed for replication / application in local contexts (data & models)• Be concise
02	Purposeful content (design & development)	<ul style="list-style-type: none">• Contextualize the problem before you explain it: look at the big picture• Research synthesis: target improvements & impacts on applications and current practices• Use illustrative examples and narratives, while emphasizing generalized concepts to be able to be transposable to different local context specificities
03	High accessibility	<ul style="list-style-type: none">• Open access publishing (English) & local language translations: consider having the right to publish a translated version in local technical journals• Graphics and steps for replication (break down plans for application): practitioners want to know how they can apply the wonderful scientific results
04	Efficient visibility & dissemination	<ul style="list-style-type: none">• Social media & art• Meetings with stakeholders and/or users• Policy briefs

What are the
strategies,
resources & tools
to improve the benefit
of review papers to
hydrology practitioners?

Strategies, resources & tools

01

Effective writing

- Language
- Format

#3

PRINCIPLES

- ★ Add operational language & terms (avoid scientific jargon)
- ★ Avoid interrupting every sentence with long lists of references:
 - focus on the message not on “who’s who”
- ★ Avoid methodological details:
 - focus on resources needed for replication / application in local contexts (data & models)
- ★ Be concise

Strategies, resources & tools

02

Purposeful content design & development

- Review context
- Research synthesis
- Key findings & implications

#3

PRINCIPLES

- ★ Contextualize the problem before you explain it:
 - look at the big picture!
- ★ Research synthesis:
 - target improvements & impacts on applications and current practices
- ★ Use illustrative examples and narratives, while emphasizing generalized concepts to be able to be transposable to different local context specificities

Strategies, resources & tools

03

High accessibility

- Open access publishing
- Graphics and steps for replication

#3
PRINCIPLES

- ★ Open access publishing (English) & local language translations:
 - **Consider having the right to publish a translated version in local technical journals**
- ★ Graphics and steps for replication (break down plans for application):
 - **Practitioners want to know how they can apply the wonderful scientific results**

Strategies, resources & tools

04

Efficient visibility & dissemination

- Social media & art
- Meetings with stakeholders and/or users
- Policy briefs

#3
PRINCIPLES

★ Social media & art

- Twitter, LinkedIn
- Illustration, visual abstract

★ Meetings with stakeholders and/or users

- Get in touch with them to discuss potential opportunities

★ Policy briefs

- Some journals publish “Policy Briefs” - e.g., Frontiers journals.



Thanks for your attention !



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