



JOURNÉES ANNUELLES 2026

AVIGNON - 28 sept. au 2 oct.

PEPR FOREST
RÉSILIENCE DES FORÊTS

GESTION APPRENANTE ET ADAPTATIVE

Thomas Cordonnier

ONF, Recherche Développement et Innovation



Gestion adaptative : quelle place dans FORESTT?

REGEADAPT, WP 2. Management to promote regeneration dynamics enhancing resilience

WP2 will explore management options in terms of methods, success, and consequences for biodiversity and NCPs. **We will adopt an adaptive management perspective** including monitoring, reflecting on past decisions, and adjusting practices according to changes in the context and observed outcomes (Cordonnier & Gosselin 2009).

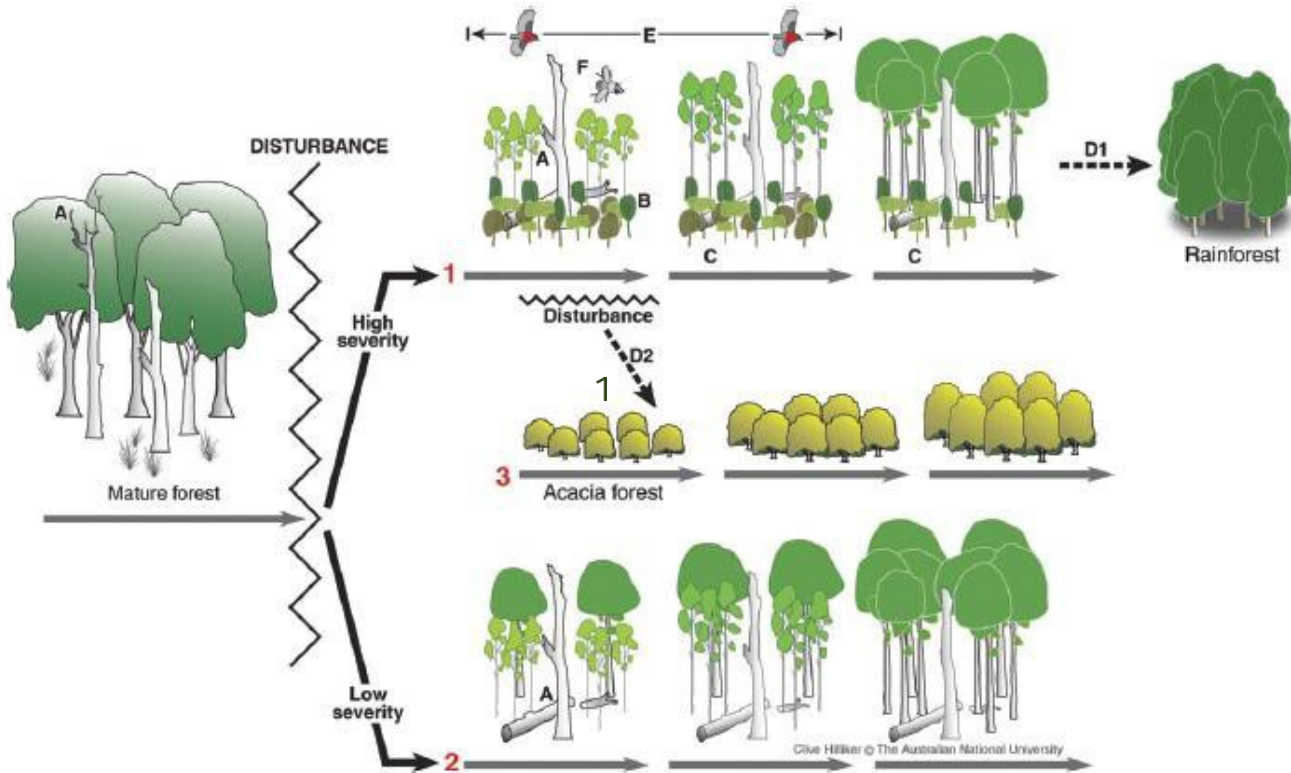
XRISKS, Task 4.3. Trajectories and transmission of social vulnerabilities, inequalities in the capacity to cope with multiple risks

Although the capacity of specific forest ecosystems to cope with climate change has been assessed for the last two decades, few efforts have been made to specifically investigate **relationships between adaptive management and the associated value chains.**

FORESTT-HUB, Task 2.3. Creation of a network of forest LLs

The targeted innovations could include participatory approaches, **adaptive forest and closer-to-nature and silvicultural management**, collective forest planning, or a concerted forest bioeconomy. A structuring network of LL projects in forestry SES (conservation, **adaptive management and silviculture**, adaptive cultural heritage reuse practices, collaborative forestry planning, territorial bioeconomy, etc.) will be set up and expanded from the pilot LLs.

Réduire les incertitudes



Pulsford *et al.* 2016.

“Data are sparse, knowledge of processes limited, and the act of management changes the system being managed.”

Surprise and change is inevitable.”

Walters & Holling 1990.

Mieux comprendre les relations entre gestions et dynamiques des écosystèmes

Apprentissage et expérimentation

“For management to be considered as adaptive management it must include a formalized process of **learning**, preferably combined with **deliberate experimentation**.”

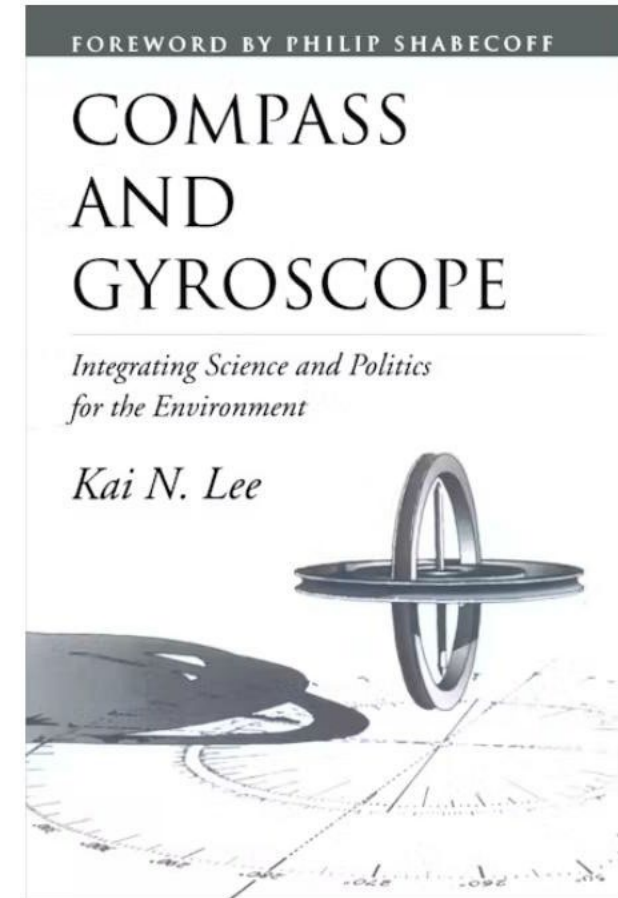
Rist *et al.* 2013.

“Il serait plus exact, pour éviter toute ambiguïté, de qualifier le type de gestion dont nous parlons de “**gestion apprenante et adaptative**.”

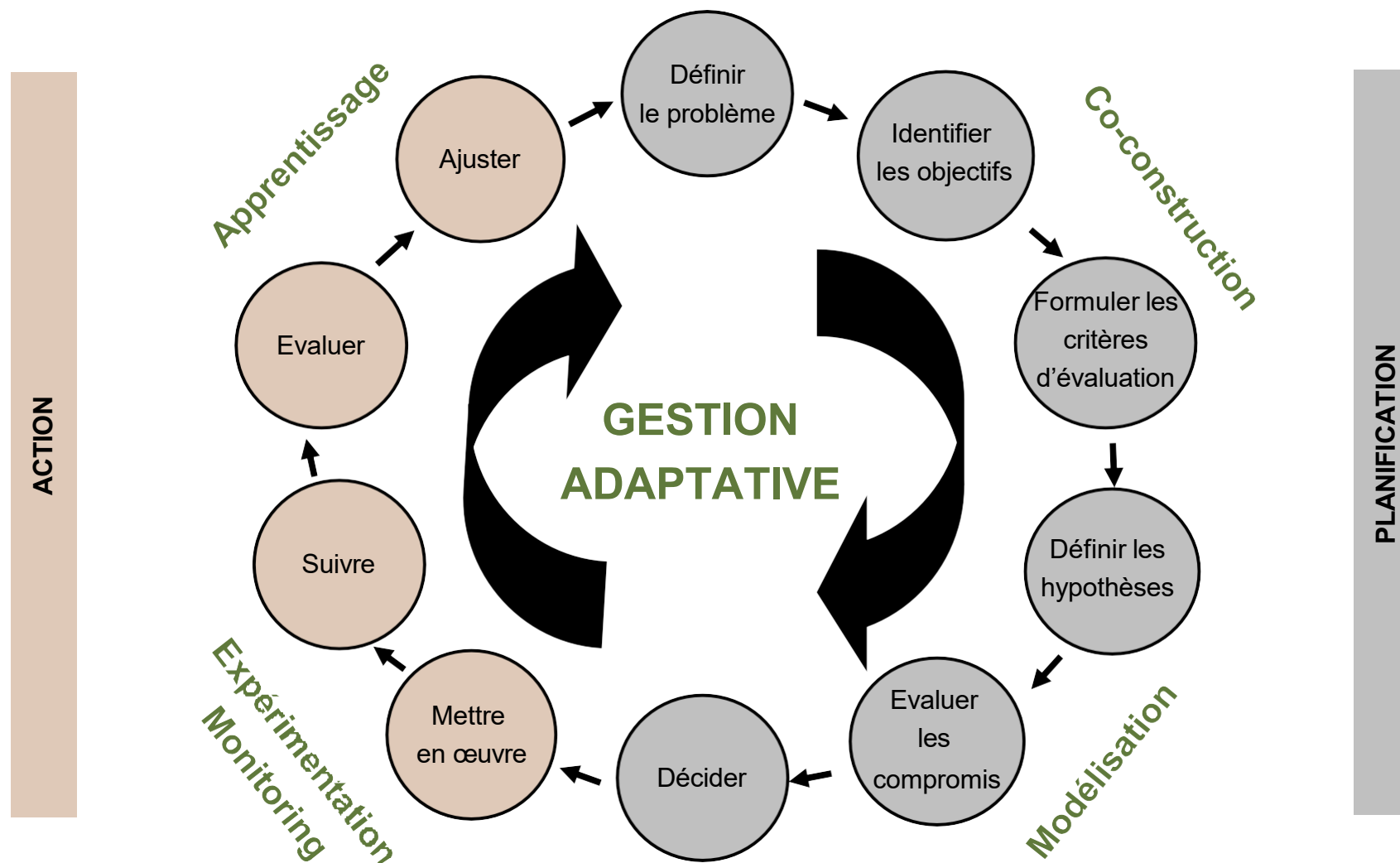
Cordonnier & Gosselin 2009.

Intégration science-gestion

“Adaptive management – the compass – is an idealistic application of science to policy that can produce reliable knowledge from unavoidable error .”

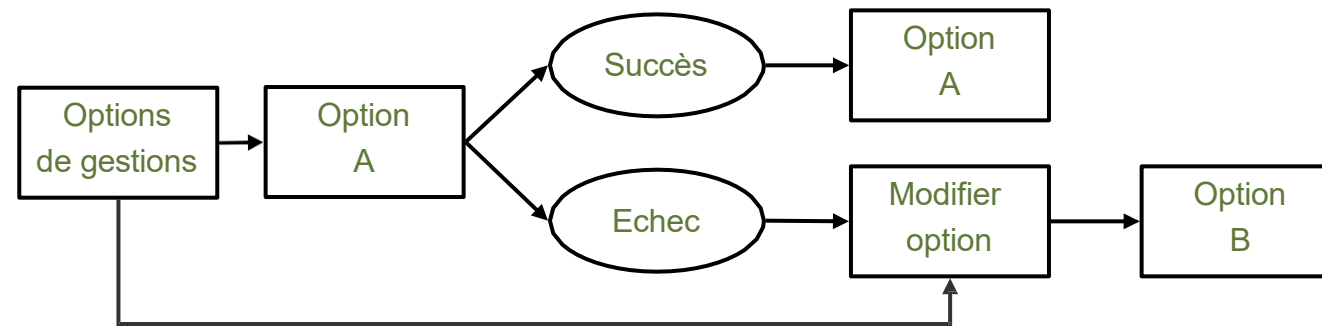


Le cercle de la gestion adaptative

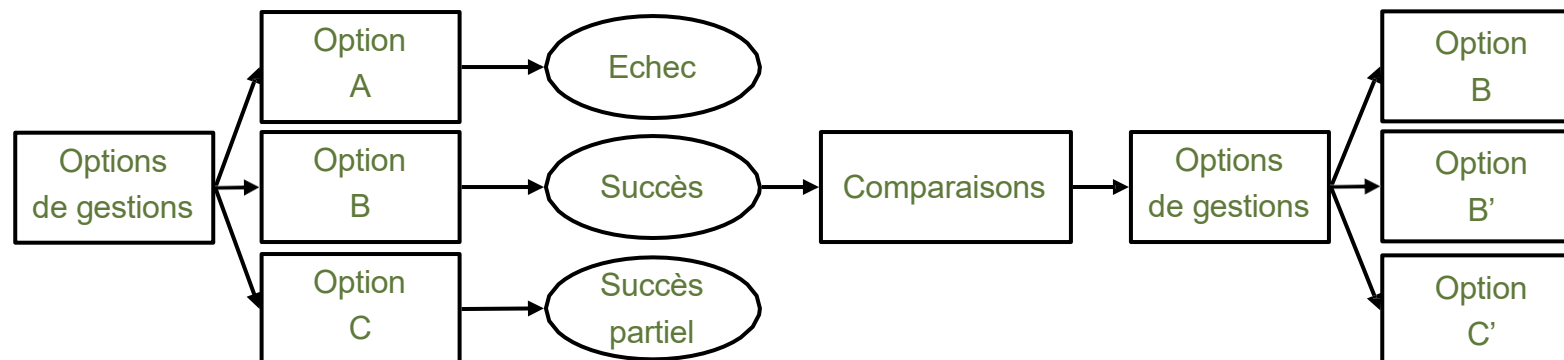


Passive versus active

PASSIVE



ACTIVE



Article les différents types d'interface recherche-gestion



Journal of Environmental Management

Volume 218, 15 July 2018, Pages 388–401



Review

Ecological research and environmental management: We need different interfaces based on different knowledge types

Frédéric Gosselin^a, Thomas Cordonnier^b, Isabelle Bilger^a, Marielle Jappiot^c,
Christophe Chauvin^b, Marion Gosselin^a

Show more

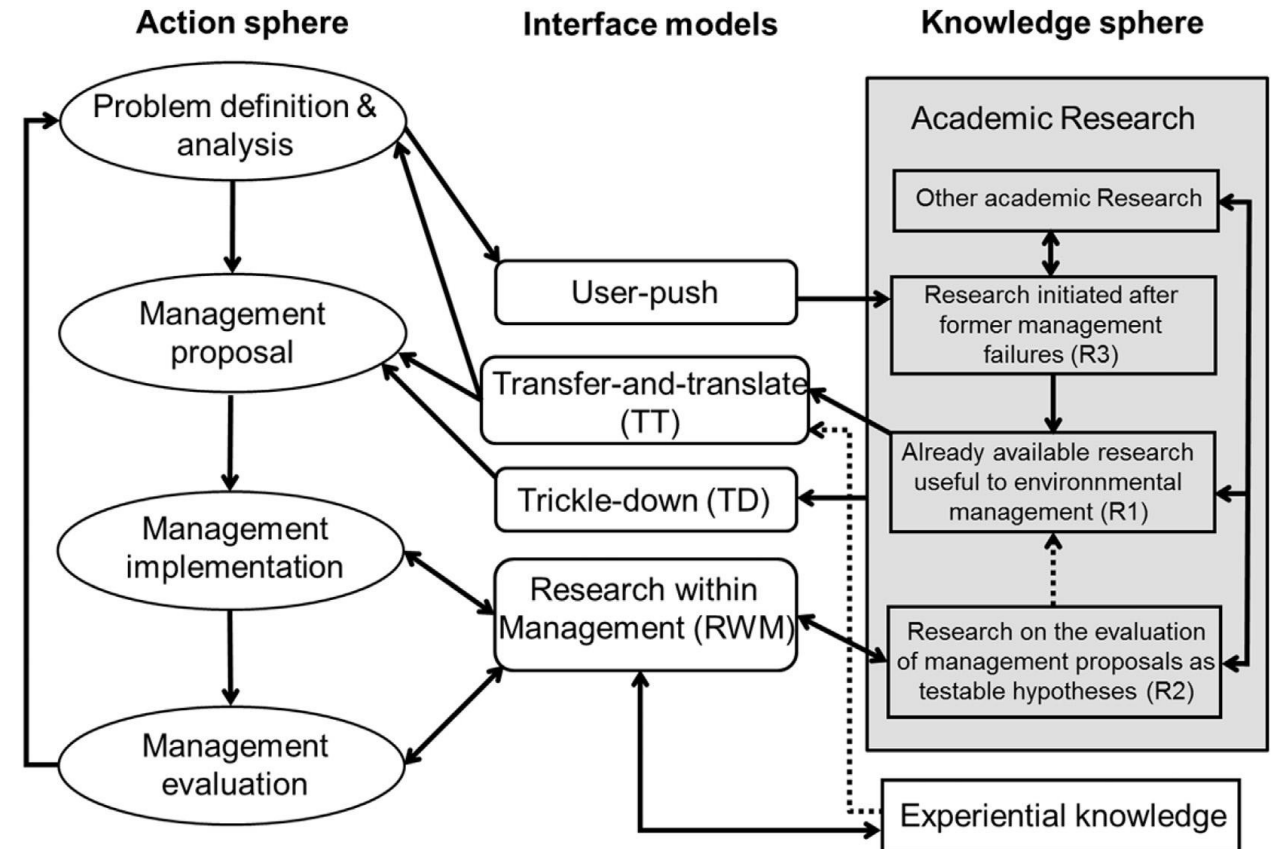
+ Add to Mendeley Share Cite

<https://doi.org/10.1016/j.jenvman.2018.04.025>

[Get rights and content](#)

Highlights

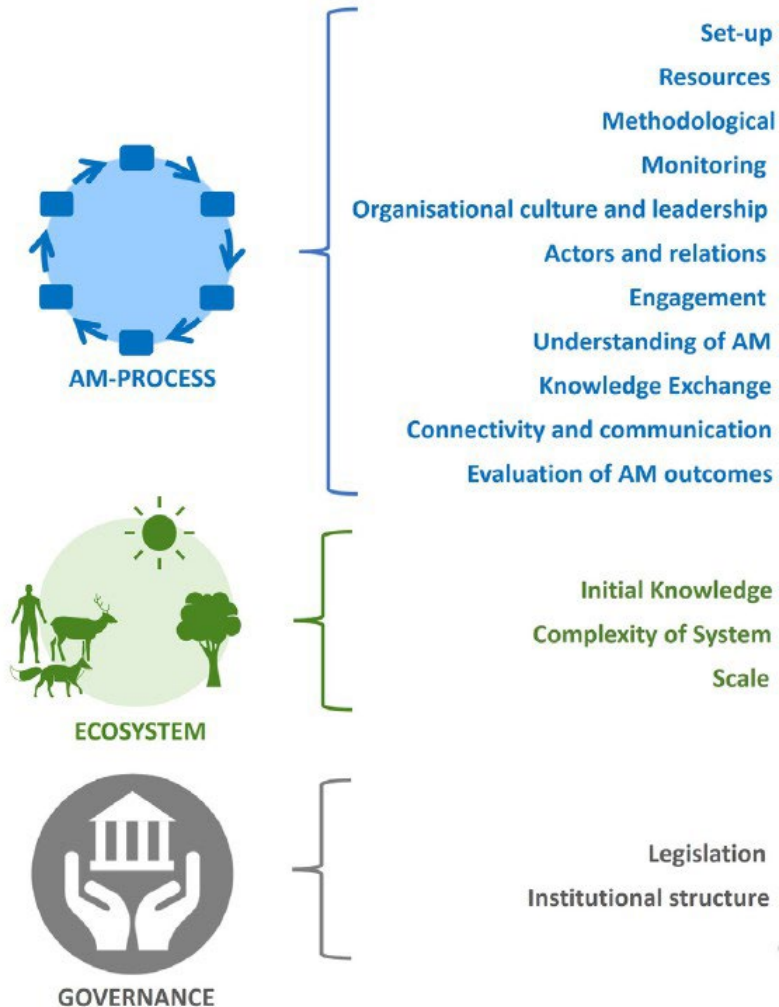
- We reconcile different perspectives on ecological research-management interfaces.
- Different types of interfaces and different types of ecological knowledge are needed.
- We propose a new Research-Within-Management interface (RWM).
- Adaptive management is a promising meta-interface.



Des difficultés d'application

MAIN OBSTACLE CATEGORIES

OBSTACLE SUB-CATEGORIES



Analyse de 1339 articles citant la gestion adaptative

Project	Country	Duration (years)
Waterfowl management	United States	25
Colorado River, Glen Canyon	United States	13
Northwest Forest Plan	United States	10
Wolf management – Yellowstone	United States	9
– Yukon	Canada	17
Reintroduction of Hihi (Mokoia Island)	New Zealand	8
Predator control – Kokako (North Island)	New Zealand	8
– Whio (Fiord-land NP)	New Zealand	6
Woodland management	Australia	7
Restoration of sand-mined locations	Australia	3
Restoration of woodland bird habitats	Australia	2
Management of Sika Deer	Japan	10
Monitoring of agri-environment schemes	UK	6

Des solutions?

Ecological Applications, 16(6), 2006, pp. 2411–2425
© 2006 by the Ecological Society of America

DECONSTRUCTING ADAPTIVE MANAGEMENT: CRITERIA FOR APPLICATIONS TO ENVIRONMENTAL MANAGEMENT

R. GREGORY,^{1,4} D. OHLSON,² AND J. ARVAI^{1,3}

¹Decision Research, 1160 Devina Drive, Galiano, British Columbia V0N 1P0 Canada

²Compass Resource Management, Suite 200, 1260 Hamilton Street, Vancouver, British Columbia V6B 2S8 Canada

³Department of CARRS, 305 Natural Resources Building, Michigan State University, East Lansing, Michigan 48824 USA

AM criteria	Tree-fertilization trials	Est-induced river restoration	Forest fuels-wildfire risk management	Land-use plan/ climate change
Temporal and spatial scale				
Duration	○	○	○	●
Spatial extent and complexity	○	○	○	●
External effects	○	○	○	●
Dimensions of uncertainty				
Parameter uncertainty	○	○	○	○
Structural uncertainty	○	○	○	●
Stochasticity	○	○	●	○
Confidence in assessments	○	○	○	●
Costs, benefits, and risks				
Specifying costs and benefits	○	○	○	○
Magnitude of effects	○	○	○	○
Multiple objectives	○	○	●	●
Perceived risks of failure	○	●	●	○
Institutional support				
Leadership guidance	○	○	○	○
Flexibility in decision making	○	○	○	●
Taboo trade-offs	○	●	●	○
Capacity of institutions	○	○	○	○

Key:

- Not a major barrier to proceeding with an active, experimental, AM approach.
- Challenge that must be addressed in order to successfully proceed with an active, experimental, AM approach. Passive approach may be more applicable.
- Significant challenge; active, experimental AM infeasible unless resolved. Likewise, passive approach must resolve in order to be feasible.

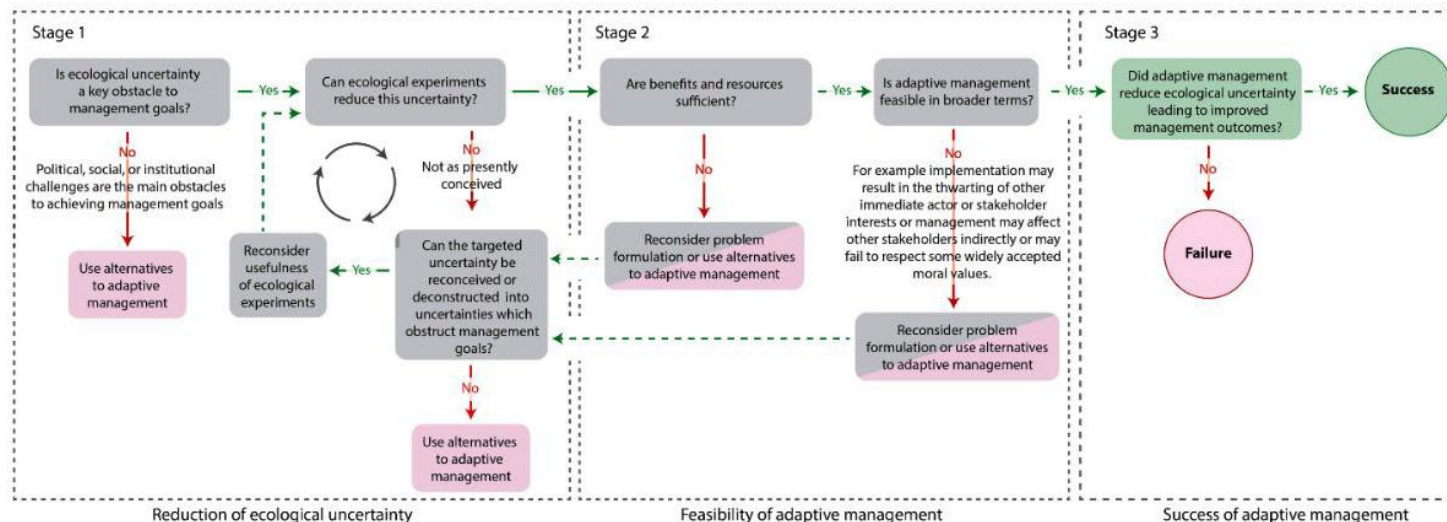
Copyright © 2013 by the author(s). Published here under license by the Resilience Alliance.
Rist, L., A. Felton, L. Samuelsson, C. Sandström, and O. Rosvall. 2013. A new paradigm for adaptive management. *Ecology and Society* 18(4): 63. <http://dx.doi.org/10.5751/ES-06183-180463>



Insight

A New Paradigm for Adaptive Management

Lucy Rist¹, Adam Felton², Lars Samuelsson³, Camilla Sandström⁴ and Ola Rosvall⁵



Un exemple sur l'adaptation des forêts au changement climatique (I)

14 sites

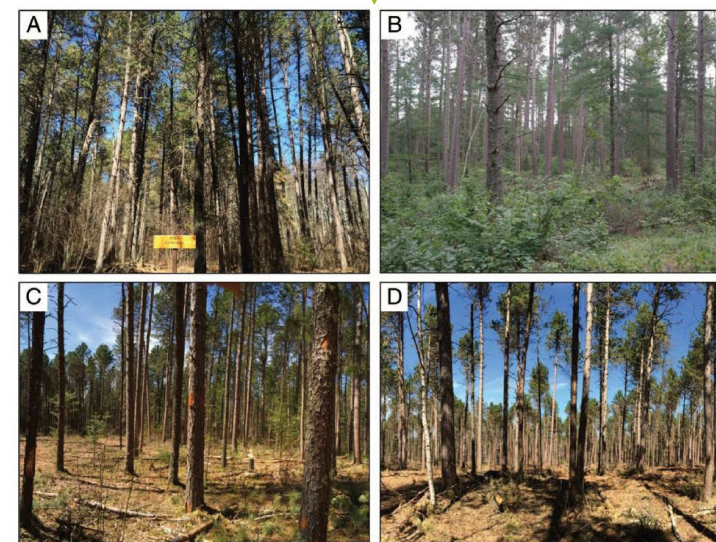
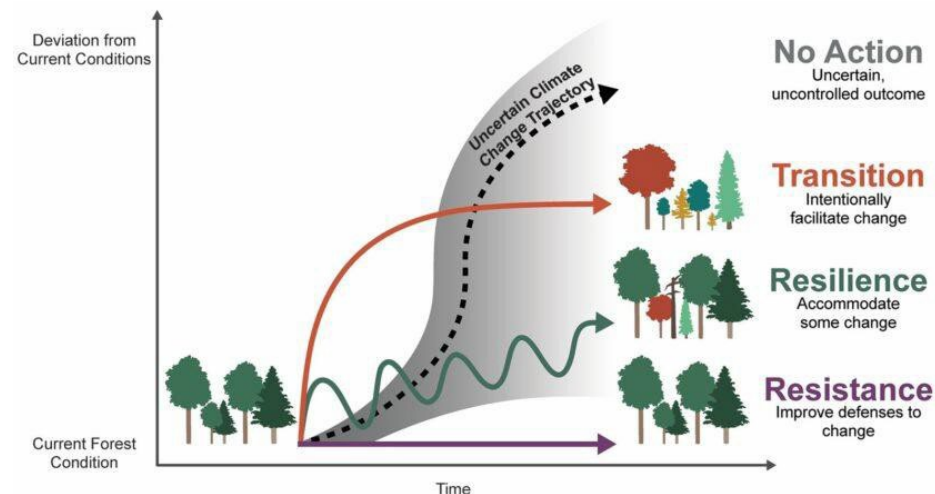
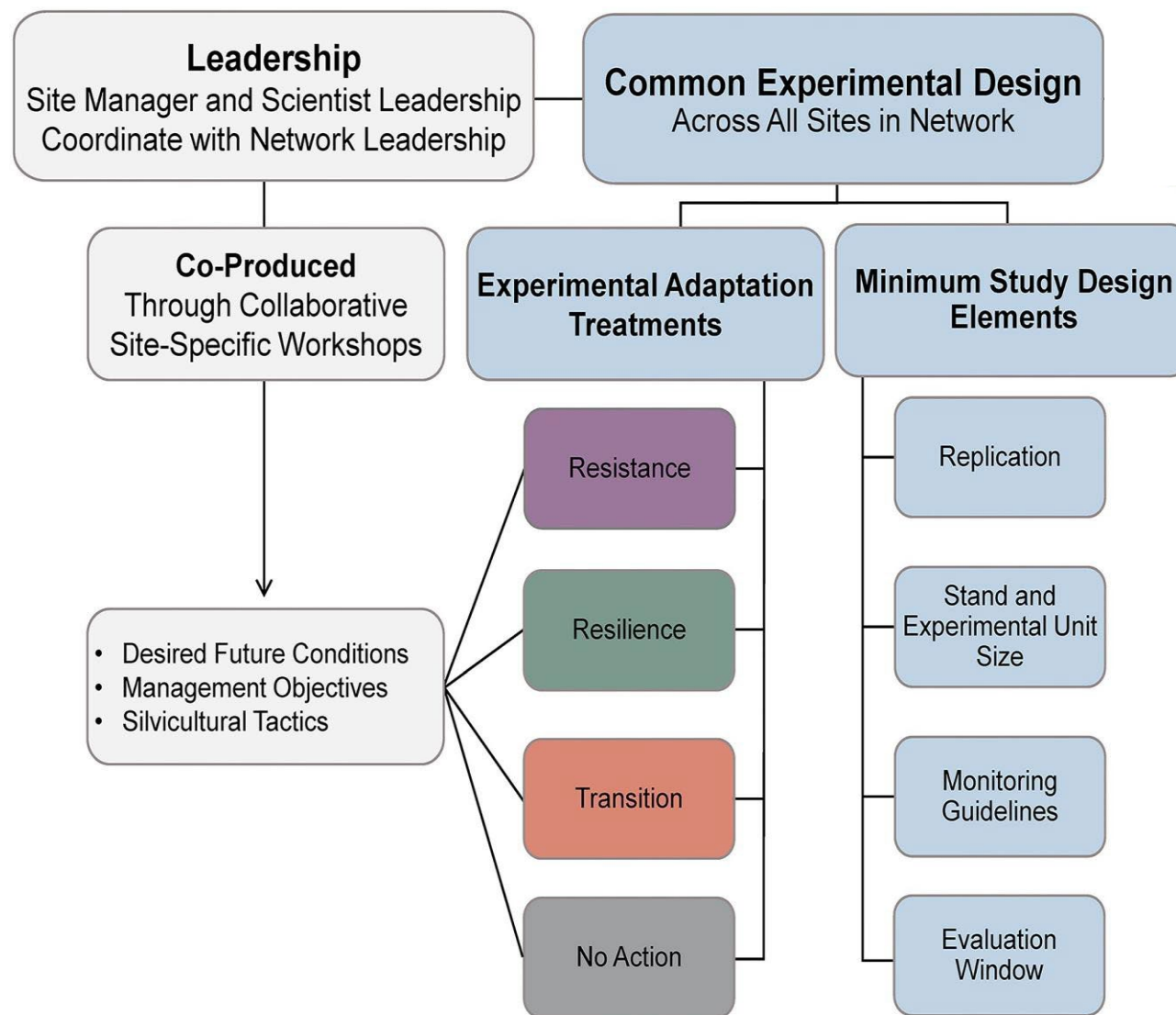


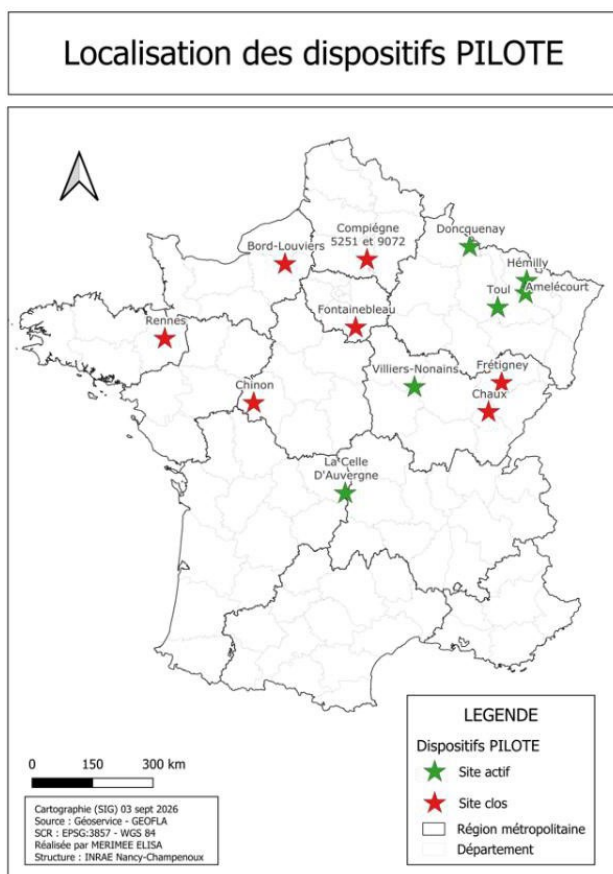
Figure 4. Photos showing four treatments on CEF in Minnesota: no action control (A), resistance (B), resilience (C) (with gap on left-hand side of photo, thinned matrix on right-hand side), and transition (D) treatments. (Photos courtesy of Eli Sagor, 2015.)

Un exemple sur l'adaptation des forêts au changement climatique (II)

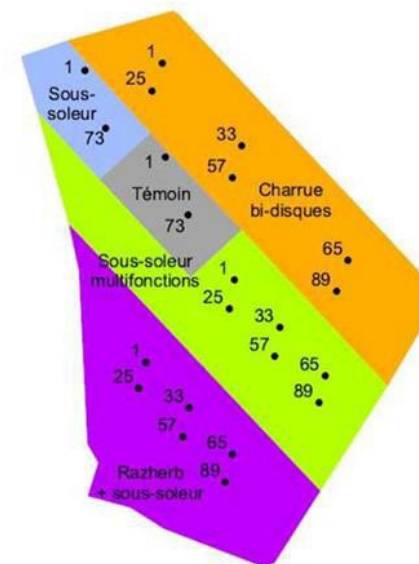


Réseau PILOTE

Itinéraires techniques pour l'installation des plantations : un réseau de chantiers pilotes pour tester, former et démontrer



PILOTE Compiègne (60)

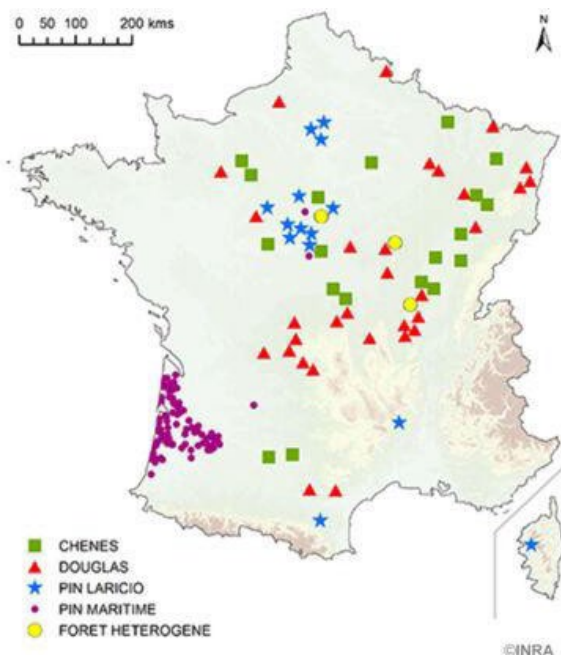


1. Performances économiques : Productivité et coût technique des opérations
2. Performances techniques : Succès des opérations (survie et croissance des plants)
3. Performances environnementales : impacts des opérations sur les propriétés et le fonctionnement du sol et sur la biodiversité floristique
4. Performances sociales : ergonomie des opérations et pénibilité du travail pour les opérateurs

GIS Coopérative de données

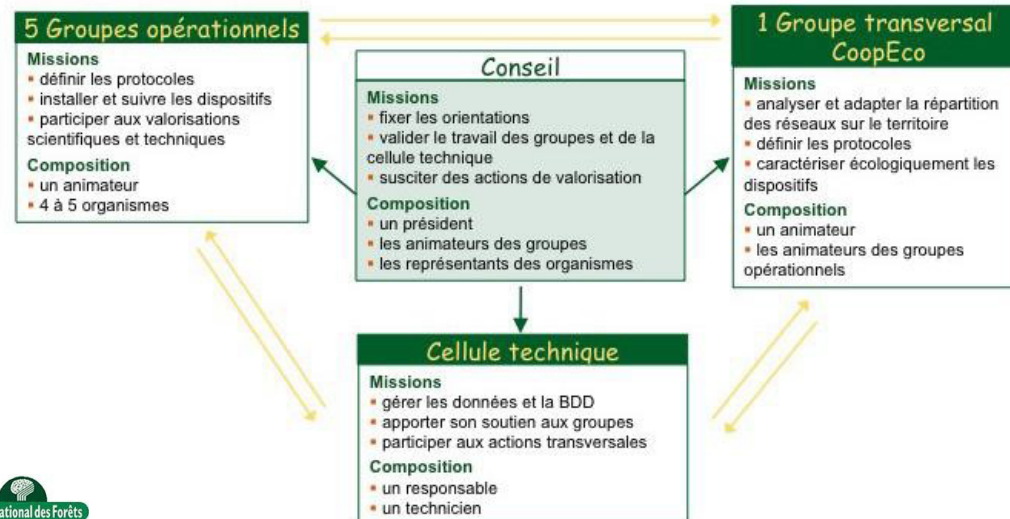


Différents systèmes sylvicoles
Larges gradients pédoclimatiques



Carte de localisation de tous les
dispositifs du GIS Coop installés depuis
la création du GIS en 1994
Année de mise à jour : 2014

Expérimenter la densité des peuplements,
de la densité maximale à la croissance libre



Importance des structures favorisant l'émergence de projets coconstruits autour de questions de gestion



Donner davantage de place aux principes de la gestion adaptative?

- Coconstruire des **alternatives de gestion**.
- **Expérimenter délibérément des gestions** aux échelles pertinentes.
- Prendre en compte **des critères et seuils de décision** en gestion dans la formulation des objectifs, les analyses et les évaluations.
- Situer le **niveau de variabilité** couvert pour les inférences / celui couvert en gestion.

Références

- Allen, C.R., Fontaine, J.J., Pope, K.L., & Garmestani, A.S. (2011). Adaptive management for a turbulent future. *Journal of Environmental Management*, 92, 1339-1345. <https://doi.org/10.1016/j.jenvman.2010.11.019>
- Cordonnier, T., & Gosselin, F. La gestion forestière adaptative: intégrer l'acquisition de connaissances parmi les objectifs de gestion. *Revue Forestière Française*, 2009, 61, 131-144. <https://doi.org/10.4267/2042/28896>
- Gosselin, F., Cordonnier, C., Bilger, I. et al. 2018. Ecological research and environmental management: We need different interfaces based on different knowledge types. *Journal of Environmental Management*, 218, 388-401. <https://doi.org/10.1016/j.jenvman.2018.04.025>
- Gregory, R., Ohlson, D. & Arvai, J. (2006). Deconstructing adaptive management: Criteria for applications to environmental management. *Ecological Applications*, 16, 2411-2425. [https://doi.org/10.1890/1051-0761\(2006\)016\[2411:DAMCFA\]2.0.CO;2](https://doi.org/10.1890/1051-0761(2006)016[2411:DAMCFA]2.0.CO;2)
- Lee, K.N. (1993). *Compass and Gyroscope : Integrating Science and Politics for the Environment*. Island Press.
- Månsson, J., Eriksson, L., Hodgson, I. et al. (2023). Understanding and overcoming obstacles in adaptive management. *Trends in Ecology & Evolution*, 38, 55-71. <https://doi.org/10.1016/j.tree.2022.08.009>
- Nagel, L. M., Janowiak, M. K., Clark, P. W. et al. (2026). Ten years of Adaptive Silviculture for Climate Change: an applied, coproduced experimental framework. *BioScience*, 76, 157-170. <https://doi.org/10.1093/biosci/biaf170>
- Nagel, L. M., Palik, B. J., Battaglia, M. A. et al. (2017). Adaptive silviculture for climate change: A national experiment in manager-scientist Partnerships to apply an adaptation framework. *Journal of Forestry*, 115, 167-178. <https://doi.org/10.5849/jof.16-039>
- Rist, L., A. Felton, L. Samuelsson, C. et al. (2013). A new paradigm for adaptive management. *Ecology and Society*, 18, 63. <http://dx.doi.org/10.5751/ES-06183-180463>
- Seynave, I., Bailly, A., Balandier, P. et al. (2018). GIS Coop: networks of silvicultural trials for supporting forest management under changing environment. *Annals of Forest Science*, 75, 48. <https://doi.org/10.1007/s13595-018-0692-z>
- Walters, C.J. & Holling, C.S. (1990), Large-scale management experiments and Learning by doing. *Ecology*, 71, 2060-2068. <https://doi.org/10.2307/1938620>
- Westgate, M.J., Likens, G.E., Lindenmayer, D.B. (2013.) Adaptive management of biological systems: a review. *Biological Conservation*, 158, 128-139. <https://doi.org/10.1016/j.biocon.2012.08.016>



JOURNÉES ANNUELLES 2026

AVIGNON - 28 sept. au 2 oct.

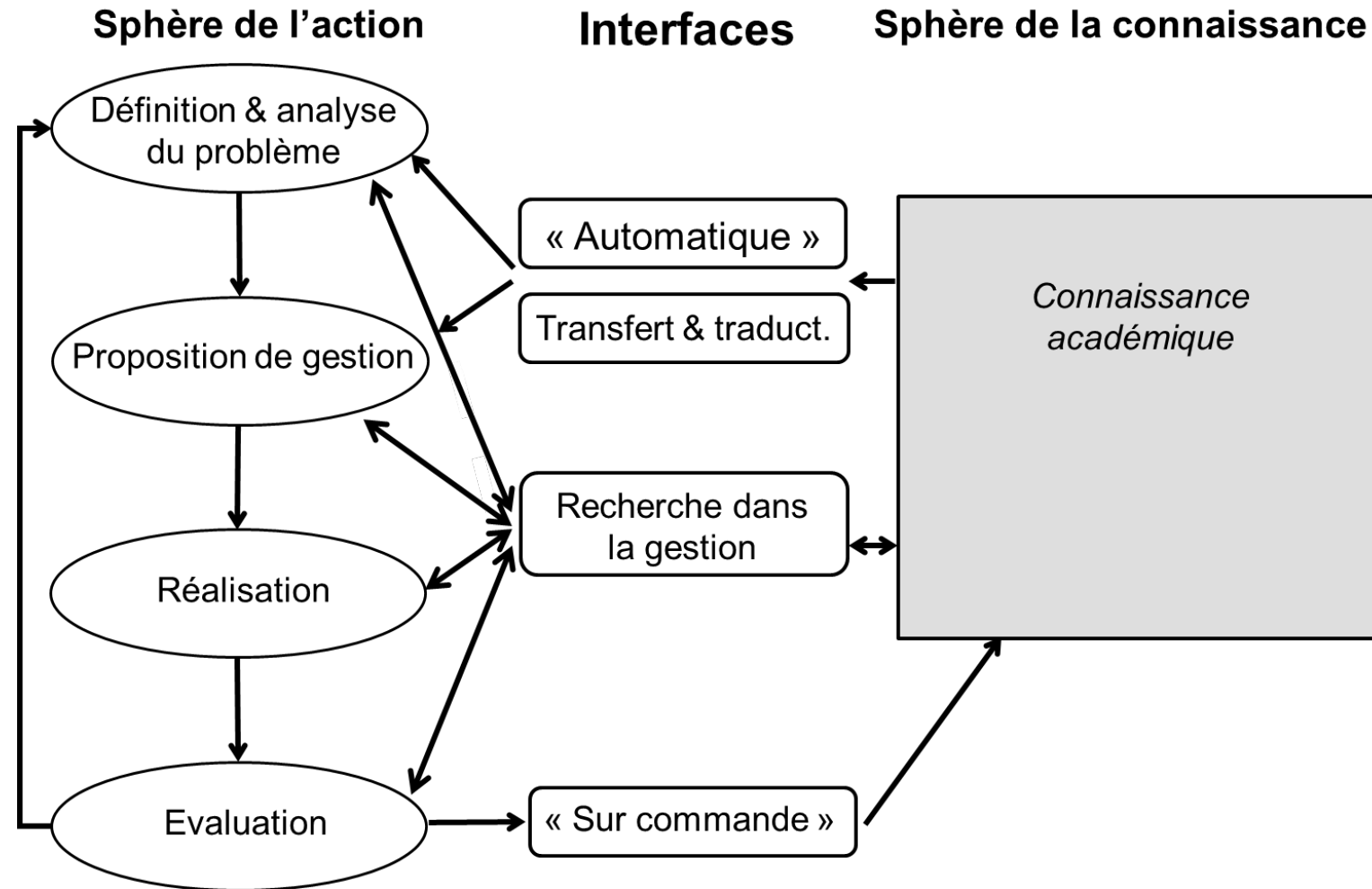
PEPR FOREST
RÉSILIENCE DES FORÊTS

TABLE RONDE

« Favoriser les interfaces efficaces de partage et construction des connaissances »»



Frédéric Gosselin (INRAE),
François Morneau (RMT AFORCE), Lucie
Lombard (Association Forêts Alpines),
Emila Akroume (ONF) et Ariane Mirabel (CIRAD)



Issu de Gosselin et al. (2018) JEM

La “gestion adaptative/apprenante” comme une méta-interface

22

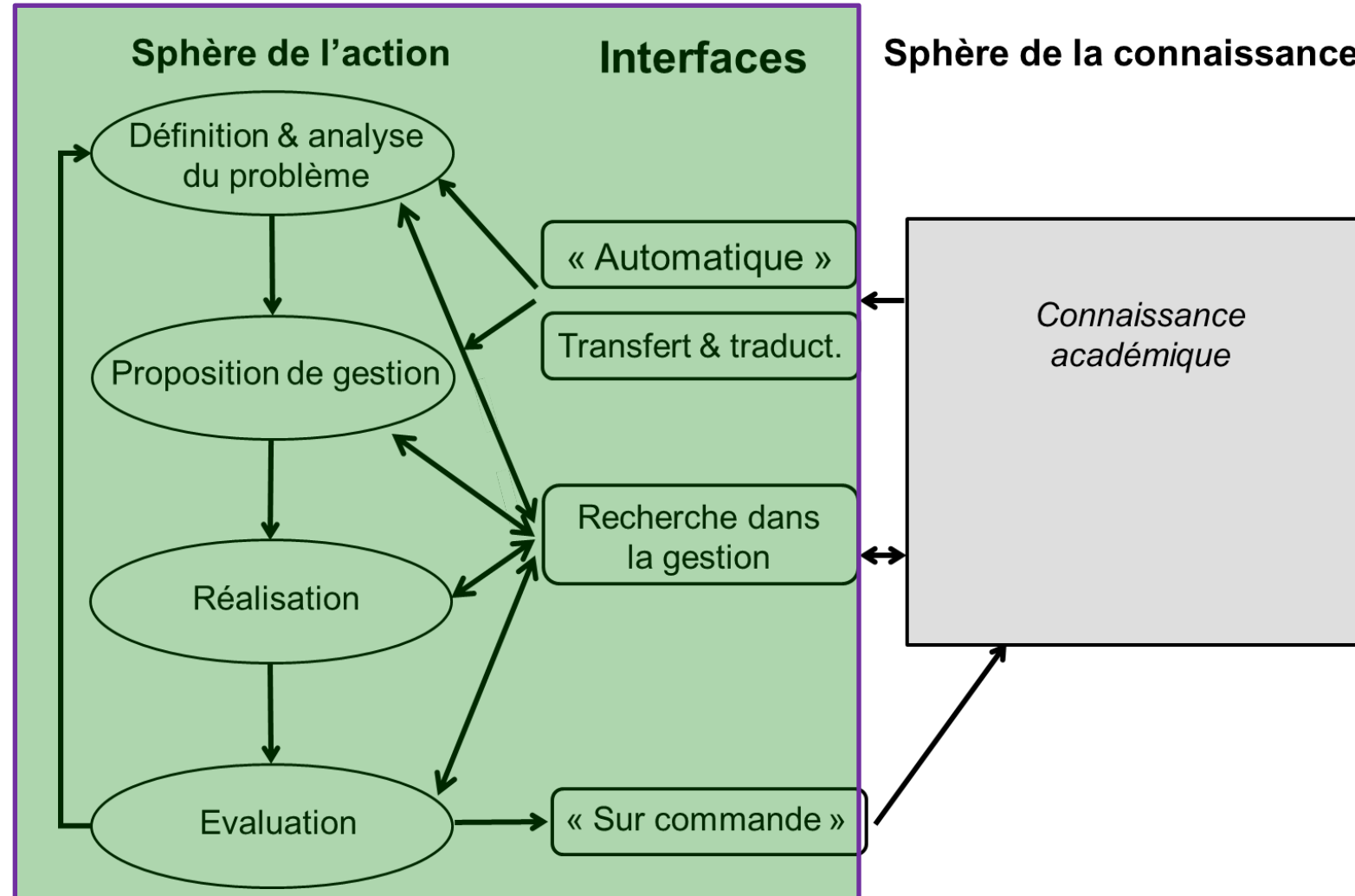
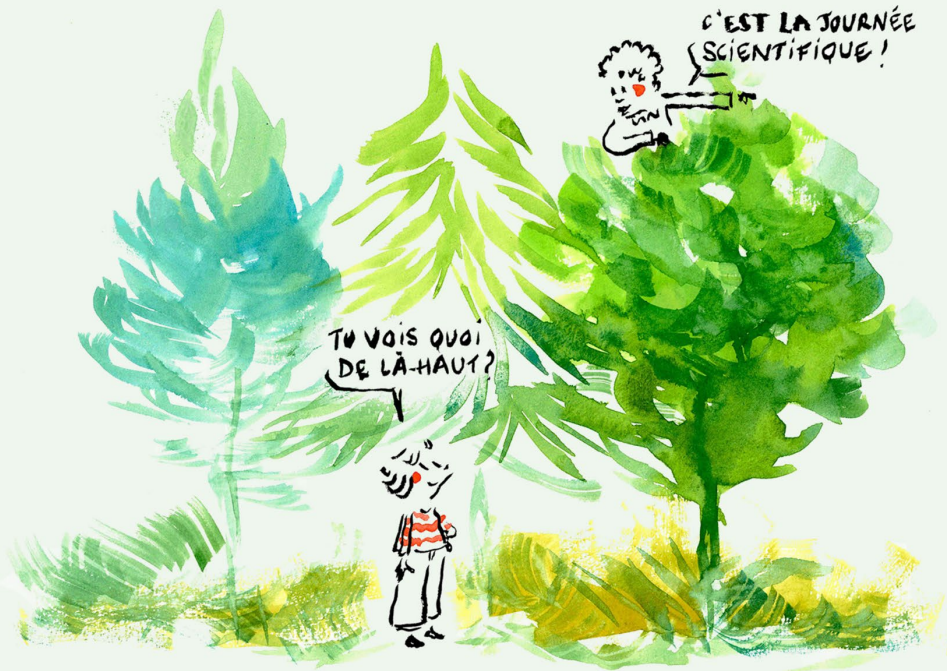


TABLE RONDE

« Favoriser les interfaces efficaces de partage et construction des connaissances »»



Frédéric Gosselin (INRAE),
François Morneau (RMT AFORCE), Lucie
Lombard (Association Forêts Alpines),
Emila Akroume (ONF) et Ariane Mirabel (CIRAD)



Pause

 domatelle liens