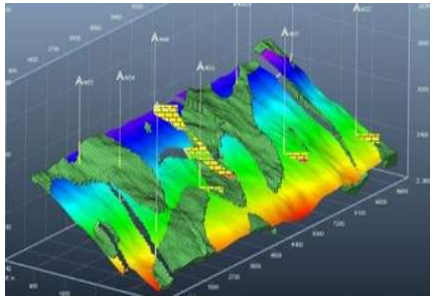
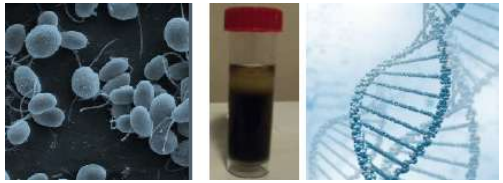
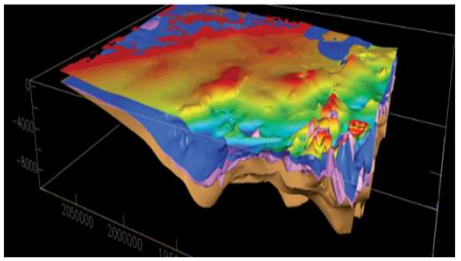
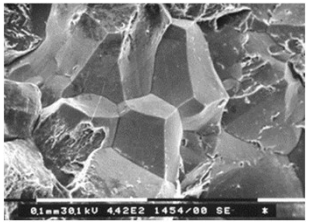
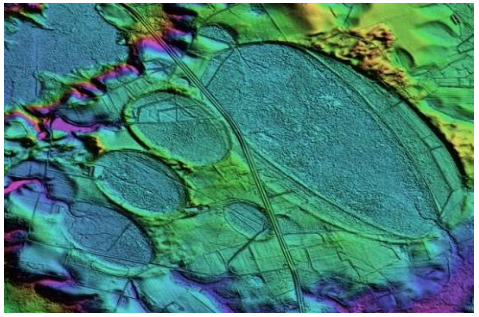









Natural hydrogen potential in France

yannick.peysson@ifpen.fr
R&D Program Manager

OFATE
06/10/2026

Innovating for a low-carbon and sustainable world

IFP Energies nouvelles



Public sector **R&I** institution

Training center

Industrial **Group**

INTERNATIONAL SCOPE in the field of **ENERGY, MOBILITY** and **THE ENVIRONMENT**



1,523 employees

incl. 1,074 R&I engineers & technicians

€117,6 M Budget allocation in 2025

€162,1 M Own resources in 2025

ENERGY

- Wind energy/Energy Storage
- Geothermal/Natural Hydrogen, Hydrogen transport & storage
- Subsurface modelisation
- Rewewable gas processing

MOBILITY

- Biofuels and e-fuels
- Electric mobility
- Batteries
- Hydrogen mobility: IC engines & fuel cells
- Environmental analysis of transport & digitalization of mobility

ENVIRONMENT

- Biobased products
- Plastics recycling/Metals recycling from catalysts and batteries
- Industrial decarbonization: CCS/CCU
- Environmental monitoring /Soil management/Water treatment

NATURAL H_2 : IFPEN EXPERIENCE

More than 18 years experience in Natural H_2 exploration, in various geological contexts

2008-2011
Oman
PhD : Christelle Vacquand



2013-2016

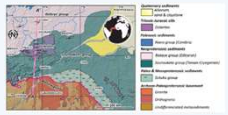

2015-2017
Kansas
PhD : Julia Guelard



2020-2023
New Caledonia
PhD : Kanchana Kularatne



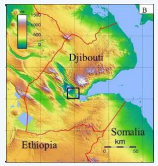
2020-2023
Kansas
PhD : Valentine Combaudon



2021-2024
Mali
PhD : Omar Maiga



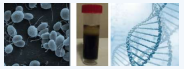
2022-2025
Australia
PhD : Ugo Gaymond



2024-2027
Djibouti
PhD : Ibrahim Omar Said



2025-2028
Australia/ Minesotta
PhD : K. Srivongsana



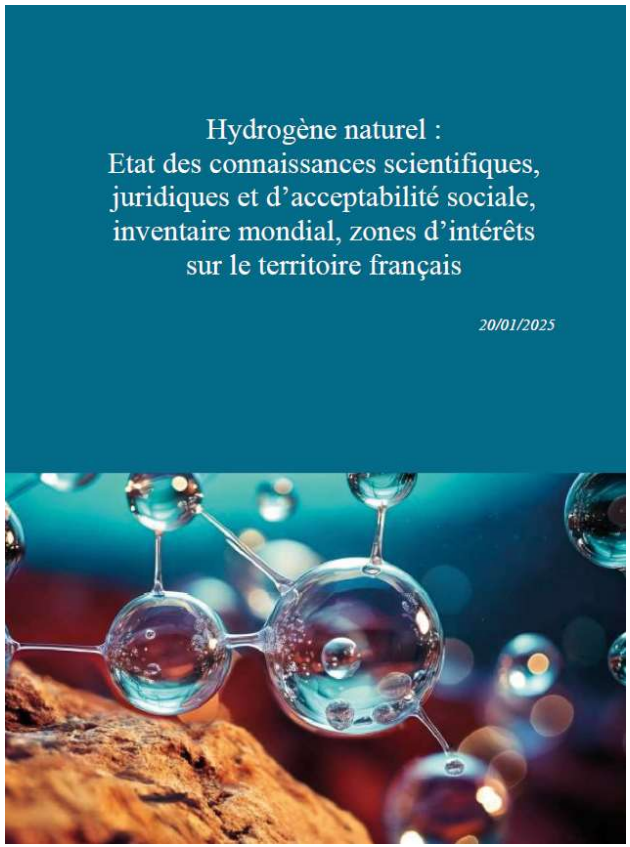
9 IFPEN PhD students

> 20 scientific publications

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IFPEN COORDINATED AN EXPERTISE FOR THE ENERGY FRENCH MINISTRY IN 2025

Synthesis of the state of knowledge and potential in metropolitan France and overseas territories, based on scientific literature



https://presse.economie.gouv.fr/rapport-ifpen-sur-les-potentialites-de-lhydrogene-natif-en-france/

- **Chapter 1 :** Natural hydrogen generation, migration, and trap
- **Chapter 2 :** Exploration activities and high-potential areas outside France
- **Chapter 3 :** Estimating the natural H2 potential of an area: accumulation or continuous flux?
- **Chapter 4 :** Natural hydrogen potential in France: a review of current knowledge. Over a century of gas exploration experience.
- **Chapter 5** : Legal analysis and societal acceptability/desirability of natural hydrogen

- **IFPEN**
  - Eric Deville
  - Olivier Sissmann
- **CNRS-Univ. Lorraine**
  - Marie-France Agnoletti
  - Philippe de Donato
  - Jacques Pironon
- **CNRS/Univ. Montpellier**
  - Marguerite Godard
- **Institut Polytechnique de Bordeaux**
  - Adrian Cerepi
- **Institut de Physique du Globe**
  - Isabelle Martinez
- **BRGM**
  - Frédérick Gal
- **Univ. Grenoble Alpes**
  - Laurent Truche
- **Université de Pau et des Pays de l'Adour**
  - Louis De Fontenelle
  - Jean-Paul Callot
  - Isabelle Moretti
  - Anthony Ranchou-Peyruse

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METROPOLITAN FRANCE

Bassin Armoricain
→ Surfaces signs (> 1000 ppm H_2),

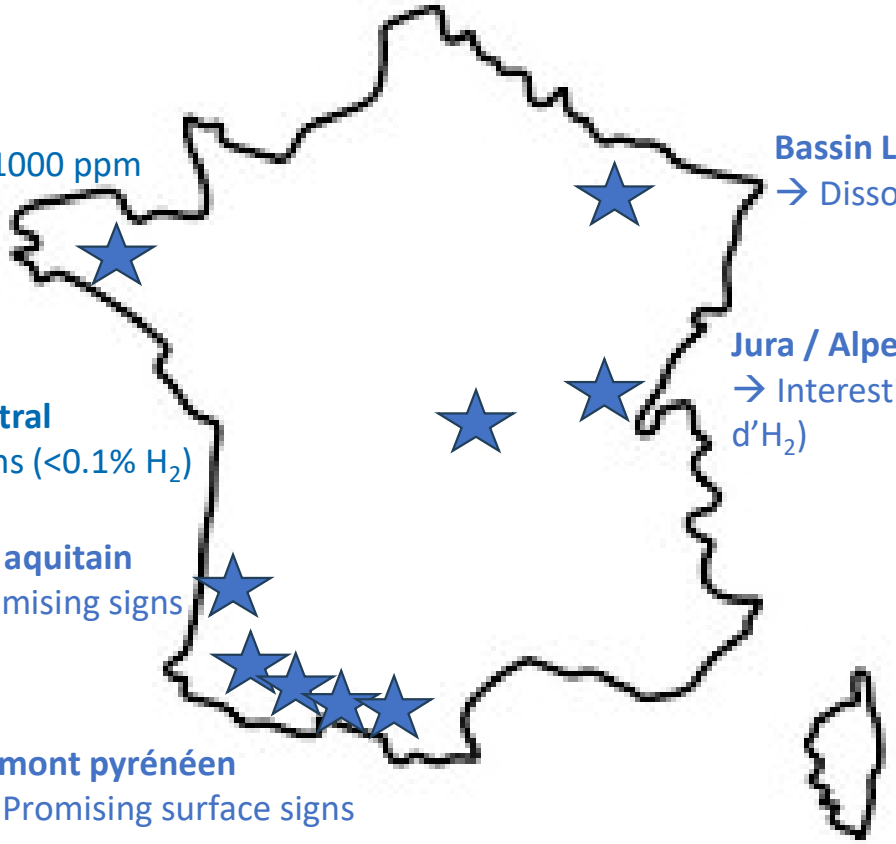
Bassin Lorrain
→ Dissolved H_2 in aquifer 18% d'H_2 à 1250 m

Jura / Alpes
→ Interesting signs Vaux-en-Bugey (5% d'H_2)

Massif central
→ Few signs (<0.1% H_2)

Bassin aquitain
→ Promising signs

Piemont pyrénéen
→ Promising surface signs



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OVERSEAS

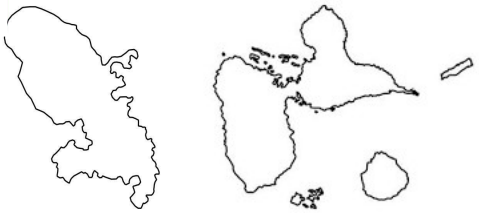
New Caledonia



Highest potential

H2 degassing observed on ophiolite massifs (up to ~30% H2)

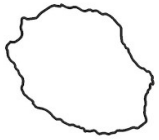
Martinique, Guadeloupe



Volcanic systems

Low H_2 concentration observed

Réunion Island



Basalt and olivine suggesting potential H2 at depth, but no studies to date.

French Guiana

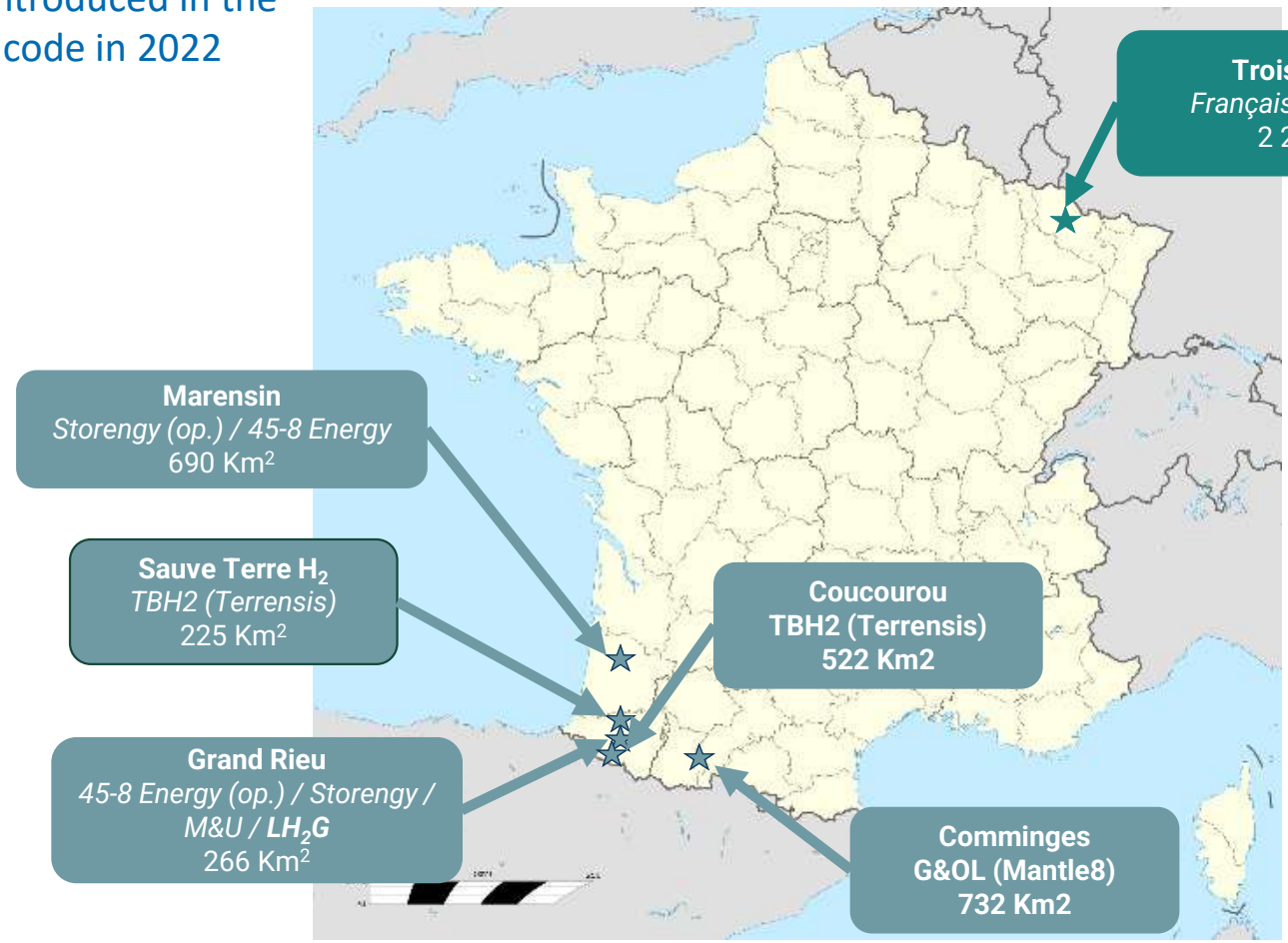


No exploration to date, but the geology (craton) is probably favorable

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FRANCE: 6 PER (EXCLUSIVE EXPLORATION PERMITS) AWARDED

« Native H_2 » introduced in the French mining code in 2022



H_2 exploration drilling
→ Drilled in march 2026 : 3655 m

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