



# Science@ifpen

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15 minutes of reading



News

Fundamental Research

Climate, environment and circular economy

CO2 capture, utilization and storage

Responsible oil and gas

Basins and reservoirs modeling and simulation

Geosciences



Putting geological structures into equations and describing

the processes involved in the **formation of rocks, fluids and complex flows**, in order to translate the rich diversity of natural media into numerical models: that's the ambition of the Geosciences Division.

Our researchers study geological objects covering spatial scales from the nanometer to hundreds of kilometers, and time scales from a hundredth of a second to a million years. Their aim is to remove the barriers inherent to the multiphysical/multiscale character of the phenomena that govern major natural systems: taking into account **heterogeneities and uncertainties**, changes in scale, and data acquisition to develop and validate models.

This work has many applications, from **petroleum exploration** to **enhanced oil recovery** and **fluid storage**, all of which posing major economic and environmental challenges. The examples presented here illustrate the diversity of topics covered, the wide range of skills at work and the scientific quality of the research work carried out.

I hope you enjoy this issue of the newsletter,

**Olga Vizika-Kavvadias, Director of the Geosciences Division**

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### Summary:

- **Dionisos**: a model of multiple resources
  - **History-based models** chart the future of reservoirs
  - (Multi)scale access to reservoirs
  - When the **Earth gives up its CO<sub>2</sub>**
  - An innovative 3D approach for **simulating flow networks**
  - Pore scale imaging to understand **pore-to-pore flows**
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