



# Deep Carbon Lab

at Bologna University

Funded by **European Research Council** project **ERC DeepSeep**, we aim to answer the following question:  
**What sustains life underground?**

Abiotic hydrogen and methane are sources of energy for the **deep biosphere**, the environment in which **primitive micro-organisms thrive**.

As the slab continues its journey into the Earth, released fluids generate **magmas** in the **mantle**, which erupt from **arc volcanoes**.

Water leaving the subducting slab reacts with the overlying mantle in a process called **serpentinization**. This reaction generates **hydrogen-** and **methane-**rich fluids.

The Deep Carbon Lab studies the **rocks** and **reactions** involved during **serpentinization** to understand how natural hydrogen and methane are generated.

At **subduction trenches**, oceanic crust enters the mantle. In contact with ocean water for millions of years, the **slab** is full of **hydrous minerals**.

**Water** and **carbon** in the slab are present within **sediments**, **igneous crust**, and **shallow mantle**. During subduction these volatiles are released.

**High-pressure metamorphism** of the subducting slab creates **chemical disequilibrium**. As unstable hydrous minerals decompose, water is released.

Designed by K. Wong (@GeoKevW)

## Contact us!

We are an **international team** of geologists of **multiple disciplines**. With team members from five countries, we represent diverse branches of geology all working towards tackling the same question.

Find us at:



[deepcarbonlab.org](http://deepcarbonlab.org)



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