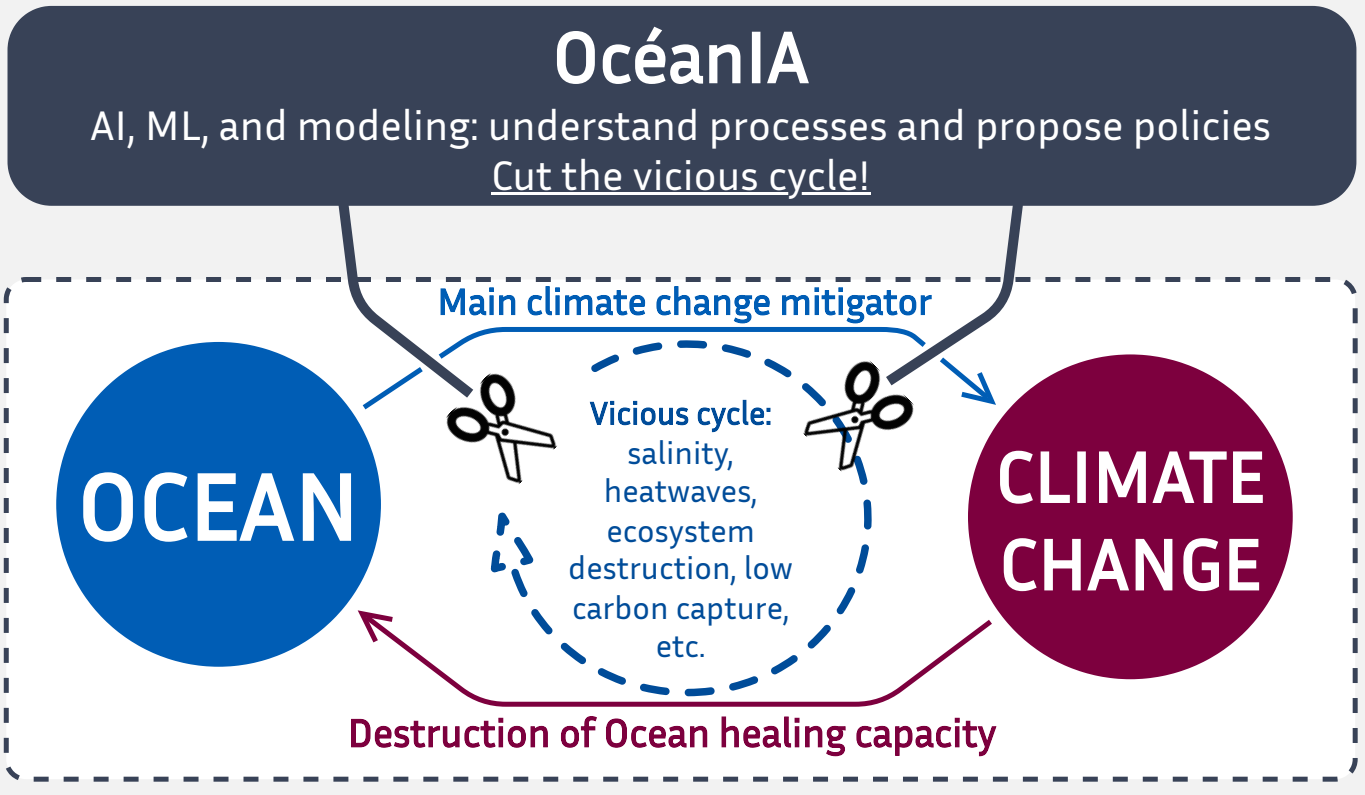
Annual Meeting

Inria Paris, 23 February 2024

Inria

OcéanIA: Three big questions



Three big questions

How the ocean mitigates climate change?

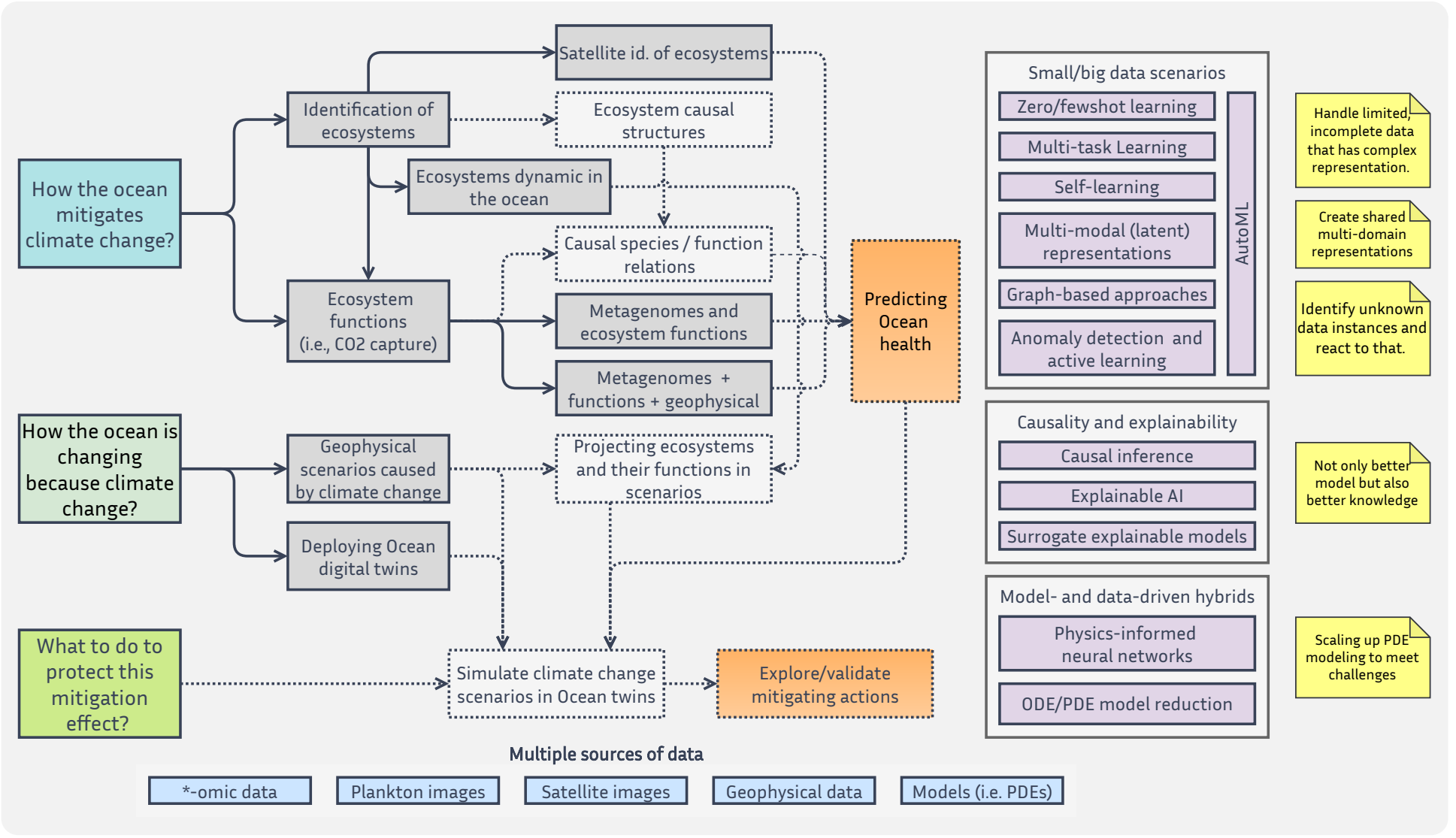
↓

How the ocean is changing because climate change?

↓

What to do to protect this mitigation effect?

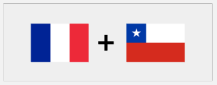
Addressing OcéanIA's questions



The team

Inria Challenge OcéanIA

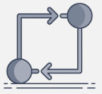
https://oceania.inria.cl/

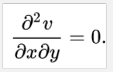


Multidisciplinary!
+30 researchers in France and Chile

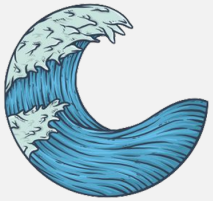

Data Engineering and HPC


Artificial Intelligence


Causal Learning


PDEs


Data Governance




Mathematical Modelling


HCI


Marine Biology


Ecology


Bioinformatics

Lead by

Inria

France

Inria
ANGE TAU
BIOCORE
cnrs GO-SEE Federation
I2M COMBI

Chile

Inria
Universidad de Chile
CMM Center for Mathematical Modeling
Pontificia Universidad Católica de Chile

Partners

TARA OCEANS

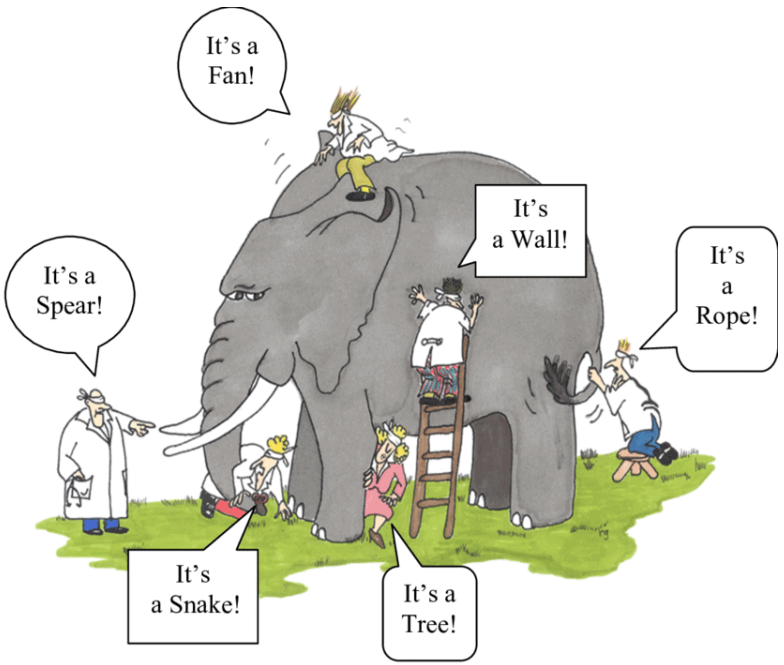
Additional support

Cooperación Regional Francesa para América del Sur
NVIDIA

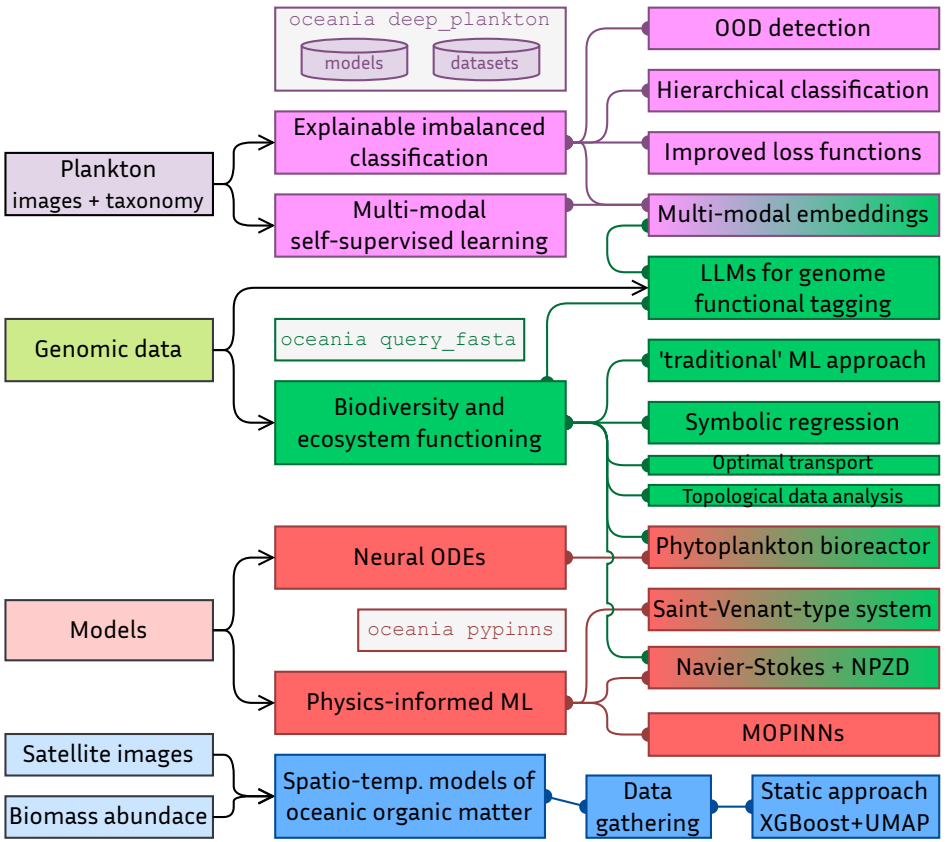
The OcéanIA scientific committee

Project organization and progress: a two-phase “map/reduce” approach

- “Strategic entropy.”
- Grasp and experiment addressing different specific problems.
- Diversity in data, knowledge, methods, and principles.



Source: J. Himmelfarb (artist G. Renee Guzlas).



Next phase: converge and compose methods to yield more sophisticated answers.

Lessons learned

Results

- Challenging problems lead to improvements in state of the art.
- Solid results in each direction.
- Creating a community: workshops in top venues (new one just accepted).
- Identified connections and spill-overs.

Difficulties

- Covid19 + Chile $\Longrightarrow$ Hard to meet in person!
- Hard to convert results into papers (topic for discussion).
- Hiring and team stability – a big hurdle:
  - has uneven progress in the different lines,
  - hard to carry results across the finish line, but
  - problem shared by all academia.

Today's program

- **09:00 Welcome coffee.**
- 09:30 **Intro by J-F Gerbeau.**
- 09:40 Status and program.
- 10:00 **O.Bernard:** Temperature and light on phytoplankton growths.
- 10:30 **R.Ranini:** Spatio-temporal models of particulate organic matter in the ocean.
- 11:00 **A.Maass:** CEODOS mission.
- 11:30 **Sebag et al.:** Plankton images.
- 12:00 **P.Peterlongo (invited)**: Defí OmicsFinder.
- 12:30 **L.Thiry:** Simulation of large-scale ocean models

- **13:30 Lunch at Le Repaire (100 Av. Daumesnil 75012)**

- 15:00 **F.Lombard, J-O. Irisson, LOV (invited):** Ecotaxa project
- 15:30 **P.Marquet:** A general theory for temperature dependence in biology.
- 16:00 **L.Valenzuela:** Modeling plankton communities.
- **16:30 Pause coffee**
- 16:45 **L.Martí:** MOPINNs.
- **17:10 Discussion of next steps.**

Before we start...

- Please, stick to your time and leave at least 10 minutes for discussion.
- We are being impacted by weather, strikes, protests, as all OcéanIA meeting, we might need to adapt during the day.
- Share ideas, even if we can't discuss now we can organize visio calls.

- How can we maximize impact and answer key questions?
- How can we boost collaboration?
- What other activities can we organize? i.e. special issues on journals, outreach, etc.

Enjoy!


Merci ! ¡Gracias! Thank you!
Questions?