Marine Biology research project

To understand how coral reef faces global environment changes

CORAL REEF PROJECT

Data ScienceTech Institute

What is a coral reef?

Coral reef is a bioconstruction produced by animals called corals

Coral reefs are important ocean habitats in which more than 25 percent of all marine species live

Coral reefs are threatened by global changes (e.g: bleaching)

It exists many families of coral

For Example

Grooved brain coral

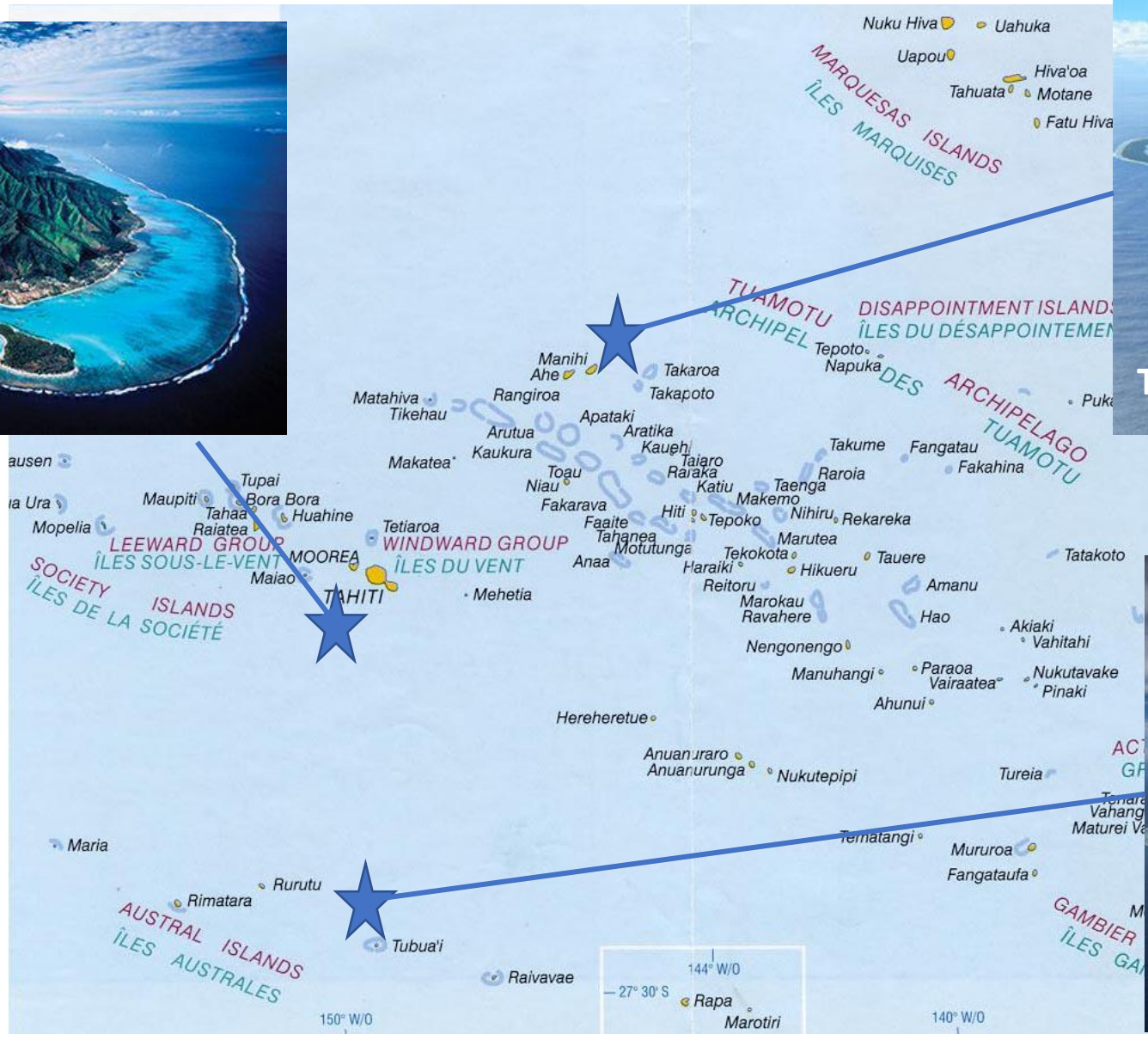
Black coral

Lettuce coral

And many others!

Scientists would like to understand how coral families are facing global changes?

THE PROJECT: Scientists followed coral reef in 3 Islands of French Polynesia



THE PROJECT: For each Island, they took pictures every 2 years during 16 years of around 20 sites with the same protocol (quadrat pictures)

Example of pictures that will be used for the project
Pictures correspond to the same site in 2003, 2005 and 2007


2003-12-17 00:00:00.0 - D01


2005-01-01 00:00:00.0 - D01


2007-01-01 00:00:00.0 - D01

440 pictures (resolution 2000X2000px) in total to analyze

Now they are looking for expertize
to analyze those pictures
to understand how coral reefs are
facing global warming

The project

Minimum Viable Product

Automate labelling and analysis

Of coral reef images

(Deep learning, Pytorch, tensorflow/keras, OpenCV)

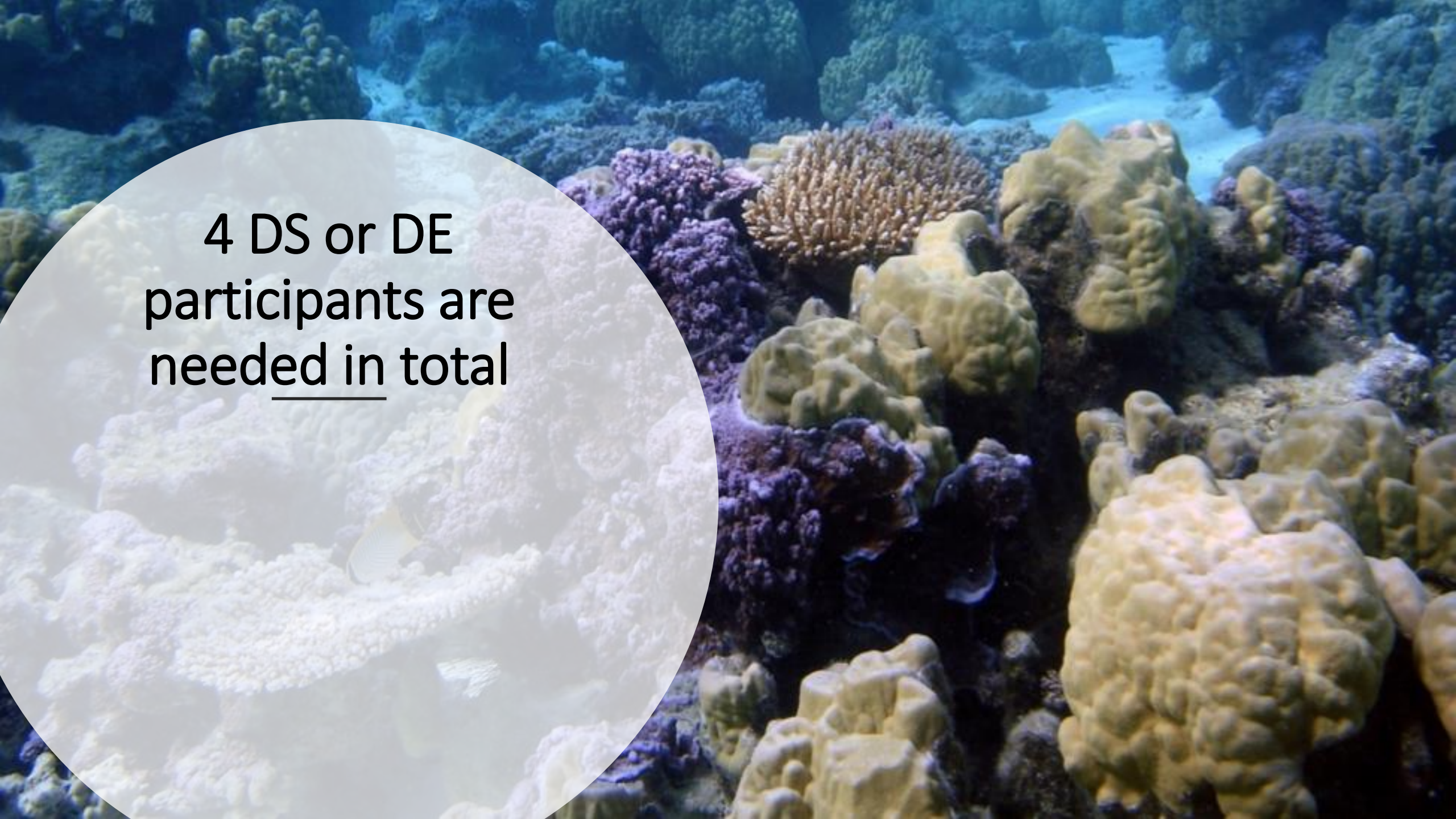
Scientific questions

Characterize **growth** of each families of coral over time in each island

- Could we see a difference between each family?
- Could we see a difference between the 3 island?

Characterize whether some coral family are dying (disappearance) or appear over time in each island

- Could we see a difference between each family?
- Could we see a difference between the 3 island?


4 DS or DE participants are needed in total