# Past to Future:

### Towards fully paleo-informed future climate projections

Goal



#### Background

The P2F project is an EU-funded consortium that brings together 24 partners from a wide-range of disciplines in future climate model development, paleo-climate data collection, and applied mathematics.

#### Structure

P2F is composed of four scientific work streams (WS):

P2F's overarching goal is to create a framework that uses new knowledge of past climatic conditions to project future climate change on spatio-temporal scales relevant for societies, ecosystems and the planet as a whole, and to advance our ability to understand and anticipate the main climatic and societal impacts of the ongoing climate crisis.

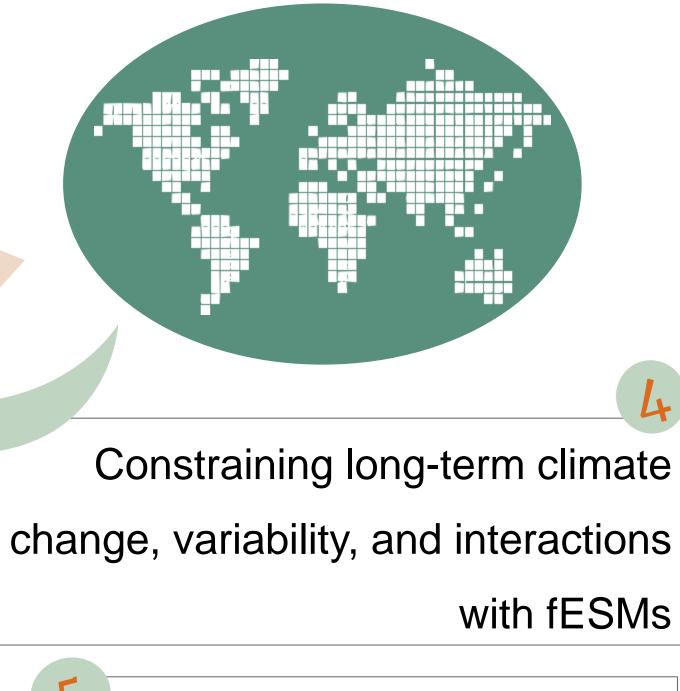
## WS1 will evaluate and improve Earth system models with paleoclimate constraints

Model development of CMIPclass comprehensive Earth System models (cESMs)

Snapshot simulations and model-data comparison with cESMs

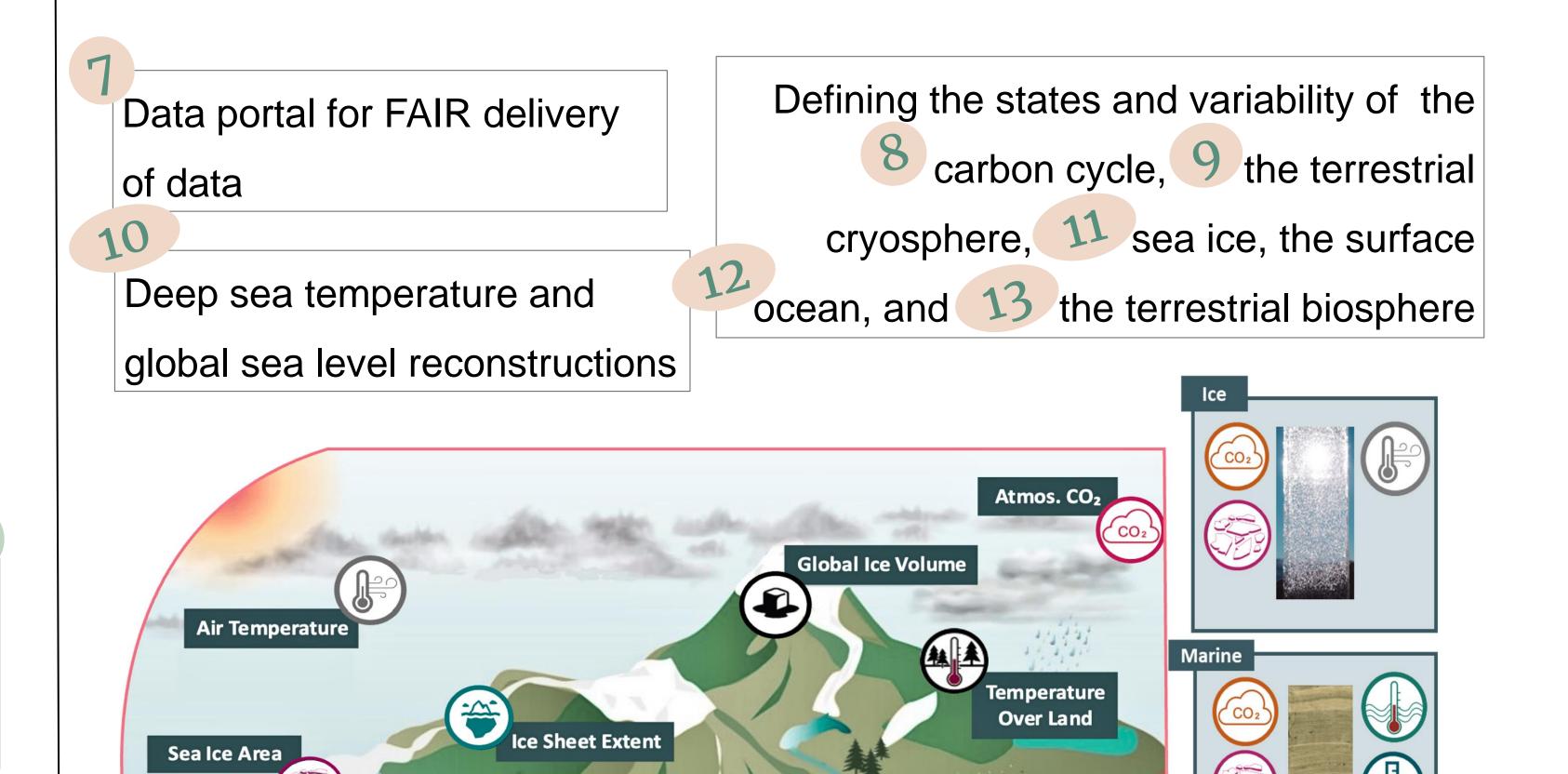


Development and improvement of fast Earth System models (fESMs)



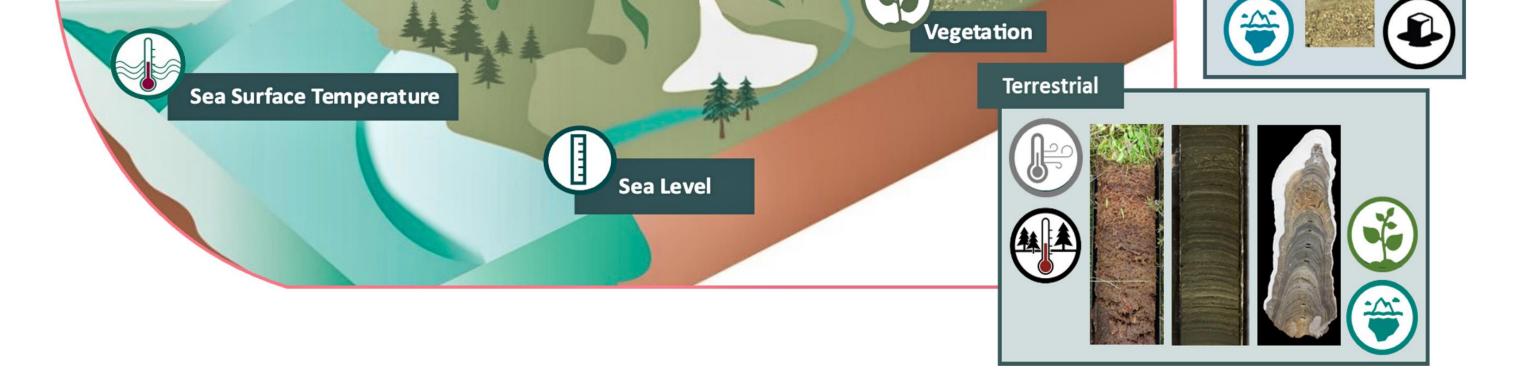


WS2 will integrate and re-evaluate paleoclimate data while adding new reconstructions to key sites and time intervals



comprehensive ESMs

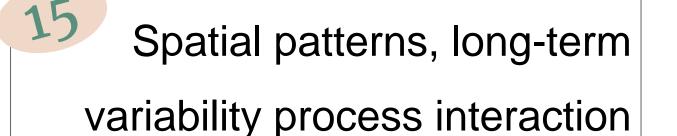
Future simulations with improved paleo-informed ESMs (fast and comprehensive)



WS3 will develop new tools for analysis of model output or data, model validation and tuning, and for helping to generate testable methods that underpin faster and more accurate climate projections.

Climate response, feedbacks

and environmental limits

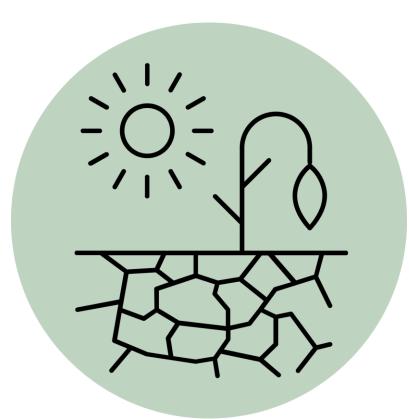


Inputs Outputs

WS4 will study regional impacts and local effects of largescale climate on ecosystems, the carbon cycle and societies

Develop new methodology for bias correction and downscaling of ESM simulations to a scale of a few kilometres for impact analysis

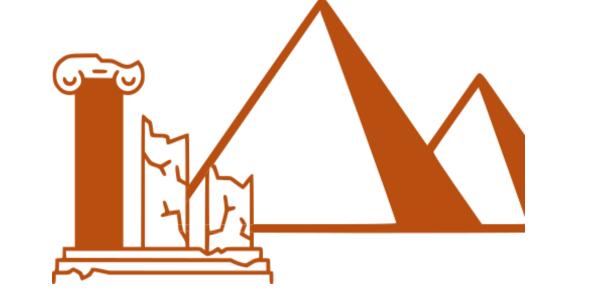
18 Impact of climate trends, variability and abrupt changes on the terrestrial biosphere



Cascading impacts of abrupt warming events and extremes on carbon cycle



Transients, extremes and abrupt changes



#### and ecosystems (B/A onset, Holocene)

Climate impact on past societies



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