

The Latest Science of Seasonal Climate Forecasting

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Background:

- Why are they useful?
- What do we mean by 'seasonal climate forecasting'?
- How is it possible?
- How do we know if they are any good?
- What do existing long-range forecasts look like for end-users?
- How are they used?
- What else could be done?

How will SECLI-FIRM use the latest science of seasonal climate forecasting

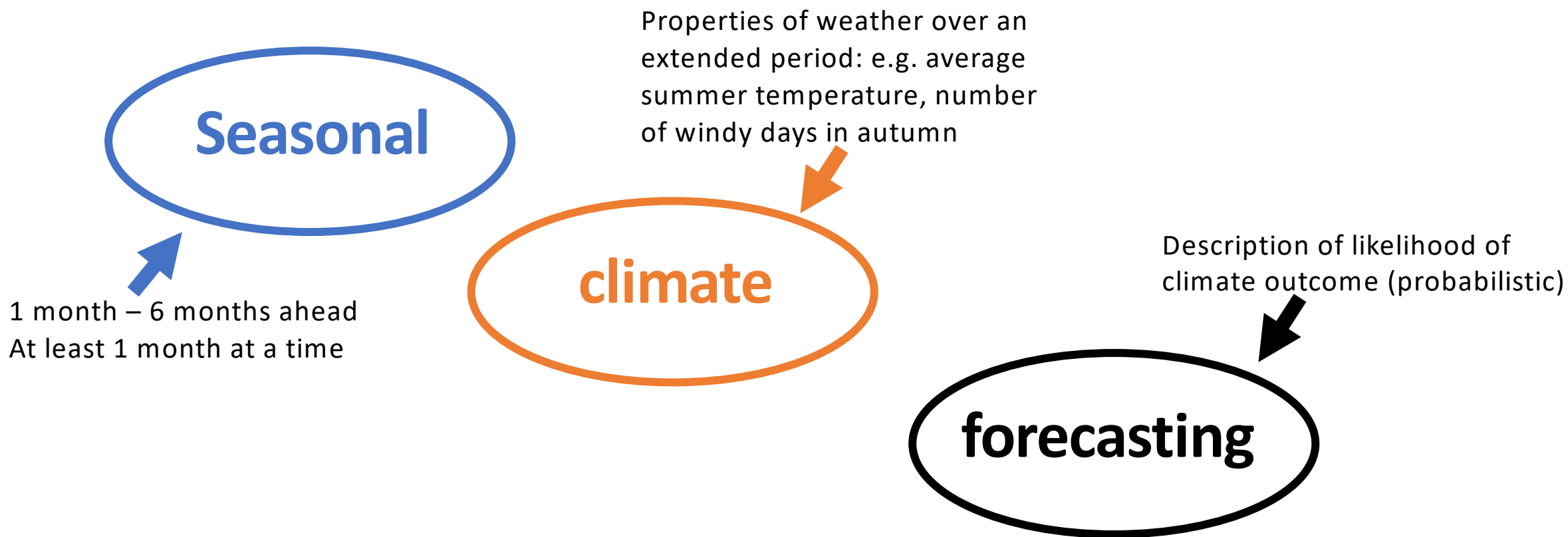
Background

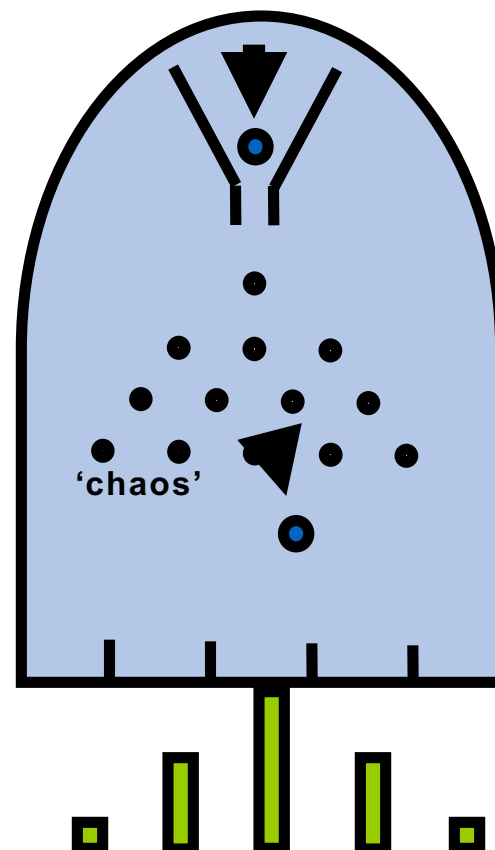
If your business can...

- use **historical weather** data to make better decisions,
- make decisions **several weeks or months ahead**, and
- **hedge** decisions, or **adjust** them as time evolves

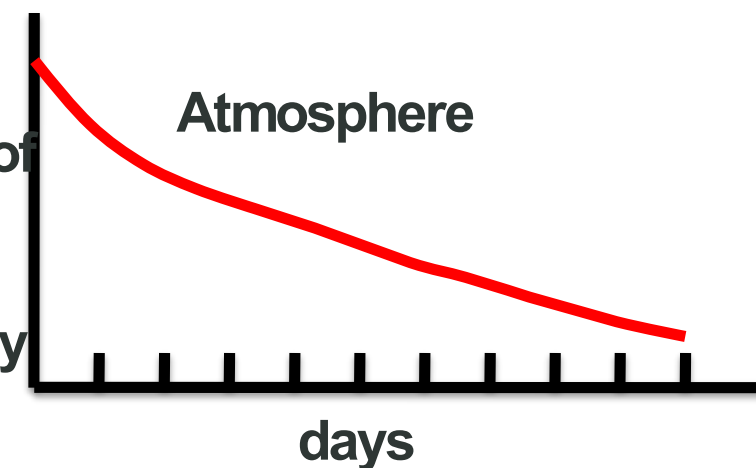
...seasonal climate forecasts could...

- increase confidence,
- reduce your costs,
- reduce your risk



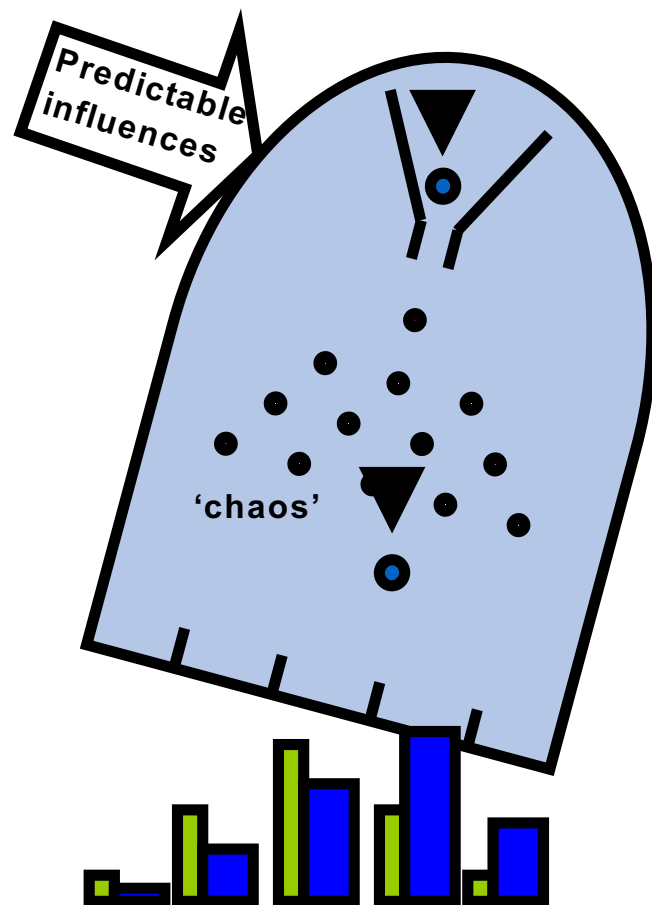


Relevance of
initial
conditions:
Predictability

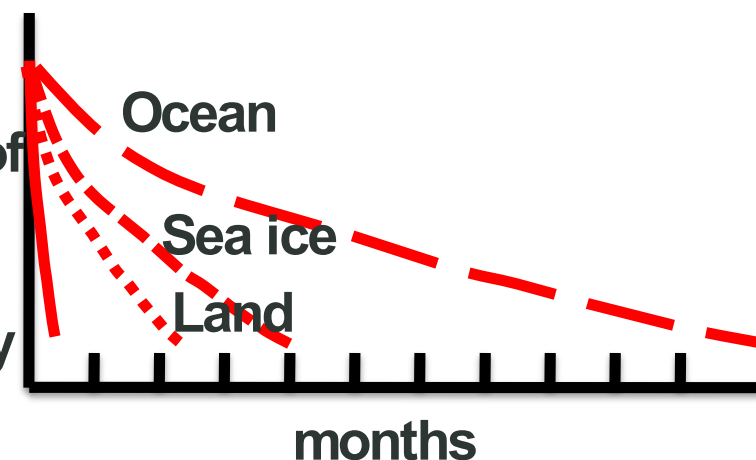


E.g.
Sea surface temperatures soil
moisture
tropical precipitation
sea ice

Several influences
can act at the same
time!



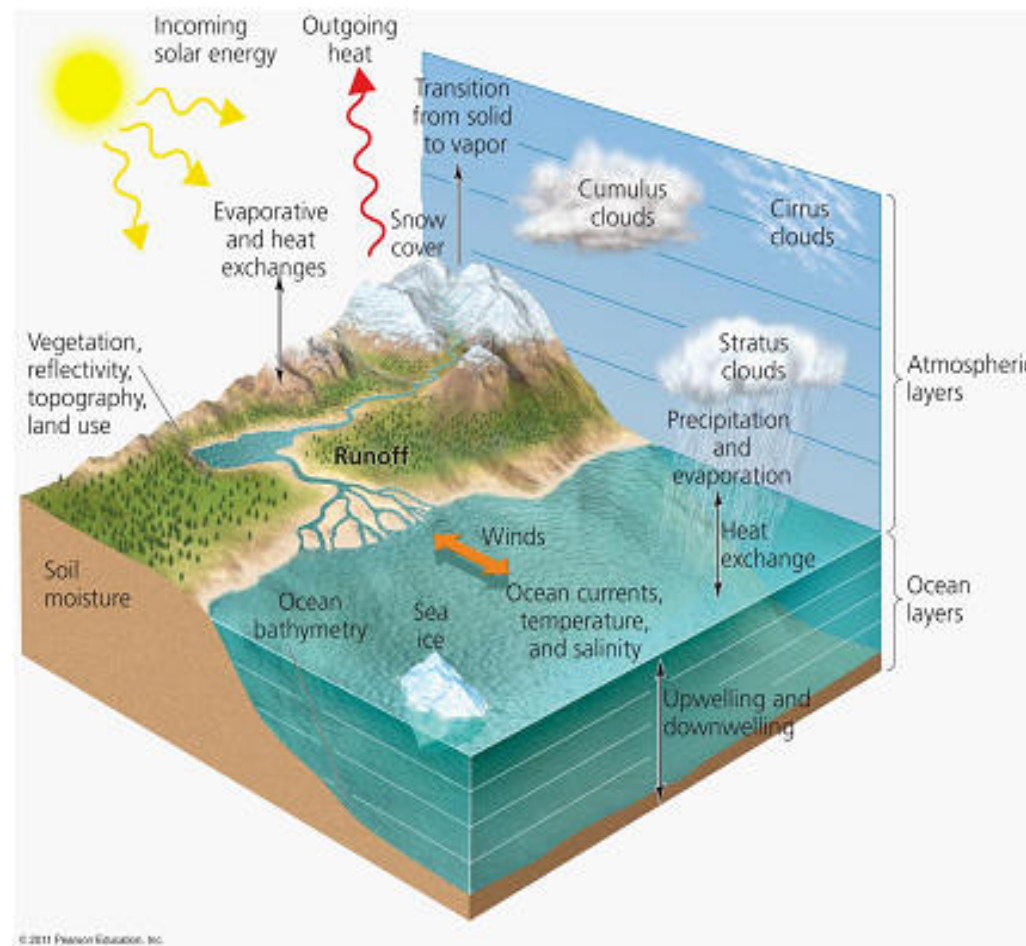
Relevance of
initial
conditions:
Predictability



- 1) Estimate initial estate of earth system,
- 2) feed it into a model and then,
- 3) run the model forward in time

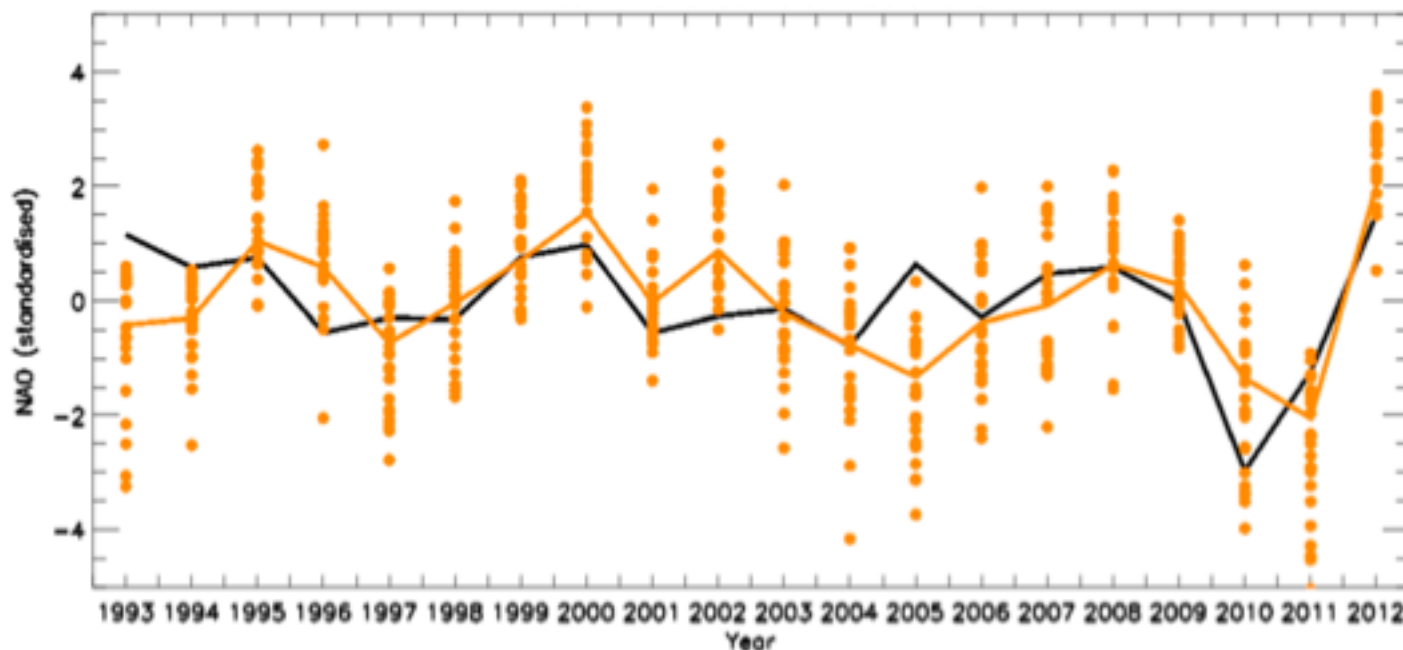
Compared to short-range forecasting:

- a) More complex model (ocean, land-surface, sea-ice)
- b) More components to initialize
- c) Need to run the model for longer



How do we know it's any good?

- Skill assessment



Scaife et al, 2014

How do we know it's any good?

- **Value** assessment!



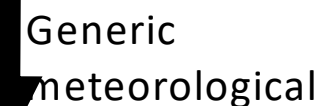
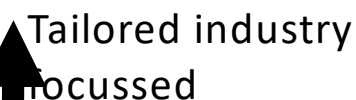
Correct identification of calm weather windows can save many thousands of dollars per day in unplanned downtime, allowing large savings if decisions are made as early as possible...

Steele et al. (2017), OTC, pp. 1-8; Steele et al. (2018), OTC, pp. 1-8;



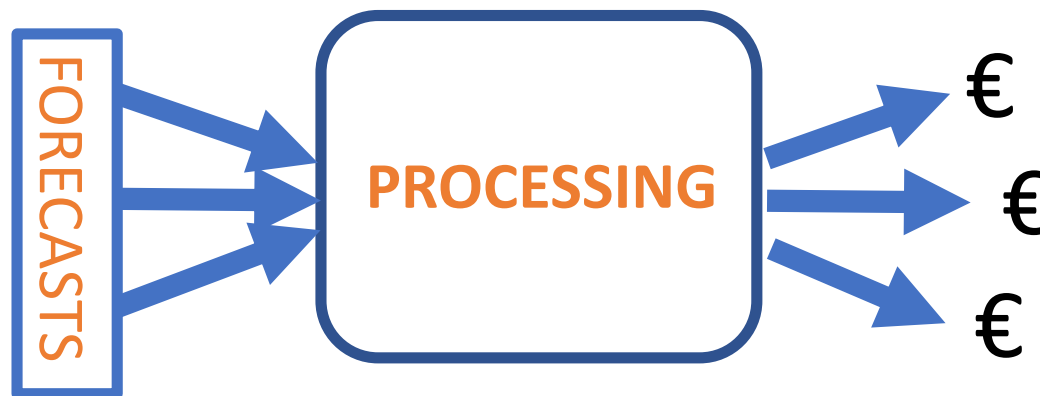
	Event observed	No event observed
Event forecast Action taken	Hit COST + REDUCED LOSS	False alarm COST
No event forecast No action taken	Miss LOSS	Correct rejection

Steele et al. (2017), OTC, pp. 1-8; Steele et al. (2018), OTC, pp. 1-8; Alessandri et al., 2016 Under Revision



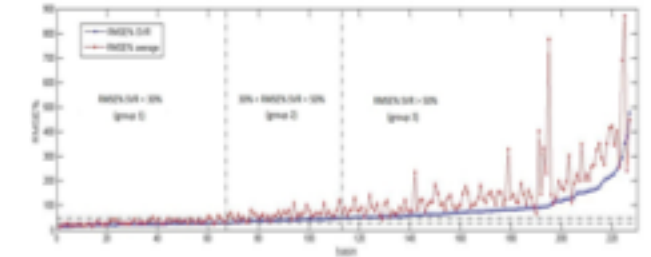
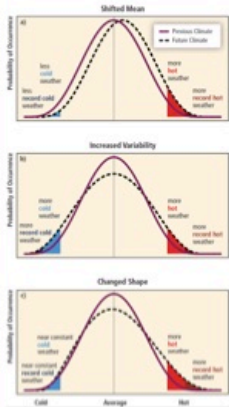
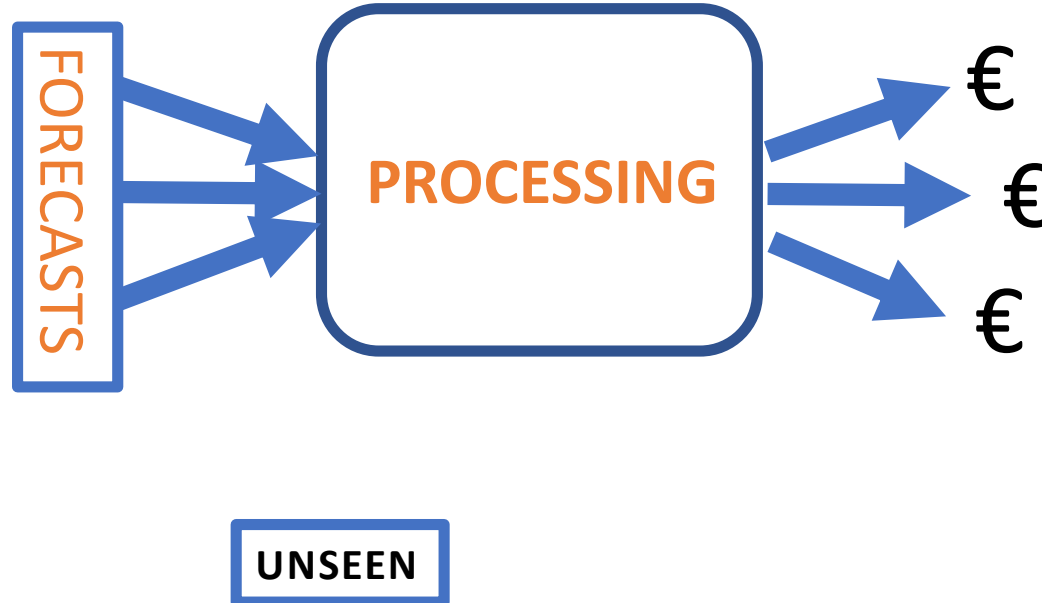
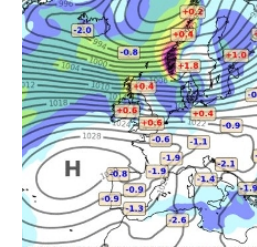
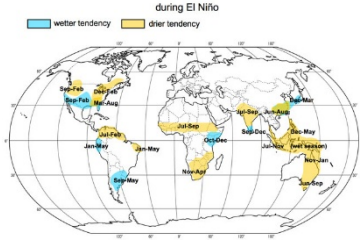
How will SECLI-FIRM use latest science of seasonal climate forecasting

Work package 2:



Grand Multi-model ensemble

Optimization of climate prediction performance



Questions and answers