



Estimating phytoplankton phenology metrics from noisy, gappy data

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Phenology study of the timing of natural seasonal cycles.

- 1 Emergent property, as it results from physical and biological processes;
- 2 Vulnerability to observational processes leads to phenology being often used as an indicator of climate change, as well as climate variability.

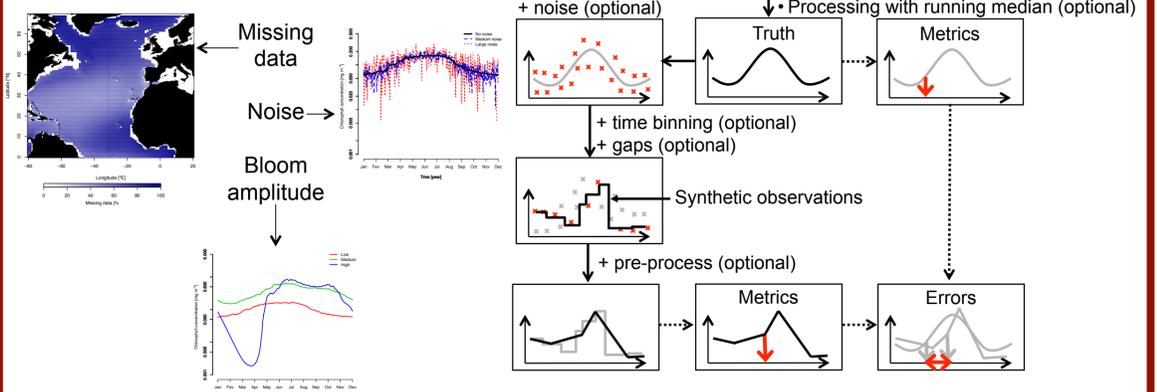
Satellite

- Bloom amplitude
- Noise
- Temporal resolution
- Missing data
- Pre-processing

influence } **Phenology metrics of phytoplankton spring blooms**

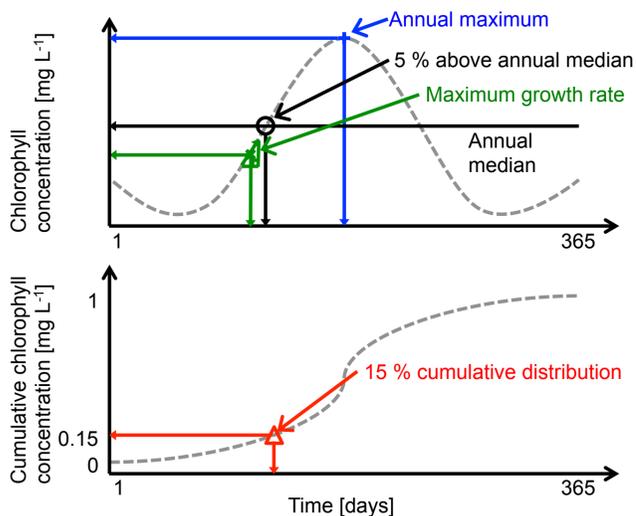
Approach

Spatial and temporal variability of observational processes



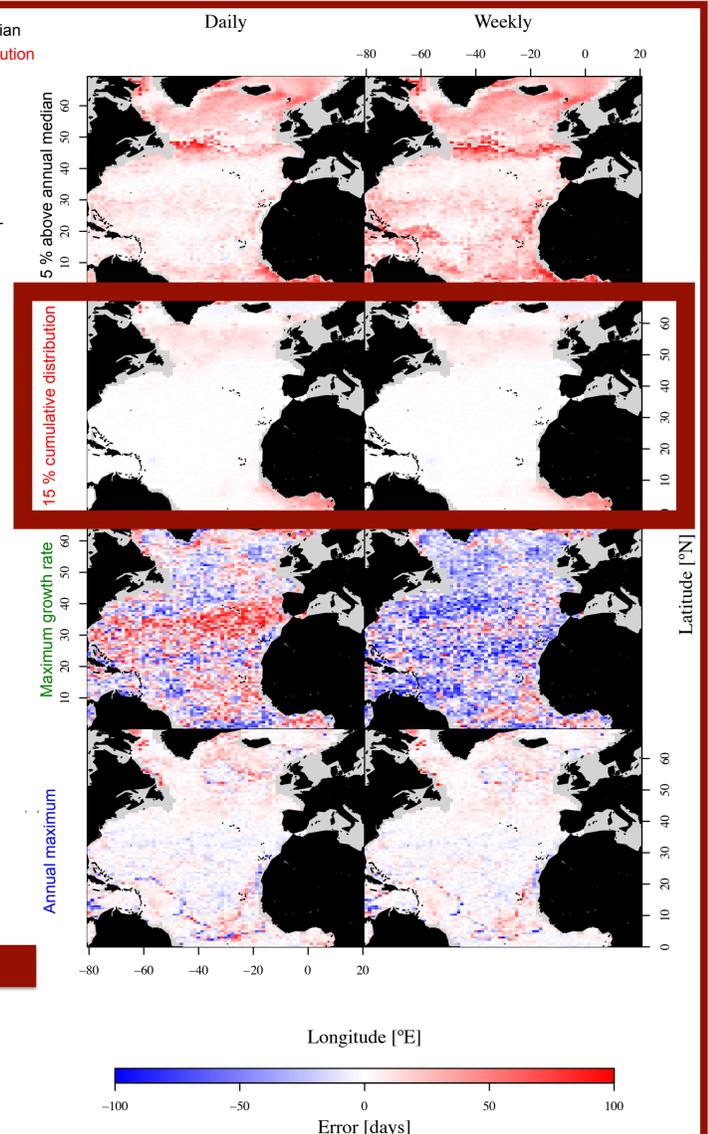
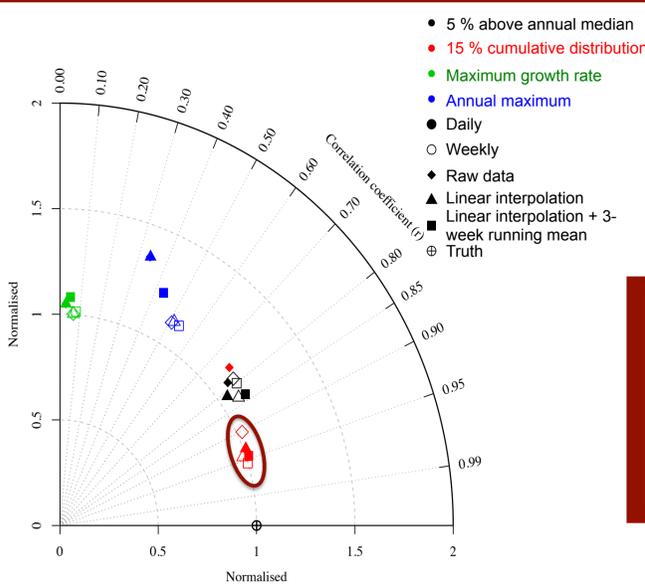
Simulation-testing approach: the phenology metric generated from the truth was subtracted to the phenology metric generated from the modified truth (+ noise + gaps).

What is the most robust method to describe phytoplankton bloom dynamics in the North-east Atlantic?



Main findings

- 1 Accuracy and precision of error estimations increased with both gaps and noise for all metrics;
- 2 Error variability between phenology metrics is greater than between temporal resolutions or pre-processing techniques;
- 3 The choice of phenology metric should be determined by the research question being addressed.



Weekly, pre-processed 15 % of cumulative distribution