

## A new strategy to face climate variability at subseasonal to seasonal scale in agriculture

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Producing sub-seasonal to seasonal forecasts aimed at assessing the probability of occurrence of extreme events is crucial for many economic sectors, in particular to agriculture and agribusiness.

In this study we implement a new strategy to improve the quality of seasonal forecasts by getting closer to targeted times of the year, identified as the most sensitive in terms of possible losses. Production of seasonal forecasts aimed at quantifying the probability of climate anomalies and extremes, and the hazard associated with the occurrence of extreme events occur in two steps. A first multi-model ensemble is used to provide an indication of possible extreme events at seasonal scale (3-4 months). By getting closer to the target, starting from 45-60 days ahead, a second multi-system characterized by higher resolution in space and time, provides upgraded sub-seasonal forecasts.

The multi-models will be providing a probabilistic forecast, which expresses the likelihood of occurrence for the targeted events together with an hazard coefficient, that companies may use for risk analysis.

Here we analyze the case study of late frosts at the beginning of spring, particularly dangerous in agriculture for damages they could cause to blossoms, which often turn out to be devastating for production.