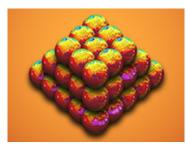Contribution ID: **7**   Type: **Oral presentation**

Using ensemble weather forecasts in agronomy modelling

Tuesday, 4 June 2019 11:30 (30 minutes)

Since crop diseases and pests are highly dependent on weather conditions, various decision support systems are proposed to take into account these meteorological conditions in the modeling of epidemic dynamics and assist farmers in their decision-making. Nevertheless, the atmospheric flow is a chaotic phenomenon and weather forecasts remain uncertain. In recent years, several weather prediction centers have implemented probabilistic prediction systems that provide an estimate of the uncertainty of weather forecasts. We propose to demonstrate the potential of these probabilistic predictions for decision support tools regarding the protection of crops and applications for wheat.

For this work three ensemble prediction systems (EPS) have been used, that cover different time and length scales : the regional and global EPS operated at Météo France (the AROME-EPS and ARPEGE-EPS respectively) and the ECMWF-EPS. Since the agronomy sector makes decisions in advance about crop protection, the first step of the method consists in answering the scientific research question : " How to combine the three systems in order to provide an ensemble of « consistent » forecast scenarios from very short to intra-seasonal lead times ?"

For that purpose, we chose the high-resolution AROME-EPS for the first two days of simulation and then we extend each AROME-EPS member with an ARPEGE-EPS member up to four days and with an ECMWF-EPS member for longer lead times. We will present different strategies to perform the connection between EPS members, a key point being the metric used to measure the distance between forecasts over last two common days. We will also show how these ensembles can be used in practice to determine the processing date.

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