ARE WEATHER FORECASTS
going to be increasingly reliable?

An interview with Olivier Deudon, expert in agrometeorology and digital cartography

Olivier Deudon: "Thanks to researchers' efforts, weather forecasting should gain one more day by 2020".

Weather information is crucial for many industries, including, of course, for agriculture. The predicted increase in adverse weather conditions raises the issue of forecast accuracy. Olivier Deudon, expert in climatology at ARVALIS-Institut du végétal, provides some answers.

Perspectives Agricoles: **How is forecast reliability changing?**

Olivier Deudon: Forecast quality is improving, it's undeniable, both in terms of the precision of various parameters and in terms of spatial resolution. On average over the last 30 years, Météo France's ARPEGE model has gained one forecasting day every ten years. Four day forecasts are now as reliable as three day forecasts were in the years 2000. However, forecasts may be less accurate some years, due for instance to weather variability. In any case, as the range gets longer, quality diminishes. The predictability of variables (temperatures, rainfall, wind…) also depends on the spatial and time scales. This forecasting gain is due to the constant improvement of models and IT resources, and to an even greater extent to the considerable increase in data available from satellites, radar networks and ground stations, as well as in means of understanding them. This wealth of information helps to determine more precisely weather conditions at the start of the simulation, which is a crucial point for the forecast.

P. A.: **Is there still room for improvement?**

O.D.: The chaotic nature of the atmospheric system will always be an obstacle to weather forecasting beyond a 10 day range, at least with a traditional determinist approach (using a value, a parameter, a given range), but thanks to researchers' efforts, weather forecasting should gain one more day by 2020. The shortest ranges –a few hours– will be more accurate because actual observations can be combined with specific models, and therefore small-scale meteorological phenomena, particularly rainstorms, are taken into account. For longer ranges, i.e. a month or a season, the issue lies in the fact that the atmosphere is no longer the only factor to consider. Other components come into play, including oceans and soil humidity, for which existing models need to be improved. Besides determinist forecasting, there is also probabilistic forecasting, based on simulations involving slight variations from the initial situation, using different models. This helps forecasters refine the localisation and intensity of a meteorological phenomenon. A margin for error can also be integrated into the forecast of each parameter. As far as the end user is concerned, this type of information is particularly useful, for example, to refine the timing of an action.

P. A.: **Will agronomic advice benefit from this progress?**

O.D.: The need to anticipate adverse weather conditions as much as possible, as well as their agronomic consequences, means that agronomists must take weather forecasts into account in their advice. The progress achieved will therefore improve the relevance and reliability of this advice. We mustn't forget that the availability of meteorological information, increasingly rapid and easily accessed thanks to constant development of communication technology, plays a major part in decision making.