



## **Combining high-resolution numerical weather predictions with human expertise for localized weather forecasts**

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The increasing demand of real-time, local scale weather forecast information through electronic dissemination channels combined with the significant improvements in numerical weather prediction (NWP) models, requires new solutions to integrate human expertise into public weather forecasts. Since Autumn 2014, a new system is operationally providing localized hourly values to 5000 sites covering Switzerland, from actual time to seven days ahead. This system, called “data4WEB”, combines high resolution meteorological model fields (COSMO-1, COSMO-E, INCA and the ECMWF’s IFS model), observations, and the expertise of human forecasters in order to provide very localized forecasts.

The algorithms developed for data4WEB use different calibration techniques to adapt raw NWP fields to the input given by forecasters on a regional scale. Each predicted variable is treated in a specific way in order to take account its physical properties and the complex topography of Switzerland. This “man-machine” system allows forecasters to influence NWP fields at a regional scale to modify, whenever necessary, errors or case specific biases of the model. An update cycle of the whole procedure is performed every half an hour to ensure that the forecasts provided to the end-users are refreshed shortly after every forecaster’s intervention and after each new NWP input. This efficiency guarantees a fast reaction time, for instance in the case of mismatches between model forecasts and observations.

Verification is also playing a major role in all the production process. An interactive verification system, called “VerificationBrowser”, has been recently developed by MeteoSwiss. It gives an easy access to systematic verifications where forecasters may directly analyze the quality of models, and their added-values, on specific cases or on stratified situations. It allows to establish recommendations on the use of model output by forecasters, and therefore to gain efficiency and quality on end-users products .

We will present the work flow of the production chain, which includes; NWP models, forecasters expertise and verification processes. The experience gained through the operational use during the past years will be discussed.