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Uptake of new technologies by operational hydrologic forecasting agencies

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Over the past decade, enormous progress has been made by operational forecasting agencies worldwide in updating and improving their operational forecasting systems. This was achieved by bringing together huge amounts of data including meteorological data (ensembles and higher and higher resolution NWP forecasts) into their forecasting systems. In addition, modern open-platform forecasting systems enable the forecasting agencies to run multiple hydrological models or even model chains in parallel. However, their main purpose and objective still remain the same, namely to obtain the best estimate of the current state of their system and to produce reliable and accurate forecasts to inform the public in time. Increasingly the emphasis is on producing reliable probablistic forecasts which stimulates research into the areas of ensemble forecasting, hydrologic data assimilation and post-processing techniques.
Although a lot has already been achieved, large amounts of data (including remotely sensed) are still not used in a day-to-day practise due to issues concerning data availability and data formats which do not stimulate adoption by risk-averse organisations such as the operational forecasting agencies. Moreover, besides all sorts of technical issues (including but not limited to computational resources), lack of transparency in automated data assimilation methods and understanding of uncertainty estimation methods hinder the uptake in the field. These issue are discussed and areas for improvements are identified.