Current methods and future opportunities for remote sensing data within flood forecasting at ECMWF

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Remote sensing data and methods are used by ECMWF as part of the modelling chains in the European and Global Flood Awareness Systems (EFAS and GloFAS respectively). Current methods include the assimilation of remotely sensed soil moisture estimates, exposure mapping from optical sensors and using flood forecasts as part of the Copernicus Rapid Risk Mapping programme. However there are more opportunities for remotely sensed data to provide solutions to current flood forecasting challenges. For example the estimation of intense precipitation events through improved satellite precipitation estimates. Or the delineation of flood inundated areas by using historical satellite observations to create a look-up library of events. Other possibilities include the mapping of flood susceptible areas, reservoir level monitoring to establish release schedules, and improved estimation of snowpack variables. If remotely sensed data are to provide the solutions however, then they often need to satisfy one or more of the following operational forecasting requirements; near real time availability, reliable delivery and have long term mission commitments. We explore some possible ideas for how current remotely sensed data can further benefit operational flood forecasting systems, as well as looking at what future missions might offer.