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# The added value of combining Earth Observation in a data assimilation scheme to develop water information systems

Rafael Pimentel (1), David Gustafsson (1), Claudia Giardino (2), Mariano Bresciani (2), Evangelos Romas (3), Apostolis Tzimas (3), Karin Schenk (4), and Ilias Pechlivanidis (1)

(1) SMHI, Swedish Meteorological and Hydrological Institute, SE-601 76 Norrköping, Sweden (rafael.pimentel@smhi.se), (2) CNR, Consiglio Nazionale delle Ricerche, Piazzale Aldo Moro, 7 - 00185, Rome, Italy, (3) EMVIS, 21, Paparrigopoulou Str. 15343, Ag. Paraskevi, Greece, (4) EOMAP, Castle Seefeld, Schlosshof 4a, D-82229 Seefeld, Munich, Germany

Earth Observations (EOs) have been evolved into a powerful tool for global monitoring of surface waters. Operational services are currently designed to facilitate increased interoperability between EO and modeled services. Data acquisition and integration of almost real time EO data in the hydrological models are implemented in order to provide improved real-time, short to medium term water quantity forecasting. Here, we demonstrate the added value of snow and evapotranspiration related EO products in hydrological services in combination with data assimilation (DA) techniques in order to improve streamflow simulation and consequently forecasting. Ensemble Kalman Filter (EnKF) algorithm is used to include these EOs into E-HYPE (European setting of HYdrological Prediction for the Environment) over two snow dominated European basins located in Sweden and Italy, where improvements in hydrological predictions have an (economic) impact to the hydropower companies and reservoir operators. The results highlight the added value from assimilating EO data in a hydrological modeling service, and highlight the conditions under which improvements using EO products are possible. These efforts will further lead to the development of more efficient decision support tools. This opens the opportunity to produce water information systems and decision support tools based on near real-time EO products, setting a step forward in operational services.