

Data assimilation from a viewpoint of regularization theory

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Abstract: Inverse problems are ubiquitous in real applications. Understanding of algorithms for their solution has been greatly enhanced by a deep understanding of the linear inverse problem. In the applied communities ensemble-based filtering methods have recently been used to solve inverse problems by introducing an artificial dynamical system. This opens up the possibility of using a range of other filtering methods, such as 3DVAR, Kalman filter (online) and 4DVAR (offline), to solve inverse problems, again by introducing an artificial dynamical system. The aim of this talk is to understand these methods in the context of the regularization theory under the framework of linear inverse problems.