

# Analysis of the POD approach to order reduction in 4D-Var data assimilation

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## Abstract

The proper orthogonal decomposition method to order reduction in 4D-Var data assimilation is implemented for a two dimensional global shallow water model. Specification of appropriate weights to the snapshots and the norm used to quantify the projection error are discussed. A reduced second order adjoint model is used to perform a Hessian condition number analysis in the POD space. A dual weighted procedure based on adjoint sensitivity fields is shown to provide improved results.