

OpenDA Data Assimilation Toolbox

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OpenDA is a data-assimilation toolbox that aims to be useful for a wide range of applications. It has been applied to a range of applications ranging from calibration of river flow models, to Kalman filtering for spectral wave-models. The object-oriented approach makes the data-assimilation algorithms fully independent of the model, which allows for a very easy exchange of research developments from one application to another.

Several methods have been developed for coupling models to OpenDA. The easiest method for coupling uses the input files and output files of the model. A small number of additional subroutines to read and write the model specific formats are all that is needed. Parallel computing of ensemble members can be configured without additional programming effort. Asynchronous assimilation reduces the overhead of the restarts needed at analysis times in this approach. On the other end of the scale, an in-memory coupling with use of MPI for parallel computing makes better use of a larger number of nodes. Parallel computing of ensemble members as well as parallel domains can be employed simultaneously if desired.

Several applications will highlight the range of applications, algorithms and coupling methods available.

The latest release, version 2.1 is freely available on our website <http://www.openda.org>. We encourage a free exchange of ideas and code in this open-source project.

References

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