

The OpenDA Association
Annual Report 2011



Annual report 2011 of the OpenDA Association

1.Introduction.....	4
2.Overview of 2011	5
3.Current Status	7
4.Outlook.....	8
5.Financial report	9

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1. Introduction

According to its charter, the OpenDA Association has the purpose to organize the product management, coordinate product development, and promote the OpenDA software toolbox for model calibration and data assimilation. This report gives an overview of the events and activities in 2011, gives the current status and provides an outlook on next year.

2. Overview of 2011

The year 2011 has been a successful year for the OpenDA association. Several well-visited courses were given, a number of very interesting new applications has been coupled to OpenDA and a lot of effort has been put into releasing version 2.0. In addition several interesting projects and cooperations have been started.

Product management

Meetings

The association has met on two occasions: on February 22nd (annual meeting) and on August 25th. These meetings serve to coordinate the various developments around OpenDA and to make plans for promotion.

Cooperations and projects

The OpenDA team is participating in SANGOMA, a European-funded project that aims at the development of advanced tools for oceanographic data-assimilation. This project does not use OpenDA as such, but the products from SANGOMA are likely to be beneficial for OpenDA as well.

The Flood Control 2015 subproject “Data Assimilation for operational wave forecasting” uses OpenDA to develop an operational wave forecasting system for the North Sea.

In addition, TU Delft participates in an OpenDA project with the engineering firm Witteveen&Bosch for modeling city waters.

The Dutch research institute TNO has started several projects with OpenDA in the fields of environmental protection and reservoir modeling and is actively cooperating with the three current OpenDA association members.

Product development

Improved installation

Various efforts have been made to ease the first steps with OpenDA. A windows installer contains its own java run time environment that allows OpenDA to be run without the need to install 3rd party software. The configuration needed for the compilation of native code on Linux and Mac OSX has been improved.

Course material

Course material has been created. Currently we have material for two courses

- A short one day course for new users to get a fast practical introduction to OpenDA.
- A more intense 5 day course (if extended with a theoretical course of Data assimilation techniques). This gives the students a more detailed overview of the system and teaches

the students to take the first steps in experimenting with the data assimilation techniques and to take the first steps in programming/extending OpenDA.

Release version 2.0

The last official release of OpenDA dated from april 2010. Since then OpenDA has been improved and extended and it has matured significantly. In November and December, Deltares (assisted by hired VORtech personnel) has put a significant effort in preparing release 2.0, which is expected to be formally announced on February 1st, 2012. The 2.0 version of OpenDA includes all new functionality and is thoroughly tested. Compared to version 1.0, the installation is simplified and the documentation improved and test procedures are added based on TeamCity.

OpenDA applications

The list of models which have been coupled to OpenDA or for which couplings are under development is still growing. At the end of 2011 this list contains (among others not known by the association)

- Eclipse (a reservoir model from Slumberger)
- Delft3D Flow
- Sobek RE & River/Rural
- WAQUA/TRIWAQ
- SWAN
- HBV
- Modflow
- HSPF
- EDFC
- Delwaq
- Msettle
- PC-raster
- Lotos-Euros
- Chimere
- OpenFOAM

Promotion

Courses

Four major courses in OpenDA have been given this year. The first was at TU-Delft as part of the graduate course on data-assimilation. Training material has been developed for this course and has been put on the website for general use. In the first week of August, a summer school has been given in Rumania. Over 30 participants from all over Europe took part in a five day event. In October, a five day training on data-assimilation with OpenDA was given at DHI in Denmark for an audience of 13 students. Finally, in November a one-day introductory training was given during the Deltares Software Days in Delft, the Netherlands, which was visited by some 20 participants.

Presentations

OpenDA related presentations have been given at various workshops, conferences and meetings. Among others at

- Annual meeting van AMS in Seattle
- Delft software days
- Adjoint workshop
- EU projects Jerico en Sangoma

Scientific publications

Known by the OpenDA association, the following scientific publications related to OpenDA have been published in 2011:

2011 - Alamsyah Kurniawan, Ooi Seng Keat, Stef Hummel, Herman Gerritsen. Sensitivity analysis of the tidal representation in Singapore regional waters in a data assimilation environment. *Ocean Dynamics*, Vol. 61, pp 1121-1136, DOI 10.1007/s10236-011-0415-6

2011 - Wang, X., R.R. Karri, S.K. Ooi, V. Babovic and H. Gerritsen. Improving predictions of water levels and currents for Singapore regional waters through Data Assimilation using OpenDA. Proc. 34th IAHR Biennial Congress, Brisbane, Australia, 26 June - 1 July 2011, pp. 4521-4528 (published on CD-Rom)

2011 - Alamsyah Kurniawan, Piyamarn Sisomphon, Seng Keat Ooi, Daniel J. Twigt, Rama Rao Karri, Herman Gerritsen. MHBox - Modelling and forecasting water levels and currents in Singapore Regional Waters. International Maritime-Port Technology and Development Conference (MTEC2011) pp. 75-80, ISBN: 978-981-08-7617-3, doi:10.3850/978-981-08-7617-3_107

Current Status

The general feeling in the association is that OpenDA is quickly becoming a serious player in the field of data-assimilation. The current release is stable and functionally quite attractive. Also, quite a number of people have made their first steps with OpenDA and several institutes are adopting OpenDA as their data-assimilation platform.

Product management

The product management is still felt to be rather ad-hoc. Deltares and VORtech are seeking ways to assign a product manager that can coordinate the development of OpenDA in general, at least for a the next year.

The main issues in the product management last year (need for a release 2.0, improved ways of starting with OpenDA) have been handled now.

The only real issue that is important now is the financial support for OpenDA. The current association members are working hard (for their own purposes) to maintain and develop OpenDA, but we should attract funding from the end-users as well. These funds would allow us to organize the product management in a professional way, which is in the interest of all users.

Product development

With the release of version 2.0 we now have a stable version that is reasonably up to date. It should provide a good platform for new users and developers.

A specific wish of the association is to try and couple OpenDA to OpenFOAM (a widely used CFD open source package). An intern will start working on this early in 2012.

Promotion

There is now quite some good course material available. This makes it relatively easy to organize courses.

The website is still rather static. An effort should be made to include more news like new OpenDA projects, releases and courses.

3. Outlook

Product management

The main goals for the product management in 2012 are:

- Organize a sufficiently stable income to support the daily maintenance of OpenDA
- Attract funds for development, possibly in the form of EU subsidies but, if possible, also from companies using OpenDA.
- Appoint a product manager
- Set up professional paid support for OpenDA

Product development

The main goals for the product development in 2012 are:

- Improvement of documentation and examples
- Improving the performance of the implementations/parallel computing
- Interface related improvements mainly for:
 - ExchangeItems
 - Observations
- Investigate possibilities to extend usage of OpenDA to (statistical) data treatment as well. (Simple models, neural networks and large amounts of measurements)

Promotion

The main goals for the promotion of OpenDA in 2012 are:

- Get more parties to join the OpenDA association
- Organize at least two major courses
- Present OpenDA at two international conferences
- Publish two articles about OpenDA in generic journals
- Get four extra active users.

1. Financial report

Assets		Liabilities & Equity	
31-12-11		31-12-11	
€	€		€
Fixed assets	-	Equity	4851
Current assets	15723	Current Liabilities	7290
Cash & bank balances ¹⁾	12910	Accounts payable	7290
Accounts receivable	2813	Profit 2011	3582
	<u>15723</u>		<u>15723</u>

Income statement for the year ended on December 31, 2011

	Debit	credit
	€	€
Revenues		
Gross revenues ²⁾		9000
OpenDA course		2360
Expenses		
Professional services	6819	
Bank fees/intrest	115	
Office supplies (for course)	844	
<i>Total expenses</i>	<u>7778</u>	<u>11360</u>
Net income		<u>3582</u>

Notes on the accounts

1. Bank account 1138.79.792.
2. Contribution of three partners, based on an annual contribution of € 3000.