# **ANUGA Installation Guide**

Release 1.0beta\_7013

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# Introduction

This document outlines the procedure for installing the Anuga toolbox. All components are licensed as open source and readily available from the net. It is assumed that the reader is familiar with the Python programming language and the process of downloading, installing and unpacking files into directories.

## 1.1 System requirements

To run ANUGA you will need a Windows PC (XP or Vista) or a Linux PC with at least 512MB RAM.

The viewer (Windows only) requires a graphics adapter that is OpenGL compatible. It has been tested with ATI FireGL X1 cards and the NVIDIA family. It may not work with other cards such as those from the Intel(R) 82915G Express chipset family.

### 1.2 Installation

Below are the install procedures for Windows XP, Windows Vista and Linux.

#### 1.2.1 Quick install - Windows XP

This procedure assumes that you do not have python installed on the target machine. If you do have a python installed already then skip the installation of python as long as you have version 2.3 or later installed.

- 1. Install the support software. These packages are available from either:
  - The supplied ANUGA distribution folder: pre\_requisites\2.5. Install in order:
    - (a) Execute python-2.5.msi to install python.
    - (b) Execute Numeric-23.8.2.win32-py2.5.exe to install Numeric Python.
    - (c) Execute ScientificPython-2.7.8.win32-py2.5.exe to install Scientific Python.
    - (d) Execute MinGW-5.1.4.exe to install MinGW.

and then unpack netcdf-3.6.1-win32dll.zip into a folder that is available on the system path. We suggest unpacking it into C:\bin.

- The Internet. Install in order:
  - (a) http://www.python.org/download/. Click on the Python 2.5.x Windows installer link to get python-2.5.x.msi. Execute this file to install python.
  - (b) http://sourcesup.cru.fr/frs/?group%5Fid=180. Download Numeric-23.8.2.win32-py2.5.exe and execute it to install Numeric Python.

- (c) http://sourcesup.cru.fr/frs/?group%5Fid=180. Download ScientificPython-2.X.X.win32-py2.5.exe and execute it to install Scientific Python.
- (d) http://sourceforge.net/project/showfiles.php?group%5Fid=2435. Click on the Download link for the Automated MinGW Installer. Download and execute the file MinGW-5.X.X.exe to install the MinGW environment. Note that you need a working internet connection to install WinGW.
- (e) http://www.unidata.ucar.edu/software/netcdf/binaries.html. Click on the Windows DLL link in the NetCDF 3.6.1 section. This will download the file netcdf-3.6.1-win32.zip. Unpack this in a folder that is available on the system path. We suggest unpacking it into C:\bin.
- 2. Add the following to the PATH environment variable:

PATH=C:\Python25;C:\MingW\bin;C:\bin

For details on how to do this under Windows please refer to Appendix A.1.

Note that if you have another version of python installed, 2.4 say, you would replace any Python25 above with Python24. A similar replacement should be made in all following steps wherever you see Python25.

- 3. Unpack the ANUGA source code (anuga-1.0\_xxxx.tgz)<sup>1</sup> in the python site-packages directory C:\Python25\Lib\site-packages. This is often done in Windows by double clicking on the .tgz file and then 'browse to' the destination directory.
- 4. In the ANUGA root directory (C:\Python25\Lib\site-packages\anuga), run the compilation script (either from the commandline or by running it in IDLE):

```
python compile_all.py
```

5. In the ANUGA root directory (C:\Python25\Lib\site-packages\anuga), run the test suite (either from the commandline or by running it in IDLE):

python test\_all.py

ANUGA has been succesfully installed if the tests pass.

6. To verify that ANUGA succesfully reproduces a series of validation examples, go to the directory anuga\_validation\automated\_validation\_tests under the ANUGA root directory where you can run:

python validate\_all.py

This may take some time.

- 7. To install the ANUGA viewer:
  - (a) Unpack the distribution (anuga\_viewer\_1.0.tgz) into: C:\Program Files
  - (b) Double click on the test file:

C:\Program Files\anuga\_viewer\cylinders.sww

(c) Associate .sww files with the executable: C:\Program Files\anuga\_viewer\animate.exe

For details on how to do this under Windows please refer to Appendix A.2.

<sup>&</sup>lt;sup>1</sup>Internet Explorer has the habit of renaming the .tgz files to .gz - the remedy is to rename them back or use another browser such as Firefox.

Try the demonstrations provided in the ANUGA directory anuga\_demos (discussed in the ANUGA user manual at http://datamining.anu.edu.au/%7Eole/anuga/user%5Fmanual/anuga%5Fuser%5Fmanual.pdf) and view the resulting .sww files with the ANUGA viewer.

#### 1.2.2 Quick install - Windows Vista

There has been one reported instance of ANUGA being installed successfully on Windows Vista. The following steps should be read in conjunction with the windows XP procedures above:

- 1. Install python-2.5.msi.
- 2. Add the directory C:\Python25 to the PATH environment variable (appendix A.1).
- 3. Install Numeric-23.8.2.win32-py2.5.exe (as administrator).
- 4. Install ScientificPython-2.7.8.win32-py2.5.exe (as administrator).
- 5. Install MinGW-5.1.4. exe (as administrator). Use the default package selection. Don't use old packages and let it make fresh downloads.
- 6. Unpack netcdf-3.6.1-beta1-win32dll.zip into C:\bin.
- 7. Add the directory C:\bin to the PATH environment variable (appendix A.1).
- 8. Install pysco-1.6.win32-py2.5.exe (as administrator).
- 9. Install matplotlib-0.91.2.win32-py2.5.exe (as administrator).
- 10. Install numpy-1.1.0-win32-superpack-python2.5.exe (as administrator).
- 11. Check that the system variable PATH contains C:\Python2.5;C:\Python25\DLLs;C:\bin;C:\MinGW\bin (appendix A.1).
- 12. Now follow the Windows XP install steps from the ANUGA source code install step.

Some of the installed packages above are optional and may not be required, but this is the reported working install we have received.

#### 1.2.3 Quick install - Linux

The procedure to install onto a Linux platform is targetted at a Debian-like Linux, such as Ubuntu. If you use another Linux the overall procedure should be followed, although the details will vary.

The steps below assume that you do not have python installed on the target machine. If you do have a python installed already then skip the installation of python as long as you have version 2.3 or later.

Note that even if you already have python installed you should still check if things like python-dev and python-profiler need to be installed.

- Install support software (in order):
  - Install python development environment, either through Synaptic or by: sudo apt-get install python python-dev python-profiler
  - 2. Install Numeric Python, either through Synaptic or by: sudo apt-get install python-numeric

- 3. Install Scientific Python, either through Synaptic or by: sudo apt-get install python-scientific
- Install NetCDF, either through Synaptic or by: sudo apt-get install python-netcdf
- 5. Install gcc and its development environment if you don't have it, either through Synaptic or by: sudo apt-get install gcc libc6-dev

Ensure that libc6-dev is installed even if gcc is already installed.

• Get the ANUGA source from http://sourceforge.net/projects/anuga (anuga-1.0\_5789.tgz say), and expand it into the python site-packages directory /usr/lib/python2.5/site-packages. In the unpacked ANUGA directory /usr/lib/python2.5/site-packages/anuga run the command:

sudo python compile\_all.py

• In the ANUGA root directory (/usr/lib/python2.5/site-packages/anuga) run the test suite: python test\_all.py

ANUGA has been succesfully installed if the tests pass.

• To verify that ANUGA succesfully reproduces a series of validation examples, go to the directory /usr/lib/python2.5/site-packages/anuga\_validation/automated\_validation\_- tests where you can run validation tests to ensure the correct running of ANUGA:

python validate\_all.py

This may take some time.

### 1.3 Optional but recommended software

This software is not required to run the ANUGA toolbox, but it is recommended.

• psyco. Speeds up ANUGA by about 30%. Under Ubuntu install either through Synaptic or by: sudo apt-get install python-psyco

Under Windows install the file psyco-1.6.win32-py25.exe which you can find from the http://psyco.sourceforge.net/download.html page.

• matplotlib. For quality 2d plotting (moving towards mandatory requirement). Under Ubuntu install either through Synaptic or by:

sudo apt-get install python-matplotlib

Under Windows install the file matplotlib-0.98.3.win32-py2.5.exe which you can find from the http://sourceforge.net/projects/matplotlib page.

• VTK. The Visualization Toolkit. Under Ubuntu install either through Synaptic or by:

sudo apt-get install python-vtk

Under Windows install the file vtk-5.2.0-win32.exe from the http://www.vtk.org/get-software.php page.

### 1.4 Testing

In the ANUGA root directory, run the test suite:

python test\_all.py

ANUGA has been succesfully installed if the tests pass as follows:

. . . test\_data\_manager.py test\_interpolate\_sww.py test\_mesh.py test\_mesh\_interface.py test\_triangmodule.py test\_triangmoduleII.py test\_advection.py \_\_\_\_\_ \_\_\_\_\_ Ran 593 tests in 42.712s

OK

# **Miscellaneous procedures**

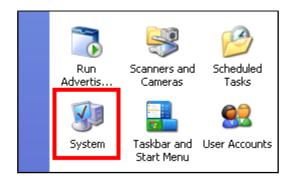
## A.1 Setting the PATH on Windows

The method of setting the PATH environment variable for Windows XP is shown here. Setting the variable for Windows Vista should be similar.

First, open the Control Panel:



Next, start the System applet:



Select the Advanced tab in the System Properties window:

System Properties				
General Computer Name Hardware	Advanced	Remote		
	Professio Version 2 Service F Registered to GA User Geoscier 76487-01 Computer: Intel(R) C 6300 @ 1.86 GHz	2002 Pack 2		
		Cancel Apply		

Press the Environment Variables button in the Advanced tab:

System Properties
General Computer Name Hardware Advanced Remote
You must be logged on as an Administrator to make most of these changes.
Visual effects, processor scheduling, memory usage, and virtual memory
Settings
User Profiles
Desktop settings related to your logon
S <u>e</u> ttings
Startup and Recovery
System startup, system failure, and debugging information
Settings
Environment Variables Error Reporting
OK Cancel Apply

If the PATH variable is not defined in the 'User variables' or 'System variables' windows, press the New button in either of the two windows (for a personal machine, choose the 'System variables' window).

If PATH already exists in the 'User variable' or 'System variables' window, select the row with the PATH variable name in the appropriate window and press the Edit button next to the New button in that window:

Environment Va	riables 🔹 🛛 🖓 🔀
<u>U</u> ser variables fo	r u08117
Variable	Value
TEMP	C:\WINNT\Profiles\u08117\Local Settin
TMP	C:\WINNT\Profiles\u08117\Local Settin
	New Edit Delete
System variables	Value
CLASSPATH	.;C:\Program Files\Java\j2re1.4.2_10\li
ComSpec debug	C:\WINNT\system32\cmd.exe OFF
DEFLOGDIR device	C:\WINNT\Profiles\All Users\Application
	Ne <u>w</u> Edit Deļete
	OK Cancel

You will be shown the editor window whichever button you pressed in the above step. If the Variable name box is empty type in the name PATH. In the Variable value box type the value you want the PATH variable to have. If there is already some text in the box, place your additional value at the front of the existing value, not forgetting to terminate your additional string with the ';' character. The final value string must be a series of directory names seperated by ';' characters:

New User Variab	le 🛛 🛛 🔀
Variable <u>n</u> ame: Variable <u>v</u> alue:	PATH C:\Python25;C:\MingW\bin;C:\bin
	OK Cancel

When you are finished, press the OK button and exit from the applet.

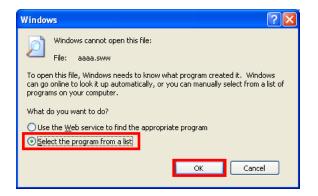
## A.2 Associating animate.exe with a .sww file

The method of associating animate.exe with a .sww file is shown here for Windows XP. A similar process should work for Windows Vista.

Double left-click on any . sww file. This brings up a dialog because Windows doesn't know how to open the file:



Select the "Select the program from a list" radiobutton and press the OK button:



Press the Browse... button to find the animate.exe program:

Open With		
Choose the program you want to use to open this file:		
File: aaaa.sww		
Programs		
Adobe Reader 8.1		
RViewer		
🕘 Firefox		
👷 gsview32		
Conternet Explorer		
iavaw		
Microsoft Excel		
🔊 Microsoft Office Document Imaging		
Type a description that you want to use for this kind of file:		
Always use the selected program to open this kind of file		
Browse		
If the program you want is not in the list or on your computer, you can <u>look</u> for the appropriate program on the Web.		
OK Cancel		

Navigate to the C:\Program Files\anuga\_viewer directory:

Open With			? 🗙
Look jn:	🛅 Program Files	💌 🕝 🎓 🖽 -	
My Recent Documents Desktop	Adobe Analog Devices anuga_viewer ArcSoft Canon	Ghostgum Google Gogle JDM Computer Solutions GINT Computer Solutions InstallShield Installation Information Internet Explorer InfanView	Micros Micros Micros Micros Movie Mozilla msn g MSXM
My Documents	ComPlus Applications CyberLink ComPlus directx Earth Resource Mapping Complexed	ianusNET Java Lange Consulting & Software LeechFTP McAfee Microsoft ActiveSync	MSXM
My Computer	Exceed.nt  File name:  File sof type:  Programs	microsoft frontpage	Power     Power     Dpen Cancel

Select animate.exe and press the Open button:

Open With						? 🗙
Look jn:	🗀 anuga_viewe	1	<b>~</b> (	3 😰 🖻	• 📰 -	
My Recent Documents Desktop My Documents	animate.exe					
My Computer					_	
	File <u>n</u> ame:	animate.exe		`		<u>O</u> pen
My Network	Files of type:	Programs		1		Cancel

Finally, press the OK button:

Open	With	? 🗙
രീ	Choose the program you want to use to open this file:	
	File: aaaa.sww	
Prog	ams	
	📕 Adobe Reader 8.1	<u>~</u>
	🧐 ERViewer	
	🕑 Firefox	-
	🙊 gsview32	
	🟉 Internet Explorer	
	🌺 IrfanView	
	🛅 javaw	
	Microsoft Excel	
	🖄 Microsoft Office Document Imaaina	<u>×</u>
Тур	e a <u>d</u> escription that you want to use for this kind of file:	
	Always use the selected program to open this kind of file	
	Browse	
	program you want is not in the list or on your computer, you o appropriate program on the Web.	an <u>look</u>
	OK	el