



# Open Source Hydrodynamic Modelling

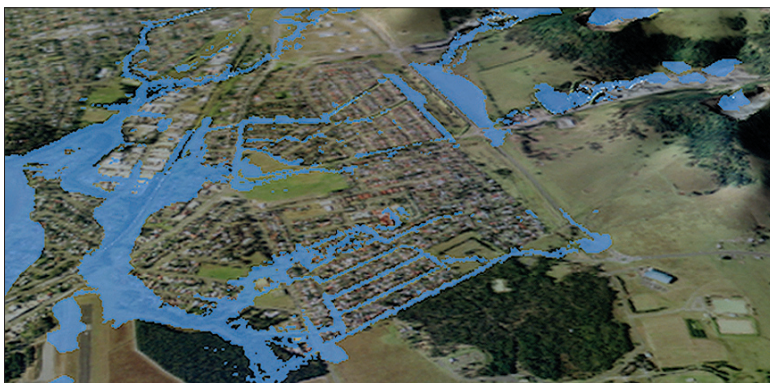
## ANUGA

*Natural hazards such as floods, dam breaks, storm surges and tsunamis impact Australian communities every year. To reduce the impact, accurate modelling is required to predict where water will go, and at what speed, before the event has taken place.*

ANUGA is free software created to model water flow arising from these events. The resulting knowledge is used to draft evacuation plans, build protective levees and design cities safely – reducing casualties, loss of life and damage to property in communities affected by such disasters.

The software was developed collaboratively by the Australian National University (ANU) and Geoscience Australia (GA) and was released for the first time in December 2006 on Sourceforge <http://sourceforge.net/projects/anuga>

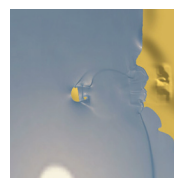
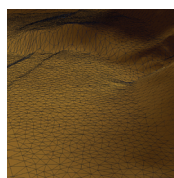
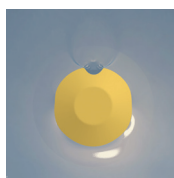
A major capability of ANUGA is that it can model the process of wetting and drying as water enters and leaves an area. This means it is suitable for simulating water flow onto a beach or dry land and around structures such as buildings. ANUGA is also capable of modelling difficult flows involving shock waves and rapidly changing flow speeds (transitions from sub critical to super critical flows).



Attracting considerable interest from organisations and individuals involved with tsunami and flood modelling, ANUGA has already been used to understand tsunami risk to the Western Australian (WA) coastline. The results of this work are being utilised by emergency managers and the Department for Planning and Infrastructure in WA, and in 2007 won the Asia-Pacific Spatial Excellence Award and Emergency Management Australia Safer Communities award.

Although the use of ANUGA requires some familiarity with programming it is not difficult to set up a model which is defined as a short script using the programming language Python. Each script consists of the study area definition, elevation data, the initial water level, boundary conditions (such as the tide or an incoming wave), and any other forces that may impact water levels such as rainfall.

To find out more about ANUGA and to download and use the software, please visit <https://datamining.anu.edu.au/anuga>



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