

Experiences in Applying and Calibrating ANUGA as a Riverine Flood Model

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While ANUGA provides a generalised solution to the 2D shallow water wave equations, its initial focus and application was to simulate inundation of coastal areas by a tsunami. Given the generality of the model there exists however other possible uses. The Author's interest is in the hydrologic and hydrodynamic simulation of flooding in streams and their interaction with receiving water bodies such as lakes and the ocean. This is an area where ANUGA could potentially be applied. To explore this possibility further, an ANUGA model of Macquarie Rivulet was constructed. This catchment had been previously modelled by the Author with several other models and quality flood discharge and flood level data was available for a flood event in June 2001. Efforts to construct the model were initially constrained by lack of code features related to flooding (such as temporally and spatially varying rainfall - inflow boundary hydrographs - multiple zones of roughness - absence of flow strings etc.). Slowly these constraints were resolved or bypassed and a useable model constructed. This model was then used to simulate flows and flood levels in the June 2005 calibration event, initially using roughness parameters from an earlier calibrated Tuflow model. Initial quality of fit was particularly good - only minor adjustment being needed to optimise the fit of the ANUGA model. It is the Author's conclusion that while some flood related features (culverts - bridges - pipe networks) need yet to be integrated into ANUGA, it is currently well able to simulate riverine flooding in a rural setting and with development that is currently underway will be well able to simulate flooding in an urban setting in the near future.