

Current Projects on Offer for 2012

ME (Civil)

1. **GIS Based Spatial Flowpath Routing Of Sediment And Water From Hillslopes To Streams**
2. **Hydropower Operations In SWAT**
The SWAT (soil and water assessment tool) model is used around the world for prediction of water flows and erosion from catchments and river networks. To make the model more robust, algorithms for hydropower operations need to be added. This work will be done in conjunction with the SWAT team in Texas A&M University.
3. **RoadNet WEPP**
Development of a GIS web based forest road, trail, and catchment based erosion model.
4. **Irrigation**
Modelling precision irrigation in the Canterbury region as influence by windbreaks. Tom Cochrane/Tonny de Vries

PhD (Civil)

1. **Development Of A True 3D Erosion Modelling Platform**
2. **Impacts Of Changing Topography And Soil Properties On Hydrological And Erosion Predictions**
Most of our current GIS based hydrological and erosion models assume topography and soil properties remain the same throughout a simulation period. For short simulation periods and shallow topography, these assumptions are fine; however, for topographically complex areas, high intensity rainfall, and soils subject to armouring, changes in topography and soils play an important role in accurately estimating runoff and erosion. New approaches need to be developed to simulate changes over time and these need to be verified through field and laboratory based experiments. Collaboration is expected with the US national soil erosion lab and the SMART center at the University of Tennessee.
3. **Understanding The Hydrodynamics Of Pulsing Lake Systems**