GEOCOMP systems

Dimensions

on the farm with Terramodel

The price of irrigation is rising and salinity continues to be a threat in rural Australia. Whole-farm planning is increasingly critical to farm economics to make the most efficient use of land and water.

Flood irrigation has come a long way since rice paddies transformed the landscapes of South East Asia. Now instead of running banks along contour lines and irrigating horizontally, paddocks are divided vertically to enable the water to trickle down.

The problem is that when the paddock runs cross-grade, water pools in some places and barely touches others.

Laser grading the land takes out the cross fall. This has double benefits: it produces higher crop yields because plants are watered more evenly, and eliminates ponding which leads to salinity problems.

Whole-farm design

This approach involves all kinds of considerations, such as:

• finding the best place for a dam, working out how much water it will hold and how much earth needs to be moved to create it;

• rerouting run-off to water storages using gravity where possible, trying to reduce the number of pumps involved;

• designing channels and drainage, working out the height of banks, etc.

• linking drainage and irrigation, and recycling drainage.

'Take the example of four paddocks all draining in different directions,' explains Peter Cobden, principal of Farm Design Services. 'At their base you need to be able to collect any run-off into one main drain and either direct it to a dam or pump it back to the top of the paddocks.'

Jerry Cresp of Geocomp Systems has been working with Farm Design Services to customise Terramodel for whole-farm planning. 'It's up and running now,' smiles Jerry. 'The software allows you to customise and control the data and inputs to work out slope and guide the laser grading'.

Jerry's refinements relate to automating the job and recently have concentrated on the drafting aspect.. 'This has been a very complex piece of programming, but for our users it has made the whole drafting process much easier,' says Jerry.

'The program now produces one map at the end which has all the information on it.'

The Terramodel Farm Design Module is exclusively available in Australia from Geocomp Systems.

'If you are spending lots of time helping your software over hard spots, you may as well use a calculator.'

Peter Cobden runs Farm Design Services in the Goulburn and Murray-Darling regions. He has been using Geocomp Systems software for 2 years. 'As a small business, it's vital that I get productivity gains out of any software I take on.'

'My clients require more and more complex plans. I needed a software program that could do whole-farm planning and that is continually upgraded with newer techniques as they come up,' says Peter.

'The great beauty of using Terramodel is that you use it for all stages from data, to design, to drafting. And the advantage of being with Geocomp Systems is that they fully support their software.'

INDUSTRY NEWS
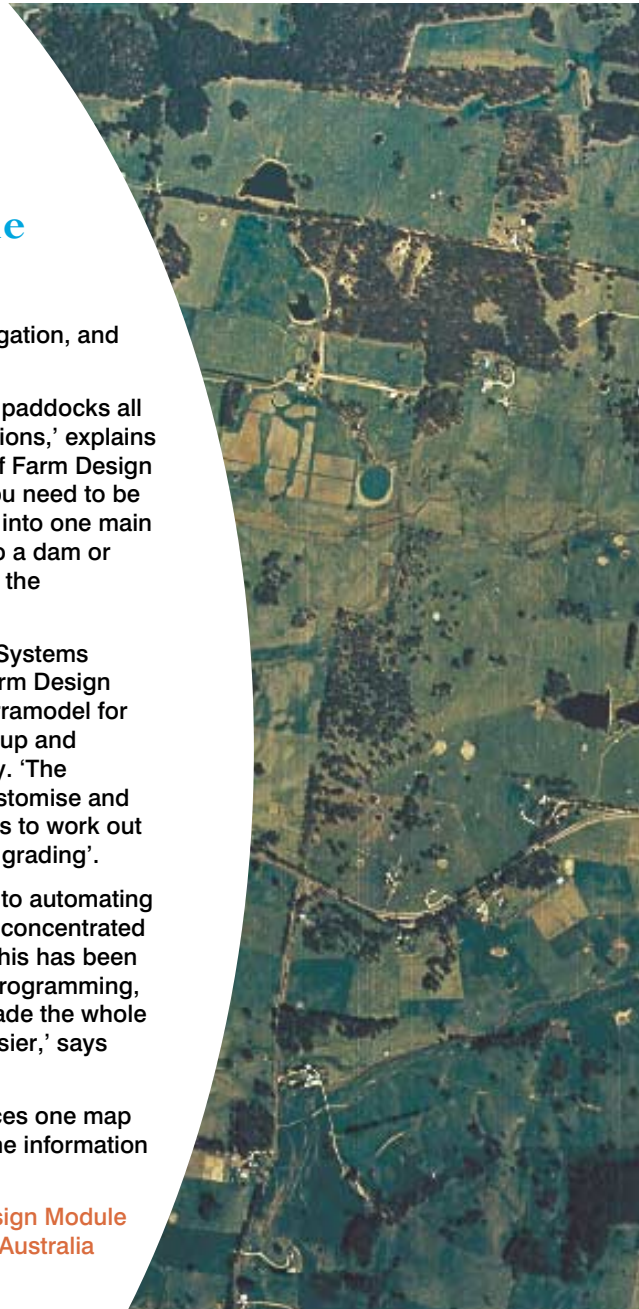
A successful plot

Geocomp Systems supplies Hewlett Packard printers and large format printers. Some of our special offers:

- HP DesignJet 500 (A1)
  Recommended retail price (RRP) $3900.
  Our price $3650.

- HP DesignJet 800 (A1)
  RRP $9500.
  Our price $8795.

- HP DesignJet 1050C (A0)
  RRP $14220.
  Our price $13195.

Prices do not include GST or delivery, and are available only for a short time. Contact Paul Fulton at Geocomp Systems for more information.

Terramodel and land reclamation

Paul Fulton has recently returned from a number of trips to Singapore. His latest major training assignment was with Jan De Nul, a large dredging company currently involved in land reclamation works.

'They were trying to process their data through other software but it couldn't cope with the size of the job,' says Paul. 'They have now begun using Terramodel and finding that it covers every part of the job, from loading in the survey data to calculating volumes and producing charts.'

Paul has been involved in an extensive training program involving Jan De Nul surveyors and engineers, a broad group of Dutch, Belgian, Argentinian, Indian, Filipino and Singaporean professionals.
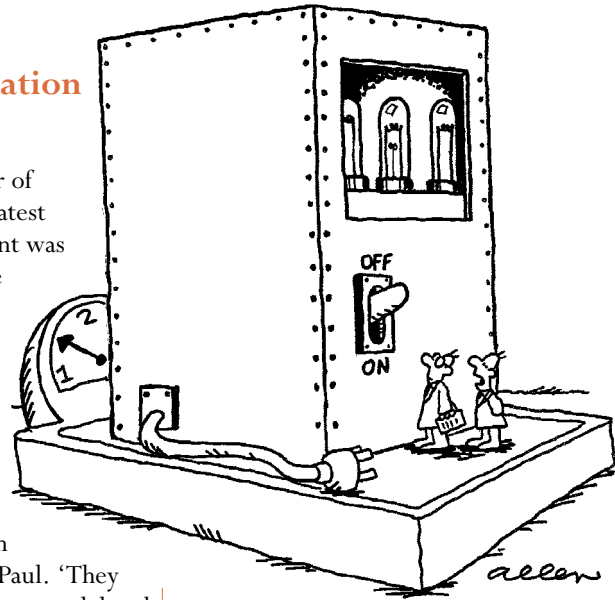
'We've got the weight down to 1.5 tons, but if we run it at night, all the street lights go out.'

Educated guess?

'In future, a computer may weigh as little as 1.5 tons.' *Popular Mechanics*, 1949.

'I think there is a world market for maybe five computers.' Thomas Watson, chairman of IBM, 1943.

INTO GEOCOMP SYSTEMS HEARTLAND:
BERNARD DE LA COEUR

Q. Was there life before Geocomp?

A. Yes, in a way. I had worked with Telstra and then Megatec, a software consulting firm for business applications ... very 'unsexy' work. My university studies were in physics, maths, engineering and computer science. I was looking for something that was more mathematical and technical than business focused, and luckily ended up here.

Q. Is it sexier at Geocomp Systems?

A. The work is, yes. My main ongoing project is to write a Windows version of GeoNav. I also write new TMLs in response to requests from our customers for enhancements.

Q. Is it more fun?

A. I'm enjoying the intellectual challenge, solving mathematical problems and designing the software.

I also enjoy the computer graphics side of things. These programs are a great use of technology: they relate directly to the land and teach us about the planet as opposed to the business administration software I was working on in my previous job.

Q. Is there life after Geocomp Systems?

A. You mean out-of-hours? I have created a sporting results web site for community groups which creates fixtures and then maintains ladders. I'm willing to negotiate with any sports league or competition to do pilot projects.

Our newest staff member, Bernard, has been working with Geocomp Systems since June 2000.

I'm also involved with a band that has been playing plenty of live shows and is interested in any recording contracts that might come our way ... as I play keyboards, I get to experiment with all the electronic gizmos we have 'invested' in. Maybe this will be my next life?

IN ACTION

HOW THICK IS THE SKIN OF A TORPEDO CAR?

It all depends how you measure it.

This is a question the steel industry is very interested in. Geocomp Systems now has the answer.

Ever wondered how a steel works gets up to 250 tons of molten iron from the furnace to the rolling mill?

It's done using rail trucks called torpedo cars. Their central cylinders are 12 metres long, have a cone on each end and are insulated with a brick lining that takes up to four days to cool.

Modern additives to the hot metal cause the brick linings to deteriorate much more quickly than they were designed to.

Replacing the lining costs about $330,000 each time and can keep a torpedo car out of action for up to six months.

For safety, torpedo handlers need to know how much of the brick lining is intact. Each torpedo acquires unique deformities during fabrication and use, so thicknesses cannot be assumed to be uniform across a torpedo or the whole fleet. Traditional survey methods, used to gauge thicknesses since the late 1980s, are cumbersome, time-consuming and often unreliable. The lack of accuracy has meant that linings are often replaced prematurely, at great cumulative cost to steelworks.

Enter Geocomp Systems

'Geocomp Systems were commissioned by Hatch Associates of Wollongong to develop a rapid and sound method for measuring torpedo car linings,' says Jerry Cresp of Geocomp Systems.

'Previously, the linings were routinely replaced after the cars carried 250,000 tonnes because accurate assessments of the condition of linings were too difficult to calculate. Now they are replaced after transporting up to 600,000 tonnes.'

'We have come up with a much more accurate software solution that simply enables the working life of the cars to be extended by a factor of 2 or 3.

'At fabrication and relining, each torpedo car is surveyed externally and internally by reflectorless theodolite. Using the new process in Terramodel, Hatch now produces coloured contour plans and 3D views of the lining thicknesses faster and far more accurately, replacing processes previously performed by five separate programs.

Top: A perspective view in Terramodel with colours showing the thickness of an 'unfolded' brick torpedo lining .

Below: A rail carriage moving a torpedo car at the BHP steel plant in Port Kembla. Photo courtesy BHP.
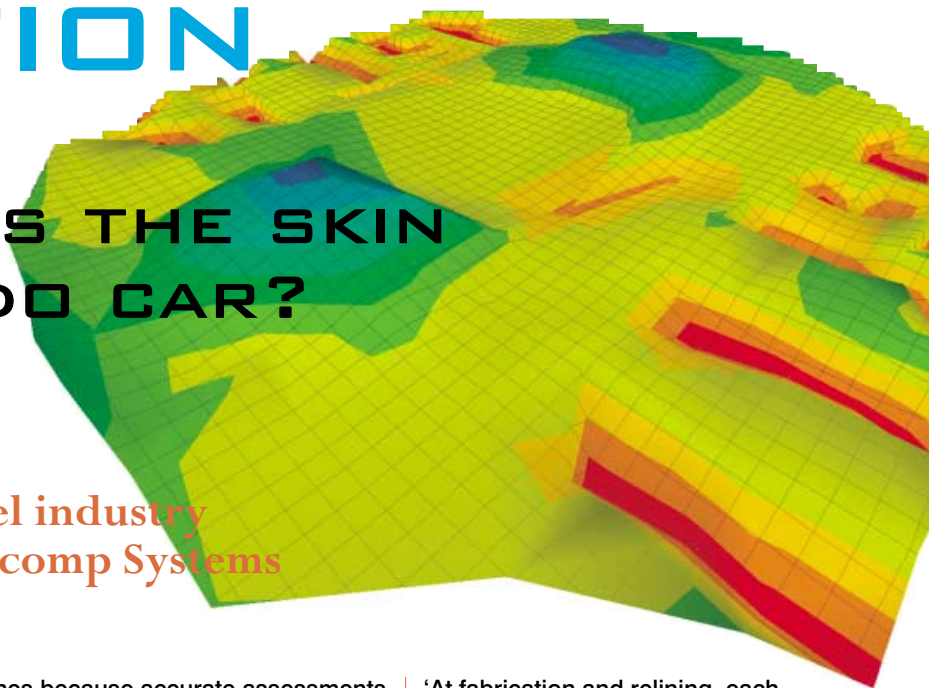
EXPERT ADVICE

Hints and tips from our experts

Introducing GCGeocode

Do you have millions of points from photogrammetry, bathymetry or airborne laser scanning and can't do anything with them? New GCGeocode from Geocomp Systems may be the solution.

GCGeocode displays millions of ASCII points in seconds. Load a whole survey, zoom in, identify points, smooth the surface, transform to GDA, or export to ASCII or Terramodel without losing descriptions. Work on the lot, or just points in selected squares.

Then read the pertinent points into any CAD or survey software for further processing.

Ring us at Geocomp Systems if you want to know more.

Changing zero heights to no heights

In 3D DXF and DWG files, 2D points which should have no heights are often given a height of zero. In Terramodel and Geocomp, any point can have a height, no height or zero height. These zero height points interfere with DTM formation from imported data.

In Geocomp, use SDS 333 to select a polygon of points within a height range (for example, –1 to 1). Then SDS 9 to change the heights of those points. If the default is not <No height>, enter a height of –9999.

In Terramodel, use GC69.TML to set zero elevations to *.

Installation guides

Memory? Missing files? Black screens? Extra characters? Windows 2000?

Windows Me? Input path for runtime module? Security device not found? Activation code? Shortcuts?

A lot of questions about installing our software can be answered by the Geocomp Systems web site (see the list in the box).

Geocomp manuals

Two-volume sets of spiral-bound Geocomp 10 manuals are available for AU$121 including delivery and GST in Australia. If you are outside of Australia send an email to the address in the box below for a price. The manuals are also supplied in PDF format with the CD.

Updates

Since the last major releases of Terramodel 9.7 and Geocomp 10, there have been minor updates. Recent Terramodel updates include utilities for joining, moving and inserting points. See the web address (in the box below) for the changes, including latest dates. Email or ring us for TM updates.

The web address for Geocomp updates is also included in the box below.

Machine control

Machine control of earthmoving plant is here. Ask us about how best to transfer roadways or DTMs from Terramodel to Trimble SiteVision, Trimble BladePro3D, Topcon 3DMC or Caterpillar CAES.

Windows printers

We've mentioned this before, but if your printer is advertised as 'Windows 95-compatible' it probably isn't DOS compatible. If you get one of these printers, it might not work with Geocomp but it should be fine with Terramodel or any other 32-bit Windows application.

Virus checkers

With the spread of Internet use, up-to-date virus checkers that run all the time are becoming more important. If you haven't got one, consider InnoculateIT from Computer Associates.

The engine is based on VET and you can download the software and updates for free from their web site. The Auto Download feature makes it easy to update over the web (see the box for details).