

SPAN's mission is to achieve excellence in the application of innovative spatial analysis in support of research, education and community outreach

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SPAN is a research support unit within the Centre for Research and Graduate Training at Charles Sturt University. It has offices at Wagga Wagga and Thurgoona campuses to provide postgraduate and staff research support in three main areas: remote sensing, Geographic Information Systems (GIS) and spatial statistics.

Manager's Message

Welcome to the final edition of the SPAN newsletter for 2008. This issue includes brief descriptions of a few of the research projects for which SPAN is providing support, reports from a number of conferences I have attended recently and also information about some spatial and statistical data updates that have been purchased for researchers' use.

In addition to data, SPAN can provide conference poster and thesis printing services, and loans of equipment such as GPS and Nomad hand held units, a Toughbook field portable laptop and spectroradiometers. Details can be obtained from the SPAN website or contact a SPAN staff member.

As the year draws to a close it is timely to thank the dedicated and talented SPAN staff – Gary and Craig at Wagga and Simon and Deanna at Thurgoona, for their invaluable work throughout the year. I am sure all researchers who have received SPAN's assistance appreciate their professional expertise.

SPAN's offices will be closed from 12:30pm on 24th December. The Thurgoona office will reopen on 5th January and the Wagga office on 12th January.

I hope everyone has a safe and happy festive season and an enjoyable holiday. We look forward to continuing to provide our researchers with high quality support next year. *Gail Fuller*



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Can SPAN help you?

SPAN might be able to assist your research in ways you do not anticipate. From simple data retrieval and map making to complex spatial and statistical data analysis, SPAN is available to enhance the quality of your research. If you are a researcher, academic or postgraduate student at Charles Sturt University and believe that some aspect of your research might be assisted by using our skills, do not hesitate to contact the Manager, Gail Fuller, on 32004 or gfuller@csu.edu.au to discuss your project requirements.

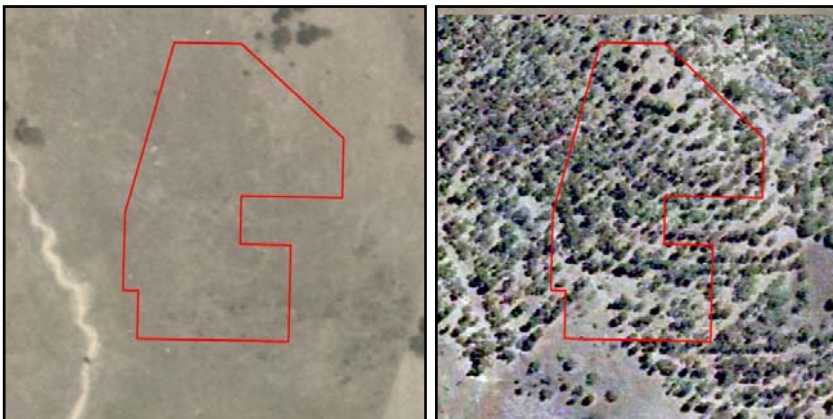
Want to know more? Visit www.csu.edu.au/research/span/

Projects

SPAN has been assisting honours student Toby Grant with his research into changes in woody vegetation over time in the Box-Ironbark region of central Victoria. Hard copy photographs from the 1970s & 1980s were scanned and imported into ArcMap. The images were georeferenced to cadastral layers and previously georeferenced aerial photos, taken in 2000, from the Dept of Sustainability & Environment. An ArcGIS extension named 'XT- classification' was used to perform unsupervised classifications on the photos, automatically extracting relevant vegetation information. Useful results were obtained, despite a small amount of misclassification of trees and shadows. The purpose of this research is to compare these estimates of changes in woody vegetation with those of the Australian Greenhouse Office, which were obtained by analysis of Landsat imagery taken over the same time period.



Box-Ironbark forest



A selected region near Puckapunyal photographed in 1970 and again in 2006

Data

Census data:

SPAN has now received the full suite of Census Datapacks on CD-ROMs from the Australian Bureau of Statistics. This allows customised extraction of data from the 2006 Census Community Profile Series, with greater flexibility than that available from CDATA Online on the ABS website. The release of Table Builder, a subscription service offering even greater customisation for extraction and manipulation of data from both 2001 and 2006 census as well as remote access to the Confidentialised Unit Record File, has been put back to 2009. When this service is made available SPAN will be subscribing and undertaking training in its use in order to offer this level of data customisation to CSU researchers.

Victorian spatial data:

Updates to SPAN's VicMap digital data sets have been purchased and are now available for research use. Included in these data sets are property boundaries, addresses, administration boundaries, elevation and contours, planning zones, transport, vegetation and features. An updated Victorian digital terrain model (DTM) at both 10 and 20m scales has also been purchased to complete the data available for this state.

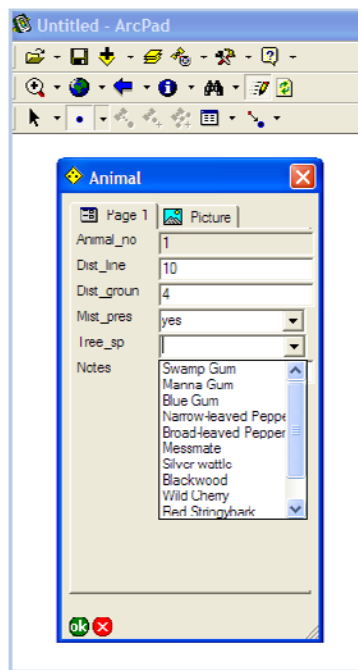
Similar data for NSW will be obtained when it becomes available.

Projects

SPAN's Nomad GPS / PDAs used in research projects:

Possum and mistletoe tree preferences

PhD student Karolina Petrovic approached SPAN to assist her with the fieldwork component of her research project focusing on tree preferences of common brushtail possums and drooping mistletoes. SPAN created field maps and electronic forms to facilitate her data collection. Forms with tailor-made drop down 'pick lists' were created in ArcPad for use on the Nomad GPS/PDA unit which Karolina borrowed from SPAN. When back in the office, all Karolina needs to do is download the data from the Nomad to an Excel spreadsheet, saving hours of laborious manual data entry.



Karolina says, "The Nomad helped me to map the trees that are most highly parasitised by mistletoes, as well as the ones that are most often visited by possums. I needed to determine whether these are the same species of trees and individuals and mapping them allowed me to get an idea of which trees should be further sampled and analysed in the lab." Karolina will later research the chemical structure (nutrient, toxin, and moisture levels) of eucalyptus trees to determine which factors influence tree preferences of two different types of consumers – possums and mistletoes.

Moreover, having the location data for the sighted possums helped design the next stage of her fieldwork - targeted trapping of possums to attach radio-collars. This shortened the whole process of trapping as exact locations were already known.

Karolina is very enthusiastic about the Nomad, saying that it makes the whole process faster and more efficient as it enables her to go straight from the field to the analysis. Furthermore, being able to display the data visually in a GIS on the Nomad allows her to easily recognize spatial patterns and clustering of her research organisms while still out in the field.

Frog response to flooding in semi-arid Australia

Omar Arnaiz, PhD candidate, is using the Nomad in his investigations into the spatial and temporal effects of a dynamic landscape on frog distribution patterns in semi-arid south eastern Australia. His research includes the role of flooding and ephemeral habitats in frog distribution patterns, and habitat modelling using temporal and spatial landscape context attributes. SPAN has been assisting by developing survey forms in ArcPad to use with the Nomad for recording spatially referenced data while out in the field.

Conferences



The Riverina Spatial Information Group (RivSIG) held their annual conference at CSU's conference centre in Wagga on 23rd October. A record attendance of more than 90 delegates heard presentations on a variety of projects that utilised spatial data and technologies, including the use of GIS in the Equine Influenza control campaign, the Olympic Torch relay through the ACT and flood modelling in Fairfield City Council. Geoscience Australia and NSW Dept Lands representatives reviewed new technologies for acquiring high resolution terrain and topographic data, such as LiDAR and high resolution digital cameras and also outlined cooperative arrangements to enhance spatial data collection and sharing. Trade exhibitors in attendance were given five minute 'spotlights' throughout the day to demonstrate new products, completing the highly successful conference program.

A number of CSU representatives attended the annual conference of the Cooperative Research Centre for Spatial Information, of which CSU is a participant. Over the two days sessions on Innovation in Australia, the New Workforce and 'soapbox' presentations by some of the private enterprise companies involved in the CRC-SI were given, outlining some of the benefits gained through their participation. Delegates also heard reports on a number of the current projects, the achievements of the CRCSI to date and plans for the upcoming new bid for 2009-2016 funding, which is to be submitted mid 2009.



Some significant achievements of the CRC-SI to date include commercialisation of a web-based emergency management system, a photogrammetric software system for generating information from satellite imagery, a method of analysing ground subsidence from radar imagery, a laser scanning technique for measuring wear in industrial processing mills, as well as awarding scholarships for higher degree students and facilitating professorial appointments. Many publications, research and consulting contracts have been completed through the CRC. A study commissioned by the CRCSI into the economic impact of spatial information and technology revealed an estimated contribution to Australia's 2006-07 GDP of between \$6.4 and \$12.6 billion.



The inaugural NatStats conference, supported by the Australian Bureau of Statistics, was held in Melbourne in November. The conference, which was attended by over 400 delegates from all states and territories as well as New

Zealand, aimed to bring together key users and producers of statistics in a major forum to discuss improvements that could be made to the nation's statistical information base in order to best satisfy the requirements of governments, business and the community. Key note speakers included the Director of Statistics and Chief Statistician of the OECD, Mr Enrico Giovannini and the Executive Director of the Macroeconomic group of The Treasury, Dr David Gruen. Plenary session topics revolved around measurement as a change driver and decision support mechanism, and a panel discussed the role of statistics in the 21st century. Concurrent sessions covered topics such as Measuring Health Outcomes, Measuring Disadvantage, Inequality and Social Inclusion, Natural Resource Management, Water and Climate Change.



The NSW Dept of Lands officially launched its Spatial Centre of Excellence and the

Common Spatial Information Initiative (CS2i) at a Spatial Information Summit held in Sydney recently. The Centre aims to focus on extending spatial frameworks and promoting shared spatial services within the state to meet the spatial information needs of all levels of government. Around 200 delegates from 80 federal, state and local government agencies, academia and business were in attendance. Presentations included an introduction to the Spatial Centre of Excellence and the new look Dept Lands Spatial Information eXchange – SIX. Open Standards and Web Service Mashups, Metadata Standards for SDI implementation, Reference Architectures and Imagery Metadata were discussed in break-out sessions. Several case studies on the use of spatial data were also presented, including Sydney Catchment Authority, NSW Dept of Planning and metadata research.