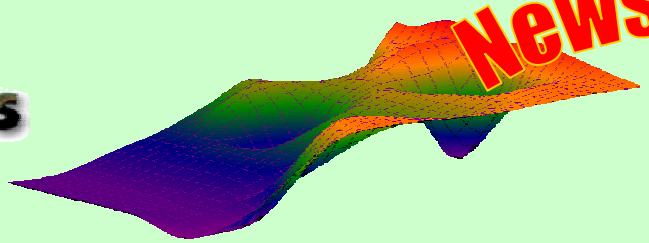
Spatial Data Analysis Network Newsletter



MAY 2005

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 Division of Research and Graduate Training at Charles Sturt University. It has offices at Thurgoona, Bathurst and Wagga Wagga 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 first edition of SPAN's newsletter for 2005, a year that is proving to be another busy one.

Over the spring and summer seasons there have been a number of flights using SPAN's Multispectral Airborne Digital Imaging System (MADIS) in both the helicopter and the Cessna to image vineyards, olives and most recently jojoba crops. This instrument is a unique resource for researchers at CSU that has potential for greater usage. Any researchers who have an interest in aerial imaging should contact SPAN to discuss the possibilities of utilising this resource in their research.

Following the recent upgrade to the network across the university, SPAN will be working on making spatial data resources more readily available to members of the university community. Any researcher who needs spatial or census data should contact SPAN for information on specific data availability and methods of accessing these resources.

Gail Fuller

Contacting SPAN

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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 your local SPAN representative.

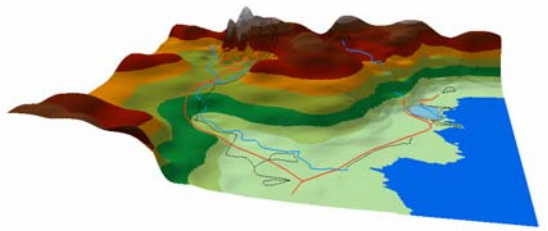
Want to know more? Visit www.csu.edu.au/research/span/

Projects

Welcome to Shrekville, Population 00101001001010

Researcher: Jonathon Howard, School of Environmental & Information Sciences

SPAN assisted Jonathon in the production of a map of a fictitious coastal national park containing key elements of limestone caves, ranger station, picnic areas and a lagoon. Roads, drainage and walking trails were also included on the map. Shrekville National Park was created to form the basis of an assignment as part of the coursework Jonathon was writing.



Telecommunications in Culcairn

Researcher: Penny Knox, Honours student

SPAN provided Penny with ABS census data on various demographic attributes for the urban centre of Culcairn in the Riverina district. These attributes included age, occupation, income, education, computer use and internet use. Penny plans to use this data to explore issues of access to telecommunications in rural areas, particularly in assessing whether the low take-up of telecommunication technologies is related to social and/or economic disadvantage rather than location disadvantage. Furthermore, her results may provide insights into the demand for on-line services in light of the push for full privatisation of Telstra.

Effects of Sunlight on Bioavailability of Humic Substances

Researcher: Suzie MacDonald, PhD student

Suzie is studying the effects of sunlight on the bioavailability of humic substances from a floodplain river and adjacent billabong. Humic substances make up a large part of dissolved organic carbon, a vital resource for aquatic environments that affects food webs either directly by uptake from organisms, or indirectly by mechanisms such as turbidity, pH, metal chelation, and the transport of contaminants. Particles in the water and the water itself can scatter and absorb radiation, therefore the amount of sunlight getting through the water column decreases with depth. The humic substances closer to the surface of the water body are expected to be more affected by radiation.

Suzie is irradiating humic substances under lamps in the laboratory to monitor the chemical changes that result from radiation and the biological response to these changes. SPAN's spectroradiometer is being used here to measure the radiation given out by the lamps in order to calculate the equivalence to periods of exposure in the natural environment. Suzie is also using the spectroradiometer to measure the intensity of different wavelengths of radiation penetrating the water at different depths through the water column.

News

SPAN Bathurst has moved

Due to leakiness in some parts of the roof in Building S1, SPAN Bathurst has been relocated. The office's new location is the Executive Area on the fourth floor of Building S1, opposite the Computer Centre. One advantage, apart from being more visible (we now have a window to the corridor), is that there is no need to sign in to meet with SPAN. The door to our office is open most working hours.

CSU Transport Symposium

Steven Gibbs presented at this symposium on Friday 29 April 2005 in Wagga Wagga. His topic was on GIS in transport research. The event was organised by the School of Humanities & Social Sciences as a means of opening up a dialogue in rural and regional NSW between public transport users, providers and advocates. Further events are planned on this theme.

Upcoming Events

Some upcoming events that either involve SPAN or are being attended by SPAN include:

- **Orange Research Showcase**, Orange campus, Friday 6 May 2005. SPAN will be attending this event and providing a poster to display some of our research support skills and facilities.
- **Institute of Australian Geographers conference**, University of New England Armidale campus, Monday 18 to Friday 22 July 2005. Showcasing leading research in Australian geography. The theme this year is *Geographies for Sustainable Futures*. For more information visit: http://www.iag.org.au/ and follow the link.

Orange Campus

SPAN Embraces the Faculty of Rural Management

After SPAN's successful visit to Orange last November, Gail Fuller and Steven Gibbs gave a presentation to another group of staff and students on the various skills SPAN can contribute to CSU's research initiatives. Many Orange researchers have expressed an interest in attending an introductory GIS course at the campus. SPAN is in the process of organising such a course, so if you are an Orange campus researcher, or a researcher anywhere in CSU and would like to learn more about GIS, please contact Gail Fuller at gfuller@csu.edu.au. SPAN will next visit Orange on Friday 6 May (see News, page 2).

Two Orange PhD students, Dong Wang and Wendy Gong, are already working with SPAN. The following is a summary of each student's research.

China's Beef Product: the Opportunity for Beef Production from Large Dairy-Beef Enterprises in China (Dong Wang)

The rapid expansion of China's dairy industry in recent years, with a view to increasing milk production, has raised questions about its contribution to developing new products for the Chinese beef industry, and giving an additional source of income to Chinese dairy farms. How can dairy beef be harvested from the Chinese dairy industry? A literature review indicates that the opportunity lies in the identification of ideal locations for dairy-beef production, projecting dairy cow numbers and developing an integrated production system including production economics analysis.

In this study, linear programming will be employed to analyse the potential economic value of dairy-beef production in China and then a time-series method will be used to find out how this industry can be expanded. Finally the best locations for dairy-beef production in China will be defined through GIS.

Developing China's Beef Industry: A Supply Chain Management Approach (Wendy Gong)

The livestock industry in China has undergone significant changes since the liberalisation of the livestock market was initiated in 1985. The significance of developing China's beef industry will be its contribution to raising incomes for farmers engaging in the beef industry, capturing the opportunity for China with accession to WTO, improving people's nutritional intake as another meat source, making full use of the resources, and promoting not only beef production but also other sectors of the beef supply chain.

However, there are still some problems in the beef industry, such as low carcass weights and poor quality, which can be improved with overall management of the supply chain. In this study, the supply chain management in China's beef sector will be described. Assessment of the beef supply chain management performance will be made by Structure-Conduct-Performance paradigm. Specifically, some key linkages which may affect beef quality will be analysed within the beef supply chains. Transaction cost analysis is used to examine factors that affect the cattle producers' quality assurance practices, and game theory is employed to analyse the behaviours of retailers' quality management.

Data

Australian Spatial Data Directory

The Australian Spatial Data Directory (ASDD) is a national initiative supported by all governments under the auspices of ANZLIC - the Spatial Information Council. The ASDD aims to improve access to Australian spatial data for industry, government, education and the general community through effective documentation, advertisement and distribution. The directory comprises government and commercial nodes in each State/Territory and spatial data agencies within the Australian Government.

A key objective of the ANZLIC strategic plan is to promote the development of the Australian Spatial Data Infrastructure (ASDI) which will improve access to, and availability of, nationally consistent spatial datasets.

For more information visit: http://asdd.ga.gov.au/asdd/.

Atlases

SPAN can access many atlases for a range of spatial data including:

- Vinson, Tony (2004) *Community Adversity and Resilience*. An atlas of social disadvantage.
- Bureau of Rural Science (2004) *Country Matters*. Various national demographic indicators.
- Public Health Information Development Unit (2003) *A Social Health Atlas of Australia*.
- Department of Education, Science & Training (2001) *Atlas of Higher Education*.

Contact your local SPAN representative for your spatial data/atlas needs.

Updates

NSW Area Health Service Boundary Changes

On 1 January 2005 NSW Health restructured their Area Health Service (AHS) boundaries, creating a series of mergers that reduced the number of AHSs from 17 to eight. SPAN has defined the boundaries to create a spatial layer of the new AHSs. SPAN now has both the old and new AHS boundaries and these are available to CSU researchers. If you are conducting research into an aspect of NSW health, contact SPAN for mapping in your project. The map above shows old and new boundaries.

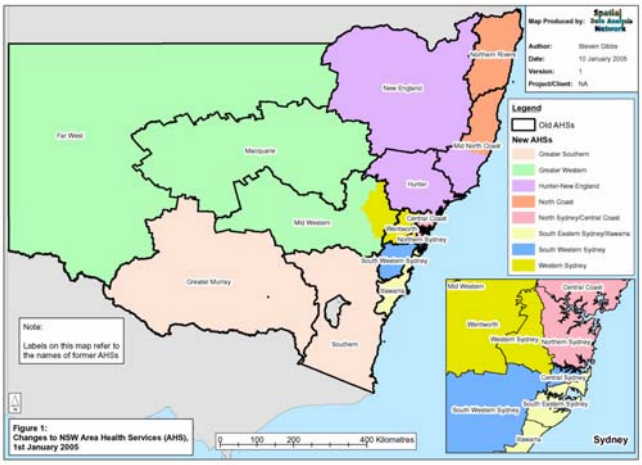


Figure 1: Changes to NSW Area Health Services (AHS), 1st January 2005

Antechinus Follow-up

Researcher: Matthew Herring

Last issue we left our regular readers hanging on the question of whether the Antechinus (pictured) needs vegetation cover in their habitat. Asked for an update, Matthew reports that "there is definitely something there, especially in combination with fallen log loads. Although we had a handful of isolated patches (with high log loads) that supported Antechinus, the majority of sites where we found them were in a much less fragmented landscape (> 15%). I'll keep you posted."

Mapping the Location of Support Groups

Alzheimers Australia

SPAN has mapped the location of support groups for carers of people with dementia that are available through Alzheimer's Australia. These maps will allow the organisation to more effectively plan for future support groups throughout NSW.

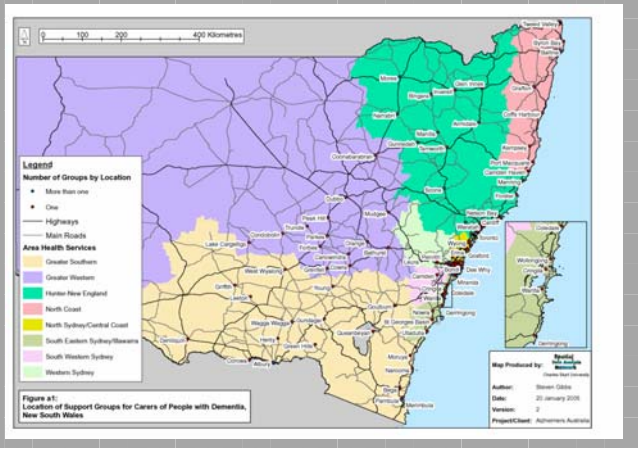


Figure a1: Location of Support Groups for Carers of People with Dementia, New South Wales

The Rest

CSU Staff Tipping

SPAN is running the inaugural first-ever CSU-wide staff tipping competitions for both NRL and AFL. Approximately 60 staff members are in each tipping competition. As well as providing an outlet for staff to enjoy the football this season, it is hoped that the tipping competition will provide another means for staff members to learn more about SPAN and its capabilities. The tipping competition has its own website that can be accessed at: http://athene.riv.csu.edu.au/~stgibbs/CSU%20Staff%20Tipping%20Homepage.htm.

Country Energy Storm Tracker

Country Energy has set up a novel, real-time use of spatial data. On their website they have established a Storm Tracker, a map of NSW that shows the location of recent lightning strikes. It can be used to keep track of trouble spots around the state as they happen. To view this feature (preferably during a storm), visit: http://www.countryenergy.com.au/storm/s_tracker.html.

Test your Place Name Knowledge

Do you find that your knowledge of the world's cities isn't what it should be? Or are you the opposite, vastly knowledgeable about city names but with no outlet to demonstrate your superiority? Then worry no more, because Mark Rossen has developed an addictive game called *Geosense* to test your knowledge. You can even play others on-line. To play, visit: http://www.geosense.net/.