

LOOKING AT LUCAS

+ LAND USE AND CARBON ANALYSIS SYSTEM

+ ISSUE 6 + AUTUMN 2009 +

Welcome to the sixth issue of Looking at LUCAS, the e-newsletter to keep you informed about progress of the Land Use and Carbon Analysis System (LUCAS) programme. We hope you find the newsletter useful and welcome your ideas, feedback and suggestions to lucas@mfe.govt.nz. For further information about the programme see the LUCAS web page www.mfe.govt.nz/issues/climate/lucas/

The LUCAS team behind the programme

To meet New Zealand's reporting obligations to the Intergovernmental Panel on Climate Change (IPCC) and the Kyoto Protocol, the Land Use and Carbon Analysis System (LUCAS) team at the Ministry for the Environment has been working hard to develop and implement a system that meets both New Zealand's and the IPCC's needs. There will also be many all-of-government benefits that will start to flow from LUCAS such as the 2008 satellite imagery and data from the natural forest plot re-measurement.

Steve Botica is the manager accountable for the whole LUCAS work programme. He has been at the Ministry for three and a half years and with LUCAS for the last 22 months. He says the biggest deliverable his team has to produce is the figures for next year's National Inventory Report which include 2008 data (the inventory year is 15 months behind the current calendar year ie, the 2007 inventory published in April 2009 contains data from 1990 to 2007 inclusive). The 2010 inventory will include the Kyoto tables for the first time. Before being seconded to lead LUCAS in July 2007, Steve was the Manager, Information Management at the Ministry. He's had a number of roles in government organisations (Ministry of Transport, Office of the Auditor-General, Ministry of Economic Development, and Ministry of Education) in Wellington since emigrating from Sydney in 1993. He says the best thing about working with the LUCAS team is the variety of work and the people. "We have a great team focused on delivery and we have fun doing it."



Steve Botica, LUCAS manager



Ministry for the
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+ LUCAS designer and architect **Peter Stephens** joined the Ministry about five and a half years ago to design and implement a carbon accounting and reporting system to meet Kyoto obligations. Initially the system was called NZCAS (New Zealand Carbon Accounting System) and then changed its name to LUCAS. Peter is the project manager for LUCAS on science issues. He is a United Nations (UN) expert reviewer for the Land Use, Land-use Change and Forestry (LULUCF) sector of greenhouse gas inventories. Before joining the Ministry to set up LUCAS he was an applied scientist working on remote sensing for erosion and land-cover mapping. He says his main aims over the next two years are completing the first report (for year 2008) and successfully defending New Zealand's approach when we are reviewed by an international expert review team.



+ Peter Stephens, LUCAS architect

+ Leading LUCAS's administrative support is programme administrator **Lisa Kinghorn**. She has been with the LUCAS team for almost two years. Her role within LUCAS is to provide procurement, financial tracking and management, contract management, secretarial support to the Steering Committee and Programme Board, recruitment administration, distribution of this newsletter and answering queries from other agencies and the public. Lisa describes her work history as "eclectic". "I have worked in sausage and plastics factories, cafes and fast food restaurants and nursing homes." Lisa's career in administration includes positions with Eagle Technology, Metservice, the Motor Vehicle Dealers Institute, the Ministry of Health and the Wairarapa District Health Board.



+ Lisa Kinghorn, programme administrator

+ **Nelson Gapare** is the team's work-stream leader for the mapping and development of the geospatial system. He is overseeing the completion of the 1990 and 2008 land-use mapping to meet New Zealand's obligations under Article 3.3 of the Kyoto Protocol. He is also supervising the development of a geospatial system which will organise geographic data into a hierarchy of data objects. The geospatial tools within the system, for example, will be able to run automated processes to determine changes in land use between 1990, 2008 and 2012 once all the datasets are loaded. Nelson's background is in forestry, resource management and GIS. He moved to New Zealand in 1997 after completing a four-year, land-cover mapping project in Zimbabwe. Before joining our Ministry, he worked for the Ministry of Agriculture and Forestry and AsureQuality (previously AgriQuality) on biosecurity and land-use mapping.



+ Nelson Gapare, LUCAS workstream leader for mapping and development of the geospatial system

+ Leading the development of the carbon accounting database and hosting service is senior analyst **Craig Elvidge**. He has been with the Ministry for five years and with the LUCAS team for four. He is working on the specification and development of the LUCAS Calculation and Reporting Application (CRA). It is a component of LUCAS that combines and organises the outputs of the other components, generating carbon and greenhouse gas numbers by land class and carbon pool. This allows the standard greenhouse gas inventory and Kyoto reports to be populated. His work is vital to ensuring that New Zealand has a creditable and robust system. In another life he was a survey statistician at Statistics New Zealand and senior research analyst at the Ministry of Education.



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Craig Elvidge, senior analyst – calculation and reporting application

+ Advancing our understanding of carbon in soils is senior analyst – soils **Jude Addenbrooke**. She has been with LUCAS and the Ministry for six months. Jude is focused on producing national estimates of soil organic carbon stocks across all land uses and predicting change in carbon stock with change in land-use using a dataset modelling approach. Short term, Jude is bringing together and making improvements to current datasets (reclassification of land-use classes to improve accuracy) and modelling (spatial autocorrelation analyses to reduce bias) and contributing to the development of the CRA. Longer term (over the Kyoto first commitment period), she is working on improvements to the data and models to reduce uncertainty. Jude has a background in soil science (pedology) and sustainable land management. Prior to joining the Ministry she worked in regional government and private industry roles.



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Jude Addenbrooke, senior analyst – soils

+ Senior analyst – natural forest **Andrea Brandon** has been working for LUCAS for 16 months. She manages the estimate of carbon stocks and change in natural forest for use in the LULUCF tables required for New Zealand's Greenhouse Gas Inventory. Over the next two years Andrea will follow up the initial measurement of the plot network with data quality work to ensure the database is fit for purpose. She will produce the natural forest carbon stock component of the UNFCCC LULUCF report and contribute to the development of the CRA. Over the next five years she will manage a re-measurement of the natural forest plot network to ensure data delivered from the programme is accurate and quality assured. Andrea previously worked for the Department of Conservation as a conservancy botanist in the Waikato. She has a background in botany, plant ecology and threatened species management.



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Andrea Brandon, senior analyst – natural forest

+ LUCAS senior analyst – reporting for land use and forestry is **Bridget Fraser** (previously Geard) who has been working at the Ministry since March. Previously she was the work-stream leader for planted forests at the Ministry for Agriculture and Forestry (MAF) looking after data collection and analysis of the post-1989 planted forest data. Her main focus now is the compilation of the land use, land-use change and forestry sector chapter and tables required for New Zealand's Greenhouse Gas Inventory and ensuring the data meets New Zealand's Kyoto Protocol obligations. These provide evidence of the emissions and removals from changes in land use and forestry in New Zealand from 1990. The first report using LUCAS data is due with the UN on the 15 April 2010. Before working on LUCAS and at MAF Bridget worked for StatisticsNZ and Fletcher Challenge Forests in the area of forestry measurement and statistics.



+ Bridget Fraser, senior analyst – reporting for land use and forestry

+ Data quality assessor **Earle Goodfellow** has been with the LUCAS team for the past six months after 20 years in IT and five years contracting in and around the Ministry of Health, ACC and Tranzqual, mostly on data-related projects. Earle provides advice on quality assurance and quality control across the entire National Inventory Register (NIR), not just LUCAS. His role is to ensure the UNFCCC principles of transparency, accuracy, completeness, comparability and consistency are carried out across the LUCAS programme to provide climate change reports to the UN.



+ Earle Goodfellow, data quality assessor

+ LUCAS senior analyst – planted forest **Alan Bell** has just joined the LUCAS team. His role is to manage the estimate of carbon stocks and change in planted forest for use in the land-use change and forestry sector and the forestry tables required for New Zealand's Greenhouse Gas Inventory. This work involves analysing the plot data for the post-1989 planted forests measured in 2007 and 2008 and also developing an inventory plan for pre-1990 forests to be measured in 2010. He is also helping develop the CRA. For the past 17 years Alan has been a forestry consultant working on forest assessment and valuation. Before that, he worked for the New Zealand Forestry Corporation as a corporate planner and forest valuer. He began his forestry career with the New Zealand Forest Service.



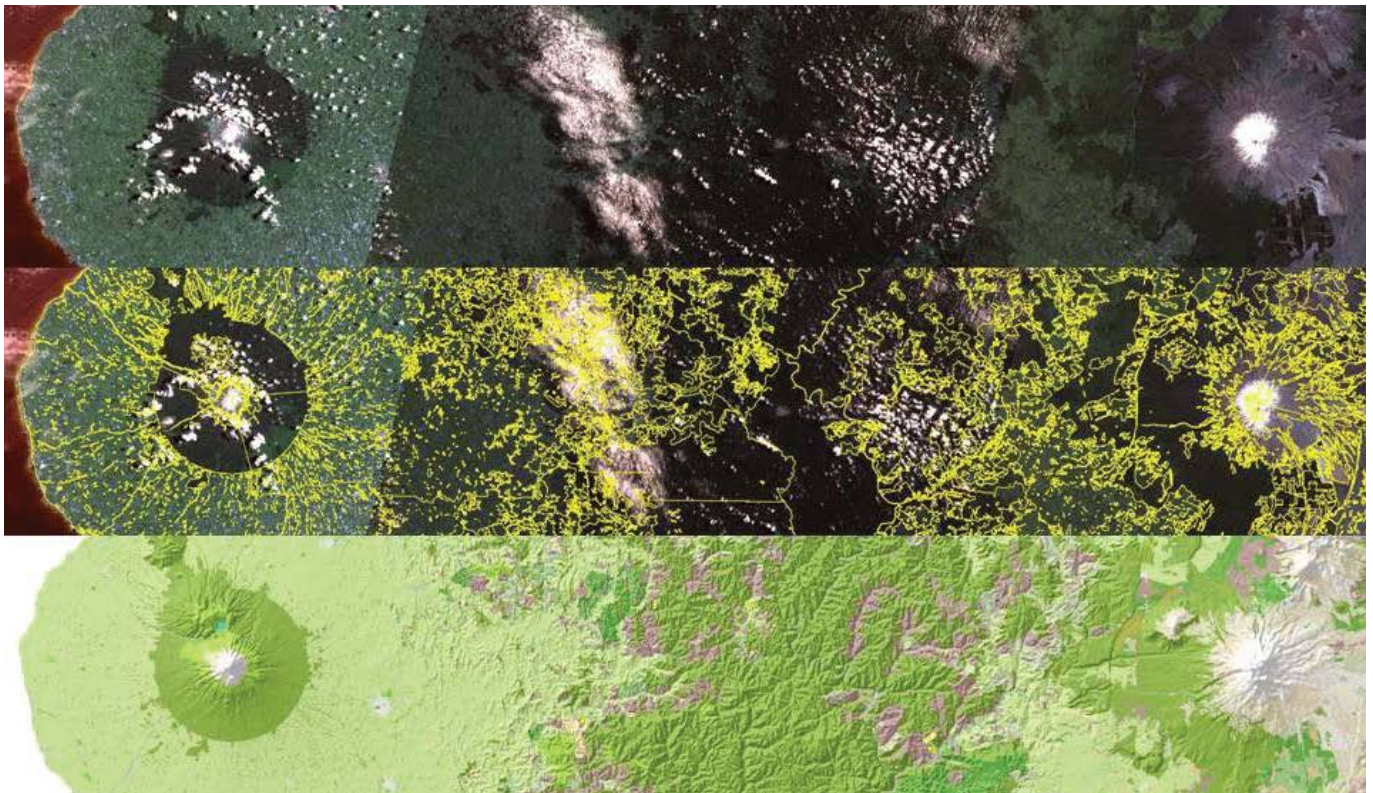
+ Alan Bell, senior analyst – planted forest

The Land Cover Database – LCDB3

The Land Cover Database (LCDB) is a national database used to support environmental decision-making. The LCDB is a digital map that is created by grouping similar types of vegetation and other land cover identified from satellite images. The information in the database can be used to analyse land use and habitat distribution. At present, there are two versions of the LCDB, one mapping land cover in 1996/97 and the other mapping land cover in 2001/02.

A new land-cover database project is proposed to provide a digital map representing land cover for 2007/08. The project, known as LCDB3, is designed to capitalise on existing satellite imagery from the mapping component of LUCAS. This will significantly reduce the cost of the project.

The Ministry is now scoping the requirements for the new LCDB and will be assessing these requirements for technical feasibility. A design for LCDB3 will be proposed and a business case developed setting out costs and funding options, both from within the Ministry and from other parties, as required. LCDB3 workshops with users of land-cover information were held in Wellington, Christchurch, Dunedin, Palmerston North and Hamilton earlier this year. For more information about the project please contact Karl Majorhazi karl.majorhazi@mfe.govt.nz



LCDB mapping of Mt Taranaki: satellite image (top) to land-cover boundaries (middle) to land-cover database (bottom).

Photo competition

Welcome to the fourth LUCAS photo competition to identify a geographical feature on a satellite map. The LUCAS programme team introduced the competition in the winter edition of the newsletter to see if readers could identify the part of New Zealand depicted in SPOT 5 satellite imagery.

All those who correctly identify the location of the satellite image opposite will go into a random draw for the chance to win a copy of the book *No clouds today: the history of aerial mapping in New Zealand and the South Pacific* by Peter Stephens, Piet van Asch and Mairi Clark.

Competition terms and conditions: The prize is not redeemable for cash or transferable. Entrants must supply the exact map coordinates of the satellite image to be entered in the draw. Entries must be submitted by email no later than **Friday 19 June 2009**. The prize will be drawn on **Friday 26 June 2009**. The judge's determination of the winner will be final and no correspondence will be entered into. Entry is limited to one per person. The promotion is open to New Zealand residents only. Ministry for the Environment employees, contractors, and their immediate families are disqualified from entering.

Last time we showed satellite imagery of **Holdens' Bay, Mokoia Island, Lake Rotorua**.

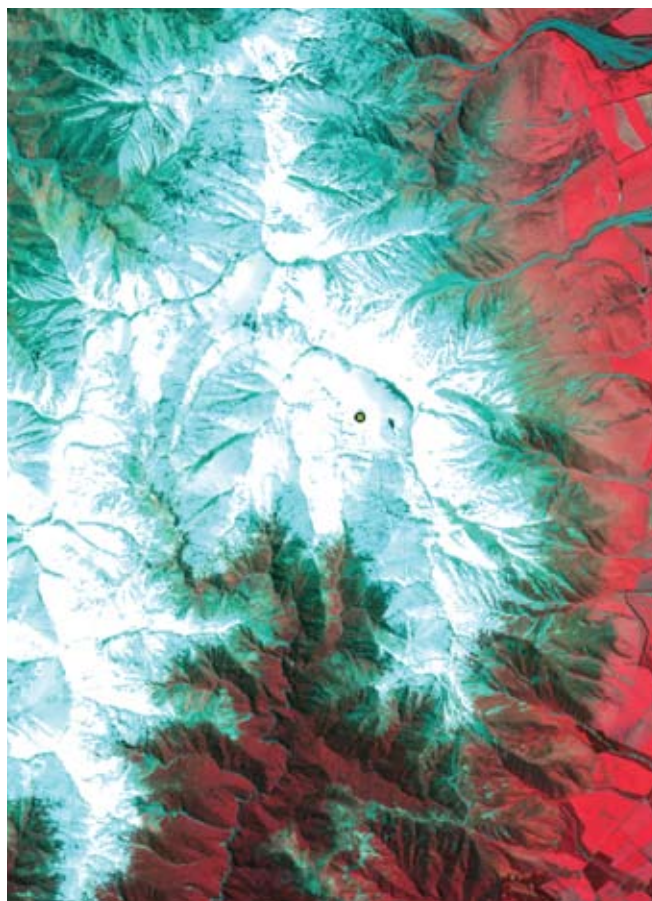
38deg 05' 51.52" 176deg 18' 18.3"
2801000 6339000 NZMG
1890860 5777480 NZTM

The competition winner was **Andrew Steffert**.

Do you know where this SPOT 5 satellite photo is?

The answer will appear in Issue 7 of 'Looking at LUCAS'.

You can get a copy of the SPOT 5 satellite photo by emailing LUCAS (see details below).



+ NEED MORE INFORMATION?

The New Zealand Land Use and Carbon Analysis System is a programme of work set up to measure and monitor the amount of carbon (carbon stocks) held in New Zealand's forests and soils.

Carbon stock information is required for New Zealand's reporting requirements under the Kyoto Protocol and the United Nations Framework Convention on Climate Change (UNFCCC). LUCAS is an important part of the Government's climate change policy package and will help inform New Zealand's future international climate change negotiations.

If you require more information about the LUCAS programme, the available SPOT 5 imagery, the LUCAS web pages, or the natural and planted forest inventory activities (including the use of airborne LiDAR) please email lucas@mfe.govt.nz

To subscribe or unsubscribe from this newsletter please email lucas@mfe.govt.nz

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