

# Citation

**Title:** Topoclimate South Soil Mapping Project

**Custodian:** Crops for Southland

**Owner:** Topoclimate South Trust

**Jurisdiction:** New Zealand

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# Description

## Abstract:

The Topoclimate South project was a 3 year project which mapped soil types in Southland to a 1:50 000 scale, and fully described the soil properties for each soil type. Previous soil surveys in this region were done at a much higher scale (generally 1:250 000) or did not fully describe soil characteristics. Only a few soil surveys from the Gore - Waikaka - Mandeville and Edendale areas have been used by Topoclimate South without significant modification.

The Southland region was broken up into 35 smaller areas. In each of these areas auger samples were taken at a frequency of about one observation per twenty hectares. Auger samples involved the field staff taking a core sample to visually describe the soil type, and to attempt classifying the soil to the New Zealand Soil Classification System. All field observations were recorded on a field description sheet, and each auger point was assigned a unique number.

Auger points were manually entered onto a hardcopy topographic map while in the field. Points which had the same soil classification were then grouped together and soil boundaries drawn in based on topographical features (i.e. river terraces, contour lines etc) or based on best estimate.

Every field map was transferred to an office map of each area. Once the area map was complete and the boundary lines agreed upon, a profile description was done for each soil type in the area. This involved selecting an auger point which was "typical" or representative for that soil. Factors like drainage, landuse, slope, and human interference were taken into account when choosing a typical profile point.

A profile description of the soil involved digging a pit one metre square to a depth of at least one metre. A complete chemical and physical analysis was carried out. This included measuring the following: rooting depth, pH, P-retention, permeability, bulk density, structure, calcium, carbon, nitrogen, sodium, magnesium, potassium, particle size, base saturation and parent material.

Soil codes were then assigned to the soil boundaries on the office map. The office map was then sent to the Institute of Geological and Nuclear Sciences (IGNS) to be digitized. The resulting ArcInfo layer was then converted into a MapInfo layer. This enabled the data to be overlaid on topographical information to check the boundary lines had not changed. The MapInfo map was also checked against the original hardcopy map for alterations to soil types and for deletions.

Once all 35 areas had been completed, the MapInfo layers were then combined to produce a Southland wide soils map.

In total, over 10,300 auger points and over 650 profile points were sampled in mapping the "productive" areas of Southland and parts of south Otago.

Crops for Southland then contracted soil scientists to develop a descriptive summary document for each soil type based on the typical profile data. These documents take two forms. A Soil Information Sheet series summarizes soil vulnerabilities, landuse versatilities and general characteristics, and is available to the public. A Soil Technical Data Sheet series, which includes additional horizon information, and physical and chemical properties, is not freely available to the public and is aimed at an audience with expertise in soil science.

### **Purpose:**

The Southland region has soil types that are marginal for the growth of many crops. It is hoped that having quality information available will lead to better utilization of present land resources and the introduction of new crops, leading to increased employment in the region.

A more immediate goal of the Topoclimate South Project soil survey is to produce accurate soil maps for most of the productive areas of Southland at a 1:50,000 scale and identify certain soil properties as part of the process.

### **Spatial domain:**

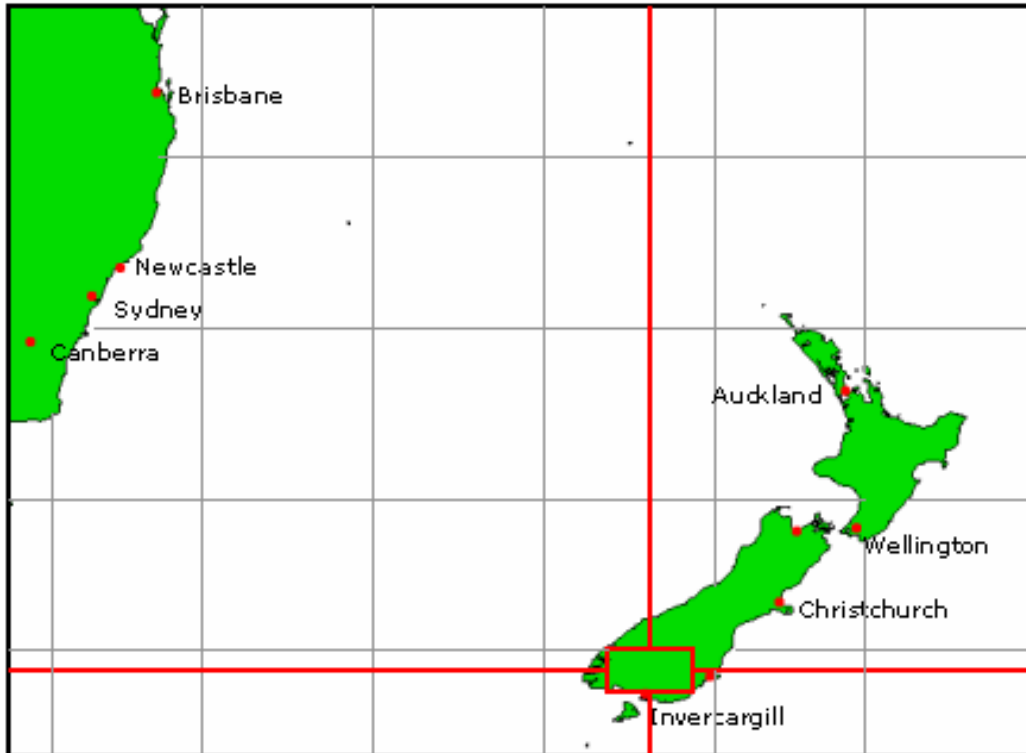
### **Geographic Extent:**

Southland and south Otago (New Zealand), excluding Fiordland, the Hokonui Hills, Takitimu Mountains, Longwood Range, Umbrella Mountains, Garvie Mountains and the Catlins area

### Geographic bounding box:

The bounding box encloses the maximum extents of the dataset. There may be voids or gaps within the bounding box, depending on the defined coverage of the dataset. Outer bounding rectangle as Latitude/Longitude coordinates uses the Geodetic Datum 1949 based on the International (Hayford) Spheroid (expressed as Degrees Minutes Seconds):

- **North bounding latitude:** -45° 23' 05.6" S
- **South bounding latitude:** -46° 37' 40.4" S
- **East bounding longitude:** 169° 16' 26.2" E
- **West bounding longitude:** 167° 30' 29.8" E



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## Date of Creation

**Beginning date:** 01 May 1998 (1998-05-01)

**Ending date:** 30 October 2001 (2001-10-30)

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## Dataset Status

**Progress:** Complete

**Maintenance and update frequency:** As required

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## Access

### Stored Data Format:

**Digital:** ArcView (version 3.2), MapInfo

### Available Data Format:

Data and maps are available in a wide variety of formats.

### Access Constraints:

Data collected are owned by the Topoclimate South Trust through Intellectual Property Rights. The custodian of the dataset is Crops for Southland, who are responsible for the accuracy, currency, storage, security and distribution of the dataset.

Crops for Southland have delegated the storage and maintenance of the authoritative record to Environment Southland.

Access to the dataset is restricted and permission must be sought from the Topoclimate South Trust. Permissions will be granted on a case-by-case basis.

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Crops for Southland and Environment Southland would appreciate receiving a copy of any publication that uses this Information Sheet as a source.

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## Data Quality

### Lineage:

The Southland region was broken up into 35 sub-regions. Each sub-region was then mapped in area by area. Field observations for each area were marked on a hardcopy topographic map while in the field. These observations were then marked on an office map of the sub-region. Once the sub-region map was complete, it was sent away to IGNS to be digitized into an ArcInfo layer. This was then converted to a MapInfo layer which was checked against the original hardcopy for errors and also checked against a topographic map for logic in the boundary lines (i.e. follow contours, terraces etc). Each sub-region map was then joined to produce one soil type map for the Southland region.

The MapInfo layer has since been converted into an ArcView 3.2 shape file and the attribute data widened to include taxonomic details. This shape file is available through a Map TV application.

### Positional accuracy:

The sample locations were established using a Trimbell Pathfinder GPS unit. Sample points were overlaid on a topographic map on a laptop computer. This enabled field staff to visually assess the accuracy of the northings and eastings on the computer against where they actually were. If the GPS unit was not working, or giving inaccurate results, then the sample point would be manually shifted to a position believed to be more accurate based on the underlying topographic map. The Trimbell GPS unit recorded to one metre with an accuracy of +/-5 metres. Manually obtained co-ordinates were recorded to one metre, with an estimated accuracy of +/-500 metres.

### Attribute accuracy:

No formal attribute accuracy assessment has been undertaken.

The soil type attribute is a commonly used New Zealand map unit code. This code is comprised of soil series name in code form, slope code and soil depth code e.g. MeU3 where Me is Mandeville, U is undulating slope of 0-7 degrees, 3 is a shallow soil of <45cm. Random checks have been made comparing the slope part of the code with a contour map. No errors were found.

In some polygons there are multiple soil types eg MeU3 + GeU2. This means that two soil types were found in the area but due to the scale of the project no attempt has been made to separate the soil units out. Although there are multiple soil types, the dominate soil type is always featured first. In the above example this means there is more Mandeville (Me) soil than Gore (Ge) soil in the area. While these polygons are an accurate representation for a 1:50 000 map, if the scale was to become finer (say at a farm level), then these multiple soil type areas would need to be reassessed to produce an accurate map.

The soil boundaries are accurate, at worst, to the nearest auger point. But in most cases the boundary lines are based on topographical features and field observations making them much more accurate. Generally speaking, the soil boundaries for a 1:50 000 map are accurate to +/-100m of the true boundary, or better.

#### **Peer review:**

The Topoclimate Soil survey was conducted by pedologists trained by Landcare Research (Manaaki Whenua), the Crown Research Institute responsible for national soils data in New Zealand. Dr Peter MacIntosh, an experienced pedologist with Landcare Research, was initially contracted by the Topoclimate South Trust to initiate and supervise the soil survey project for the first year. Subsequently, Dr Allan Hewitt, a senior scientist with Landcare Research, was contracted to provide quality control of decision making and survey procedures for the duration of the Topoclimate Project.

**Completeness:** The dataset is complete

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## **Data Contact Information**

**Contact Organization:** Venture Southland

**Contact Position:** Information Officer

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## Metadata Contact Information

**Metadata Date:** 20 February 2004  
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If there are any errors in this metadata record please contact Environment Southland so that errors may be corrected.

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## Additional Metadata

More information is available at

<http://www.cropssouthland.co.nz/topoclimate.asp>

<http://www.southlandnz.com/sections/farming/>

The data is referenced to the New Zealand Map Grid (NZMG), which uses the Geodetic Datum (1949). Errors in the data due to misclassification (not changes since classification) can be reported to the Contact Organization for inclusion in the next release.

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