



<our country,
our technology

FROM THE MOUNTAINS TO THE SEA,
FROM THE FORESTS TO THE CITIES,
FROM THE PLACES TO THE PEOPLE –
OUR PLACE IS SPECIAL



101
< OUR COUNTRY,
OUR TECHNOLOGY

Our country, our technology

Beauty in New Zealand is everywhere. From the mountains to the sea, from the forests to the cities, from the places to the people. Beauty is so everywhere that we take it for granted.

Our international visitors don't take it for granted. We had 2.3 million of them in 2004, and not just because of *The Lord of the Rings*. Many Kiwis themselves become tourists each year to see more of their own country. Few other places can boast our landscapes, plants, animals and people.

Developments in technology and science have allowed us to develop tools that let us explore our country like never before.

The land

From above, our land looks like a patchwork quilt. On the ground, with the help of the Land Environments New Zealand (LENZ) classification, we can sort, group and map this patchwork by its climate, landform and soils. The Kaweka Range in the North Island has similar climate, soils and landforms to the distant Seaward Kaikoura Range in coastal Marlborough. And Banks Peninsula, near Christchurch, matches the Wairarapa hill country. The lowlands in Hawke's Bay and the Manawatu mirror parts of Taranaki and northwest Nelson.

Some areas near each other can be vastly different. A great example is the transition from Christchurch on the low, dry Canterbury Plains, through high-lying Arthur's Pass in the Southern Alps, to Hokitika on the wet West Coast.

By sorting and grouping New Zealand into 20 broad land environments, our country is split up as shown in the map on the next page. These 20 different environments can be teased out further to pick out 500 types of land environment across our country. Our computers can zoom in or out for whatever scale we need.



LAND ENVIRONMENTS NEW ZEALAND (OR LENZ FOR SHORT) IS A NATIONAL ENVIRONMENT-BASED CLASSIFICATION OF ECOSYSTEMS MAPPED ACROSS NEW ZEALAND'S LANDSCAPE.

LENZ uses 15 climate, landform and soil factors likely to influence the distribution of species to classify and map land environments that have a similar ecosystem character. To identify each environment, a letter and numbering system is used. LENZ can be mapped at four different levels – containing 20, 100, 200 or 500 environments.

We have protected more conservation land than almost any other country. Of New Zealand's total area of 26 million hectares, about 31 percent or eight million hectares are formally protected. Nearly half of our public conservation land is in two mountainous land environments – New Zealand's central mountains and the Southern Alps.

LENZ is a powerful tool that can be used to answer questions about managing our native plants and animals, deciding what crops could be grown where, and even to identify what areas certain pests could thrive in if they got the chance.

MAPPING ENVIRONMENTS
 WITH SIMILAR CHARACTERISTICS



KEY

■	A – Northern lowlands
■	B – Central dry lowlands
■	C – Western & Southern North Is. lowlands
■	D – Northern hill country
■	E – Central dry foothills
■	F – Central hill country & Volcanic plateau
■	G – Northern recent soils
■	H – Central sandy recent soils
■	I – Central recent poorly-drained soils
■	J – Eastern dry recent soils
■	K – Central cold recent soils
■	L – Southern lowlands
■	M – Western South Island recent soils
■	N – Eastern South Island plains
■	O – Western South Is. foothills & Stewart Is.
■	P – Central mountains
■	Q – Southeastern hill country & mountains
■	R – Southern Alps
■	S – Ultramafic soils
■	T – Permanent snow & ice

^ This map shows LENZ Level 1 with 20 environments lettered A to T.

For more information about LENZ go to:

<< www.landcareresearch.co.nz/databases/lenz/index.asp



Getting fresh about fresh water

New Zealand's river network carries fresh water across and through our land. There are about 200,000 kilometres of rivers in New Zealand, excluding small headwaters where a river springs forth. Joined together, they would be long enough to stretch around the Earth more than five times.

With the help of the River Environment Classification (REC), rivers of similar character have been mapped across New Zealand's landscape. Individual river sections are mapped according to climate, topography, geology and land cover conditions. We have then grouped together sections which have similar environmental characteristics, no matter where they are.

MAPPING RIVERS WITH SIMILAR CHARACTERISTICS



KEY	Description
■	Glacier Mountain, Hard Sedimentary
■	Mountain, Hard Sedimentary
■	Hill, Hard Sedimentary
■	Hill, Soft Sedimentary
■	Low Elevation, Hard Sedimentary
■	Low Elevation, Soft Sedimentary
■	Lake
■	Spring
■	Hill/Low Elevation, Volcanic

< This map shows the Canterbury region river network classified and mapped using the REC. Rivers are broken into nine different groups according to the type of landscape from which they spring (eg, source of flow is glacial mountain) and their underlying geology (eg, soft sedimentary). The key shows a colour code for each different river type. For more information about the REC go to:

<< www.niwasience.co.nz/ncwr/rec/

- ∨ This photo, taken from a satellite, shows the bottom half of the North Island and parts of Nelson, Tasman and Marlborough. The coloured ribbons show New Zealand's river network for these areas. With the help of the REC, rivers can be identified according to their climate and source. For example, blue rivers have a cool, wet climate and low elevation source, green rivers have a cool, wet climate and hill source.

OUR MYRIAD OF RIVERS AND STREAMS FROM SATELLITE

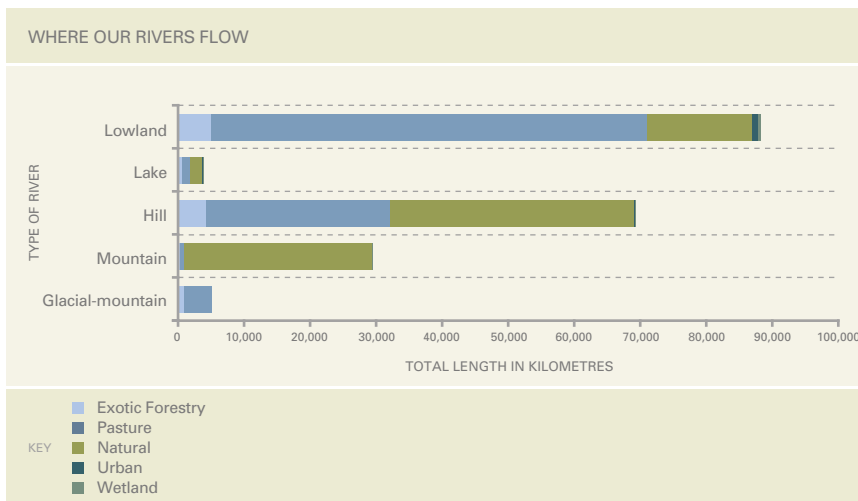


The Waikato River is a great example of the diversity within and among New Zealand’s rivers. A journey along its length takes you from its source in Lake Taupo to its mouth at Port Waikato, where its fresh waters mingle with the salty Tasman Sea.

Lake Taupo – our largest freshwater lake – is itself fed by waterways that drain the volcanic plateau of the central North Island. These relatively young waterways – abundant with wildlife – tumble clear, fast-running water down into the lake. When Taupo’s waters escape into the Waikato River and begin their journey to the sea, they set off with a turbulent rush, foaming over Huka Falls. By Huntly, as the landscape flattens and sediment washes into the river from developed land in its catchments, the mighty Waikato becomes a brownish, meandering flow.

The South Island delivers equally diverse rivers, including steep rocky streams that drain the snow melt from the Southern Alps before giving way to wide, braided gravel-bed rivers on the east coast plains. Near its mouth, the Rakaia River channel expands becoming almost two kilometres wide and is crossed by the country’s longest road and rail bridge.

Rivers on the west coast of the South Island travel a short distance from their mountainous origins to the Tasman Sea.



^ This graph shows the total lengths of the different types of river we have, depending on their source – lowland, lake-fed, hill, mountain or glacial-mountain. It further divides each type of river to show the different land cover each flows through – the key to the different colours is below. Lowland rivers tend to be surrounded by pasture. Hill rivers are surrounded by a mix of native bush, tussock grasslands and pasture, along with a small amount of exotic forest. Rivers originating from lakes tend to be surrounded by native bush and exotic pasture. Rivers with a glacial-mountain and mountain source mostly flow through native bush or tussock grasslands.



New Zealand's river environments are diverse just like its land environments.

Here, a glacier-fed river (A) on the West Coast of the South Island contrasts with a mountain-fed braided river (B) on the Canterbury Plains of the East Coast. Both of these South Island rivers begin in high elevation areas, contrast this with the low elevation warm climate waterway of the North Island, shown in photo (C).



WHATAROA RIVER (A)

Photo courtesy of NIWA



WAIMAKARIRI RIVER (B)

Photo courtesy of NIWA



TRIBUTARY OF
THE MOKAU RIVER (C)

Photo courtesy of NIWA

THE MARINE ENVIRONMENT CLASSIFICATION (MEC) IS A NATIONAL ENVIRONMENT-BASED CLASSIFICATION OF MARINE ECOSYSTEMS MAPPED ACROSS NEW ZEALAND'S OCEAN SPACE.

From the surface, the ocean appears to be a uniform mass of water. Underneath, however, there is great variation. Using a combination of eight physical factors including depth, tides, waves, sunlight, water temperature and depth of wind, we can classify and map marine environments that have a similar ecosystem character. The marine environments can be teased into finer classifications and mapped at different levels – from two to 70 or more environment groups.

What is around us?

Our islands have 15,000 kilometres of coastline surrounded by 430 million hectares of ocean we call our own. Our exclusive economic zone stretches 200 nautical miles offshore, covering four million square kilometres. It is the fourth largest in the world, and makes our marine area more than 15 times as big as our land area. Australia is sitting 1600 kilometres to the west of us.

Our ocean space is as diverse as our land space. You may have heard of the Kermadec Trench which stretches for some 1200 kilometres. We also have approximately 800 underwater mountains in our ocean space, some of which are higher than Mt Cook. Much of our ocean space is yet to be explored, but with the help of the Marine Environment Classification we can see it like never before.



< The map shows nine different marine environments. The key shows a colour code for each different environment type. For more information about the MEC go to:
<< www.niwasience.co.nz/ncco/mec/

