Wetlands: are they a potential solution to reduce the risk of flooding? | *Humedales: ¿una posible solución para reducir el riesgo de inundaciones?*

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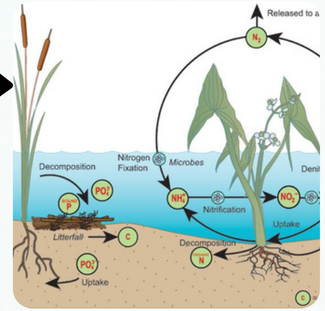
Wetlands

Recreation

Ecosystem service

Nutrients regulation



Ecosystem service

Ecosystem service

Ecosystem service

Habitat & Biodiversity

Food and water supply

Disturbance and hazard regulation

Floods:

"An overflow of water that submerges usually dry land"

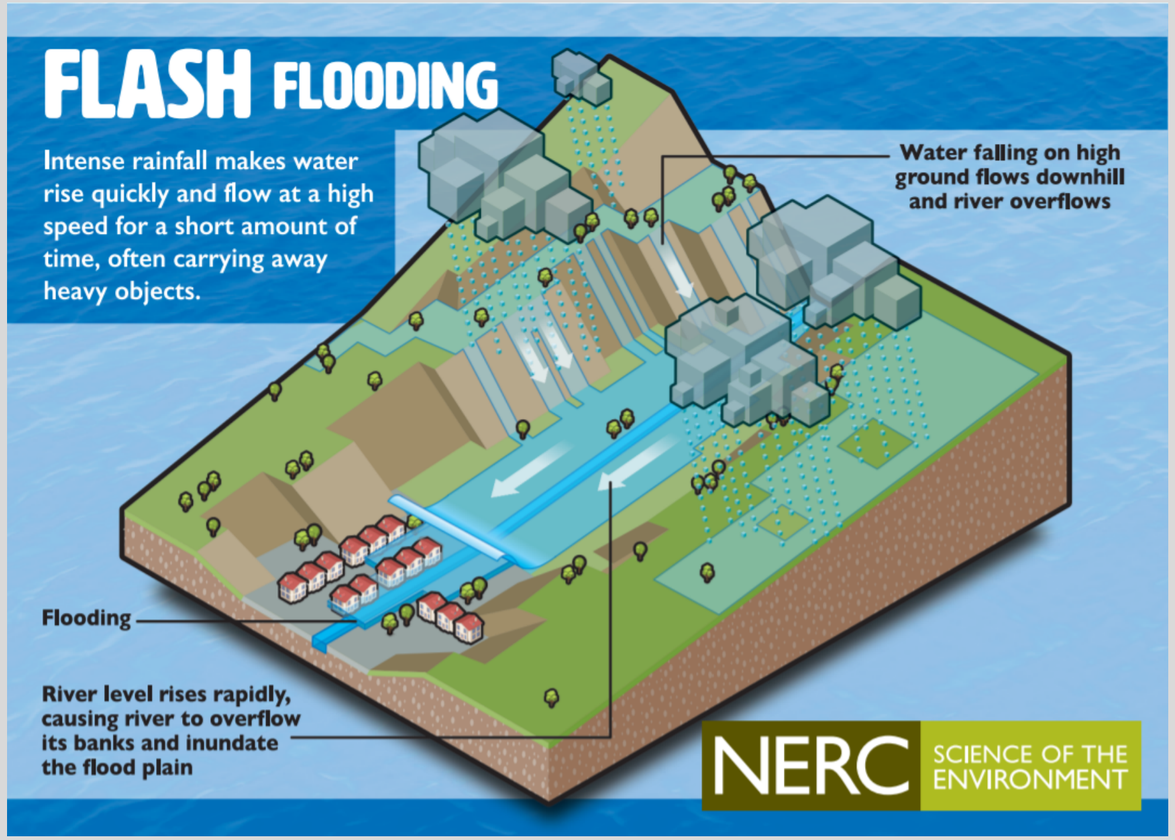
1998-2017:

43% of all recorded natural disasters

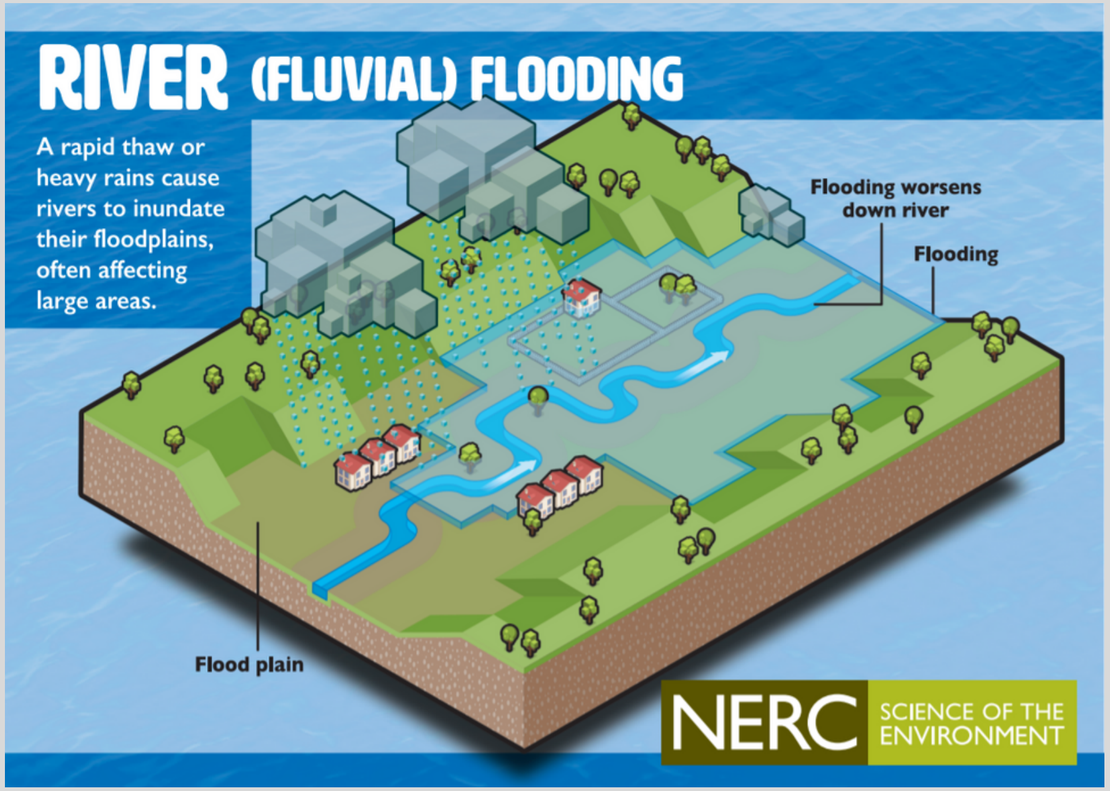
Third most damaging

(WHO, 2017)

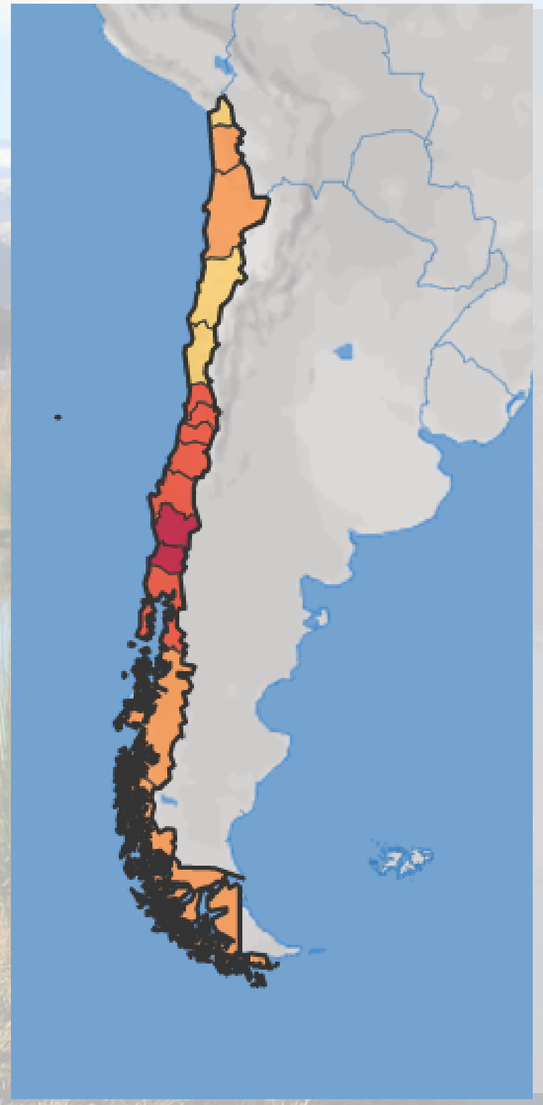
Types of floods



Types of floods

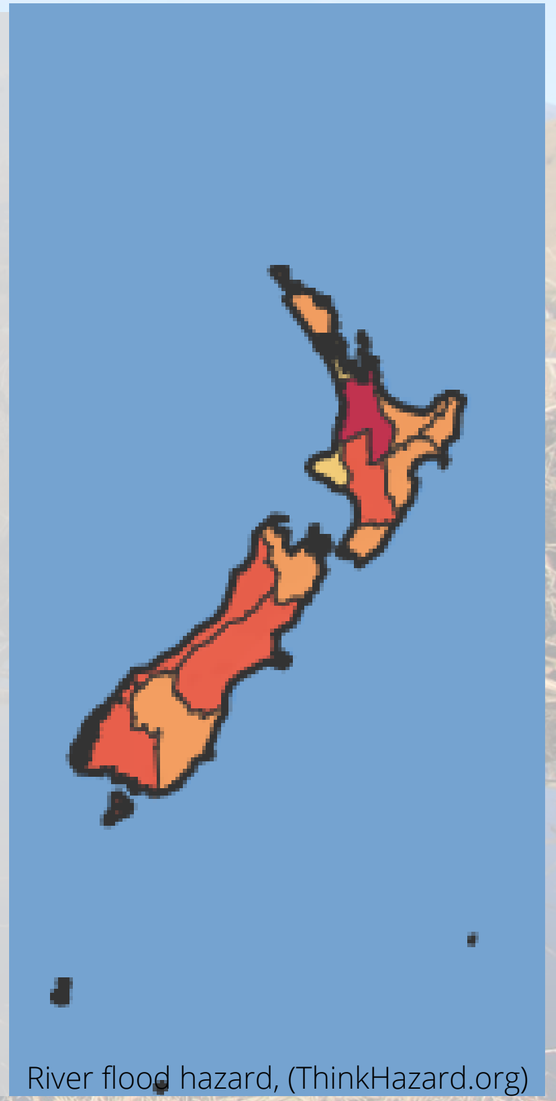



Climate change
Increase flood risk
↑ heavy precipitation frequency
↑ catchment wetness
Sea level rise



Flood Management Strategies

The management of flood risk is encompassed as part of the overall response to managing emergencies and disasters.
Both countries recognise the importance of climate change mitigation and adaptation



River flood hazard, (ThinkHazard.org)

Chile

Central Government's mission is to plan, promote, coordinate, and implement preventative actions, responses, and rehabilitation against risk, situations, emergencies, and disasters.

Aotearoa/ New Zealand

Ōpāwaho/Heathcote River

Ōpāwaho/Heathcote River

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Structural mechanisms

- stopbanks, extraction, flood gates

Non- structural

- objectives, polices, rules, min. flows

Emergency Management

- warning systems, civil defense

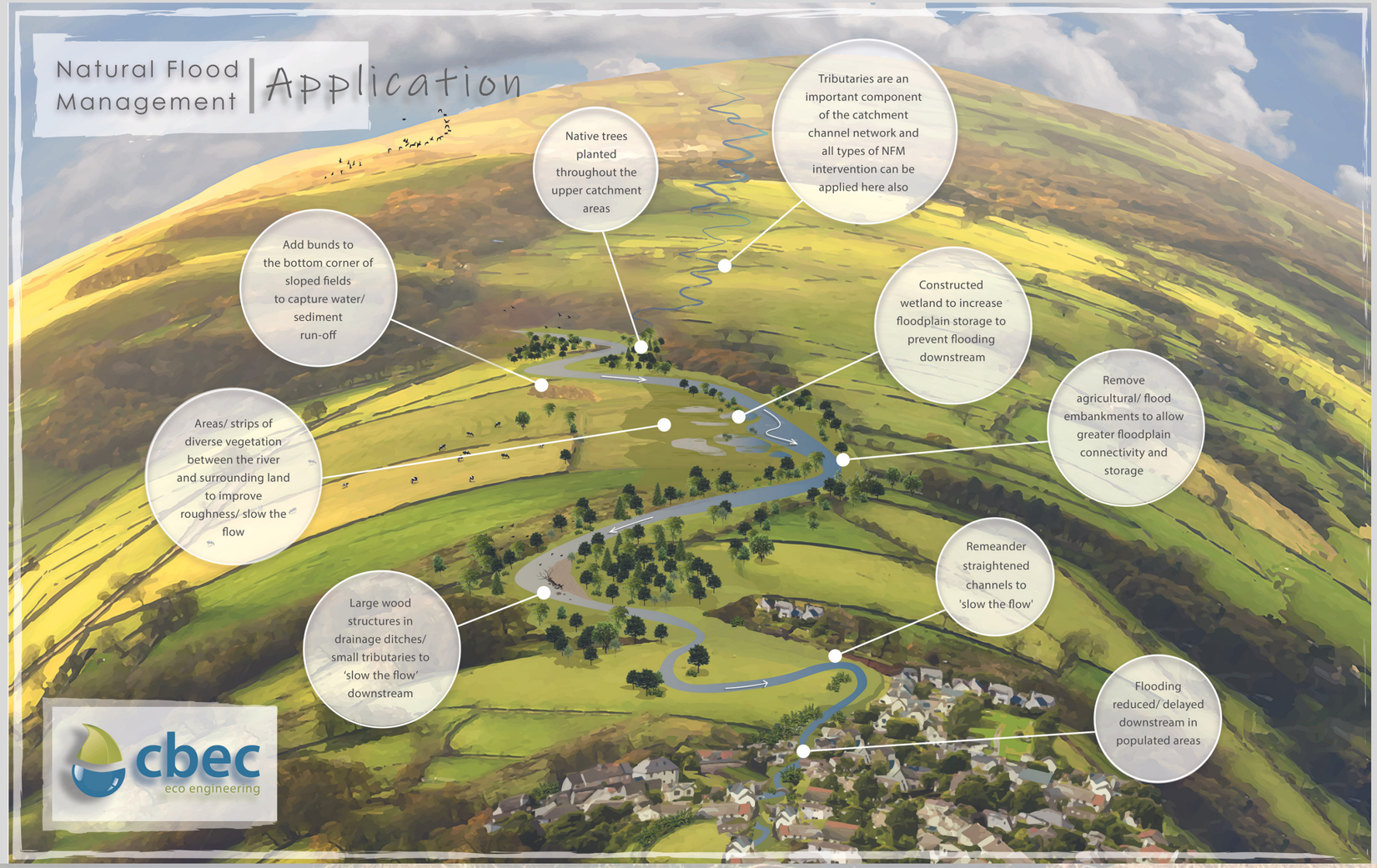
Other tools

- education & information

Both countries directly and indirectly utilise wetlands as a tool to mitigate the impact and risk of flooding.

Others country examples:

The European and United Kingdom's policy is moving towards a 'Natural Flood Management' approach, which aims to reduce flood risk through working with the environment on a catchment- based level (Connelly, A. et al 2020).



Could Wetlands reduce the risk of floods?

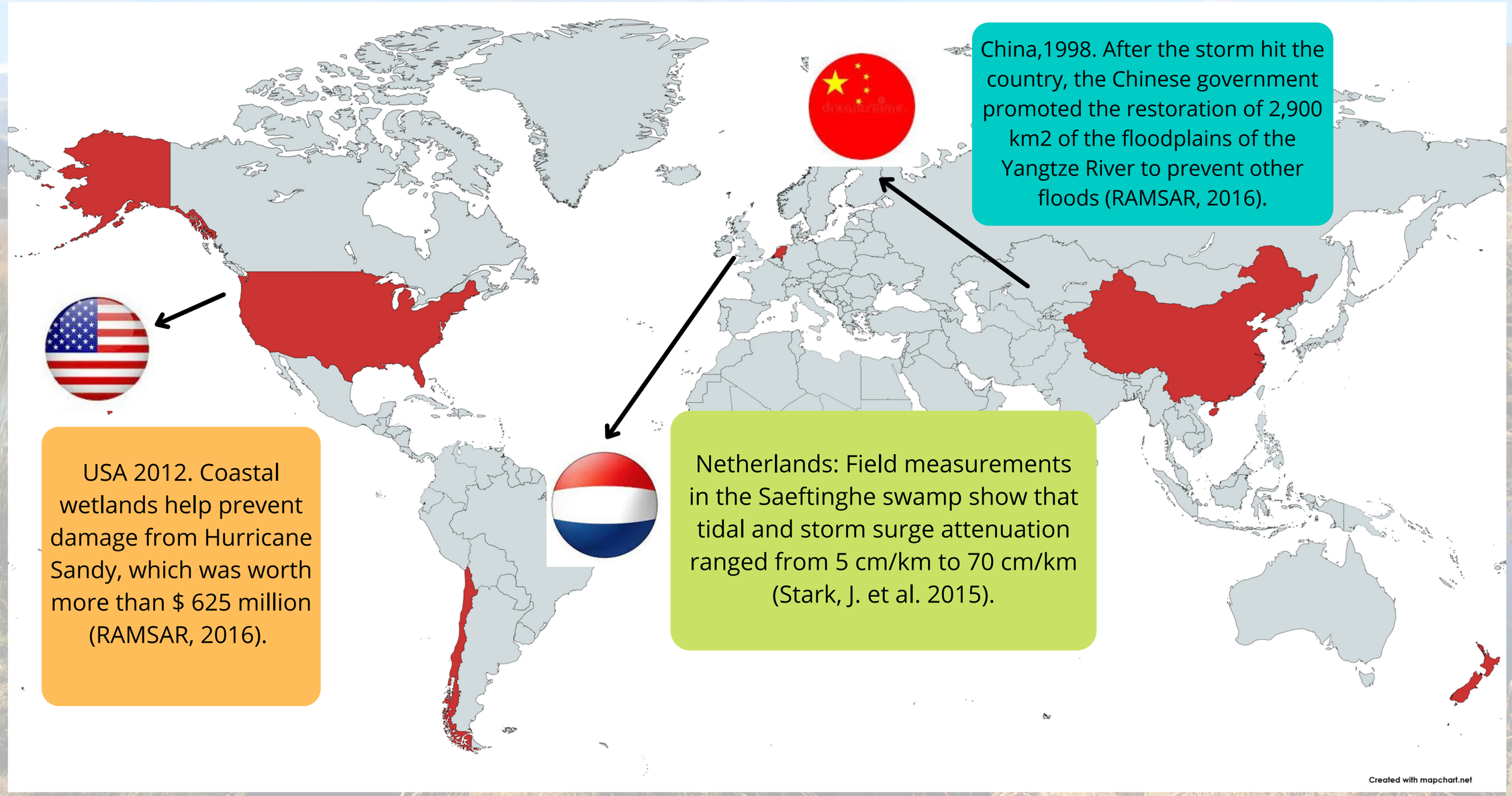
Could Wetlands reduce the risk of floods?

Studies indicated that wetlands could be. They store water, delaying the timing of flood, and significantly reduce peak flows (M.Acreman and J. Holden 2013)

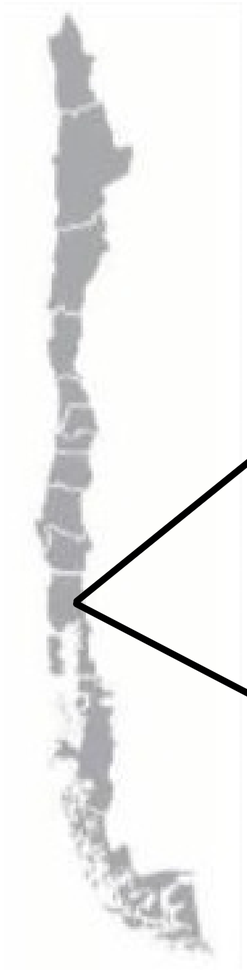
Wetlands vegetation has a vital function in slowing down the flow

The effects of wetland on flooding depend on various other factors

International experience



Chilean experience



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Llanquihue, Baquedano Wetland

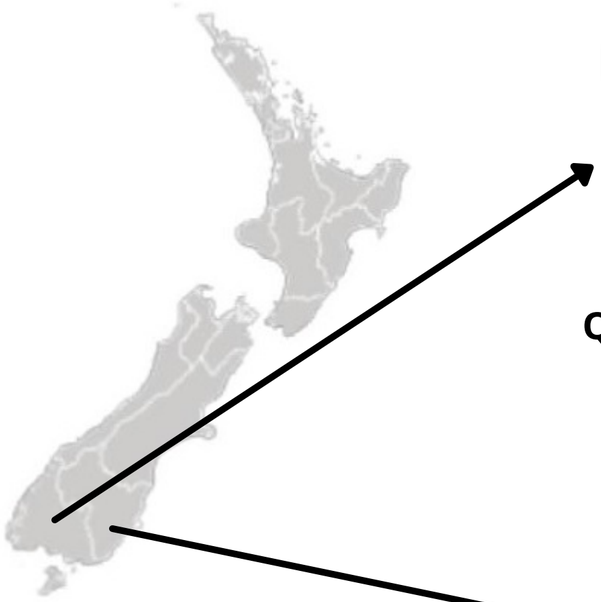
"The control of flooding by wetlands can be relevant to human well-being".

Andrés Riveros, Legado Chile Foundation

"When a wetland is restored, it can recover its functions, such as flood control, as happened in the Baquedano wetland, where it has acted as a flood absorber".

Verónica Irarrázabal, Legado Chile Foundation

New Zealand experience



Queenstown, Matakauri Wetland

"After several significant floods that Queenstown had been affected by in 1990, the local government identify the Matakauri wetland as a flood retention reserve that could help to retain the flood water that was coming into the town"

Dawn Palmer, Natural Solution for Nature Ltd

Dunedin, Sinclair Wetland

Flooding consideration in the wetlands is more a human aspect rather than a focus of the wetland health. Its time to start acknowledging the importance of wetlands, valuing them for all the areas they benefit.

Glen Riley, Te Nohoaka o Takiauau/ Sinclair Wetland Trust

Floods: definitions, types and associated problems

Latin America Centre of Asia-Pacific Excellence

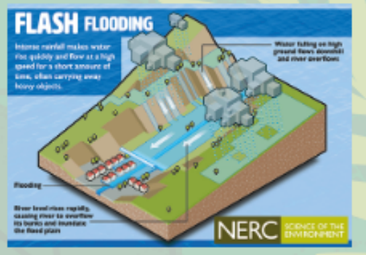
University of Otago

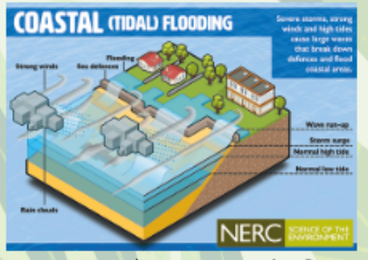
Definition

A flood is an overflow of water that submerges land that is usually dry. Floods are the most frequent type of natural disaster.

Types

Riverine and flash floods are the most common type of flood in Chile and Aotearoa (EM-DAT, 2021)



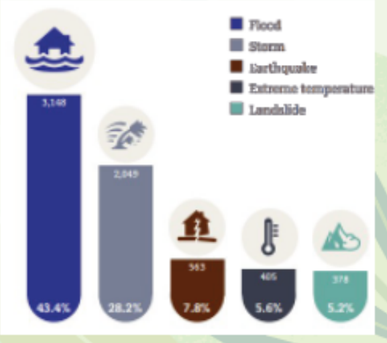


Source: Natural Environment Research Council, 2017

Effects and damages

Floods were the most frequent type of natural disaster from 1998 to 2017 and the third most damaging globally after storms and earthquakes.

Climate change is expected to increase flood risk through more frequent heavy precipitation, increased catchment wetness and sea level rise.



Source: ORED & UNISDR, 2017

Inundaciones: definición, tipos y problemas asociados

Latin America Centre of Asia-Pacific Excellence

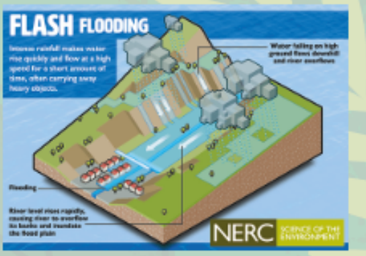
University of Otago

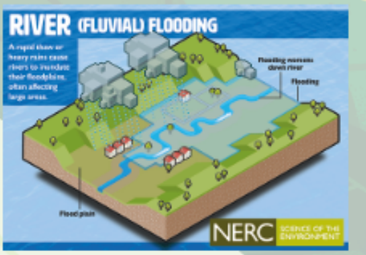
Definición

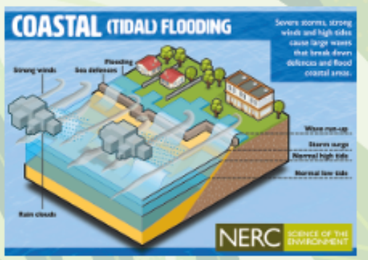
Una inundación es un desbordamiento de agua que sumerge una superficie que está usualmente seca.

Tipos

Las inundaciones fluviales y pluviales repentinas son las más comunes tanto en Chile como en Aotearoa (EM-DAT, 2021)







Fuente: Natural Environment Research Council, 2017

Efectos y daños

Fueron el tipo de desastre natural más frecuente entre 1998 y 2017 y el tercero más perjudicial después de tormentas y terremotos.

Debido al cambio climático, aumente el riesgo de inundaciones por aumentos tanto en la frecuencia de precipitaciones como en el nivel del mar.

Fuente: ORED & UNISDR, 2017

Many thanks to everyone who helped and supported us