Information topic	Details
Indicator name	**Number of days with extreme rainfall**
Domain and topic	Climate change: Extreme rainfall and drought
Indicator definition and units	Number of days with extreme rainfall, per calendar year, by TA. Extreme rainfall days are defined as days (very wet days) with rainfall amounts exceeding the 95th percentile, which was calculated from daily rainfall amounts across the climate normal period from 1981-2010.
Data source	CliFlo. NIWA's National Climate Database. URL: https://cliflo.niwa.co.nz/
Numerator	Annual number of days with extreme rainfall by Territorial Authority (TA)
Methodology	Climate stations were selected based on their proximity to the population-weighted centroid for a TA as well as completeness of data for the period 1981-2019. One weather station per TA was selected. Using the population-weighted centroid coordinates for each TA, we looked at weather stations within a 25km radius. The weather station closest to the centroid was selected, provided it was currently operating and had a long record of data (ie, minimum of 10 years of data). Where there was insufficiently complete data or the station was closed, we then examined the next closest weather station, and so on until the 'best fit' was found. In three cases, a climate station is used for two TAs (Hamilton/Waikato, Lower Hutt/Porirua, Tauranga/Western Bay of Plenty). In two cases, the only suitable climate station was currently closed and an exception was made (Kaipara, Opotiki). If a climate station's data had over 10% missing data for a calendar year, results for that year were excluded from analysis. The population-weighted centroid of a TA was calculated from 2018 Census data, using the geographic centroid of statistical area 1 (SA1, small Census area description) weighted by their usual resident population. The most recent Climate Normal for New Zealand was calculated as an average over the 30-year period 1981-2010 (all available data from all TAs was included). This average number acted as a benchmark against which current or recent observations were compared to (ie, anomalies).
Time period and time scale	Annual; from 1981 onwards

Spatial Coverage	National; by TA
Measures of frequency	- Number of days per year with extreme rainfall - Average number of days per year with extreme rainfall, by TA - 1981-2010 baseline average number of days with extreme rainfall
Limitations of indicator	There will be geographic variation in the number of extreme rainfall days across a TA that is not represented in this indicator because we have used one weather station per TA.
Limitations of data source	Some of the selected weather stations have missing data, usually due to starting collection after the year 1981.
Created by	Environmental Health Indicators Programme, Massey University
Related indicators	- Number of days below 0°C - Number of days over 25°C - Number of days with soil moisture deficit - Annual amount of rainfall - Notifications of salmonellosis - Notifications of cryptosporidiosis and giardiasis
For more information	Ministry for the Environment & Stats NZ. 2020. New Zealand's Environmental Reporting Series: Our atmosphere and climate 2020. Wellington: Ministry for the Environment & Stats NZ.