



Climate change in the Years 0-10 New Zealand Curriculum

Feedback from the consultation and subject matter experts was that climate change is best taught in ways that match students' age and stage of learning, and as an integrated part of broader teaching about Earth's systems and human interactions. As a result, all students learn the science that underpins climate change and its impacts through curriculum content across Science and Social Sciences in Years 0-10.

Students continue building this knowledge at senior secondary level through relevant subjects, including Year 11 Science which all students will study from 2028.

The Social Sciences learning area has been updated with further detail added to the knowledge and practice statements to provide additional context and make references to climate change more explicit.

Social Sciences

In Social Sciences, students learn about environmental issues, sustainability, coasts, urban challenges, how human and natural processes shape environments, and how communities respond to change. Schools can explore these concepts through a range of local, national and global contexts that are relevant to their students and communities.

Students learn about climate change through:

- **Low-lying Pacific Island nations** – the impacts of sea level rise on coastal communities and the increasing vulnerability of people, infrastructure, and livelihoods.
- **Flooding and rainfall** – how changing rainfall patterns, more intense storms, and extreme weather events affect river systems, urban areas, and flood risk.
- **Biomes and tropical rainforests** – how climate influences the distribution of biomes, the role of rainforests in carbon storage and moisture recycling, and the impacts of large-scale deforestation on climate and rainfall.
- **Pacific tourism** – the vulnerability of coastal tourism to sea level rise, erosion, storm damage, and environmental change.
- **New Zealand coastal communities** – climate-related impacts including coastal erosion, inundation, storm surges, and increasing risks to people and infrastructure.
- **Global warming and greenhouse gases** – how human activities increase greenhouse gas concentrations, leading to rising global temperatures and climate change.
- **Sea level rise and coastal change** – how melting land ice and thermal expansion of the oceans contribute to rising sea levels and changing coastlines.
- **Climate vulnerability and resilience** – why some communities are more exposed to climate hazards than others, and how people adapt and respond to climate-related challenges

The knowledge and practices that support students' understanding of climate change in Social Sciences are embedded across Phases 1-4 of the **Geography** strand.

Phase	Year	Content
Phase 1	Year 3	Physical environment of a tropical Pacific Island - Sea level rise caused by climate change is increasing the vulnerability of people, infrastructure, and livelihoods in low-lying Pacific Island nations.
Phase 2	Year 6	Patterns of climate - Climate change is altering rainfall patterns, increasing the frequency and intensity of extreme weather events and flooding, and shifting the distribution of biomes. Tropical rainforest case study - The critical role of tropical rainforests in regulating climate through carbon storage and moisture recycling, and how deforestation can contribute to climate change, and further disrupt rainfall and environmental systems.
Phase 3	Year 8	Floods - How human activities increase greenhouse gas concentrations, driving global warming and climate change, and how a warmer atmosphere can lead to heavier rainfall, more intense storms, and an increased risk of flooding in river systems and urban areas.
Phase 4	Year 9	Tourism in the Pacific – The vulnerability of coastal tourism to sea level rise, erosion, storm damage, and environmental change. Coastal threats and management - How human activities contribute to global warming and sea level rise, increasing the frequency and severity of coastal hazards such as flooding, storm surges, and erosion. They also learn how these changes are affecting New Zealand coastal communities, placing people, infrastructure, and natural coastal environments at greater risk.
	Year 10	Global inequalities - Why some communities are more exposed to climate hazards than others, and how people adapt and respond to climate-related challenges.

Science

In Science, students learn about Earth's systems and processes, including the water cycle, atmosphere, solar energy, carbon in the environment, ecosystems, biodiversity, environmental monitoring and modelling.

Students learn about climate change through:

- **Earth's water cycle** – how evaporation, condensation, cloud formation and precipitation move water through the atmosphere, hydrosphere, geosphere and biosphere.
- **The atmosphere and its gases** – the composition of the atmosphere, including carbon dioxide and water vapour.
- **Solar energy and seasons** – how Earth's tilt, orbit and the distribution of solar radiation influence temperature and seasonal patterns.
- **Changes of state and thermal energy** – how heating and cooling drive melting, freezing, evaporation and condensation, influencing weather.
- **Carbon in the environment** – the movement of carbon dioxide, water and energy through living and non-living systems.
- **Ecosystems and environmental change** – how temperature, water availability and other abiotic conditions influence the distribution, survival, biodiversity and stability of ecosystems.
- **Freshwater, forests and soils** – the role of water availability, forests, wetlands and soils in biodiversity, erosion, infiltration and runoff.
- **Environmental monitoring** – measuring temperature, water levels, light intensity, soil composition and other environmental variables to identify patterns and change over time.

- **Data analysis and modelling** – using graphs, data and models to explain interactions between Earth's water, atmosphere, land and living systems.

The scientific knowledge and practices that support students' understanding of climate change are embedded throughout Phases 2-4 across the elements of **Materials, Matter Interactions and Energy, Earth and Space, Life Processes, and Ecosystems**.

Phase	Year	Content
Phase 2	Year 4	States of matter - Water can exist as a solid, liquid, or gas. Heating and cooling cause changes of state such as melting, freezing, and condensation. This provides the foundation for understanding how water changes form in the environment and contributes to processes such as evaporation, cloud formation, and precipitation in the water cycle.
	Year 4	Temperature - Temperature is a measure of how hot a substance is and can be measured using a thermometer in degrees Celsius (°C). This provides the foundation for understanding how heating and cooling affect matter and contribute to environmental processes such as melting, freezing, evaporation, and condensation.
	Year 4	Earth and Sun - Earth rotates on its axis and orbits the Sun, causing observable patterns such as day and night and the apparent movement of the Sun across the sky. This provides the foundation for understanding how Earth's relationship with the Sun influences the amount of sunlight received at different times and supports later learning about seasons, temperature patterns, and solar energy.
	Year 5	Heat - Thermal energy comes from sources such as the Sun and moves from warmer materials to cooler materials until they reach the same temperature. This provides the foundation for later learning about weather patterns and climate.
	Year 5	Seasonal cycles - Earth is tilted on its axis. As it orbits the Sun, different regions receive more or less direct sunlight at different times of the year. This provides the foundation for understanding how variations in solar energy create seasonal patterns and influence temperature changes across Earth.
Phase 3	Year 6	The Earth's water - Water is stored in oceans, glaciers, ice caps, rivers, lakes, groundwater, and the atmosphere. It moves between these stores as it changes location and state. Freshwater resources, changes in surface, and groundwater levels are investigated. Maps, diagrams and graphs are used to represent and analyse the distribution and use of water on Earth.
	Year 6	Habitat features - Habitats differ in physical features such as water availability, sun exposure, and temperature. This provides a foundation for understanding how changes in environmental conditions can influence the distribution and survival of organisms in ecosystems.
	Year 7	Material properties and thermal energy – Thermal energy is associated with the motion and interactions of particles, and is transferred by conduction, convection, and radiation. This provides the foundation for understanding how thermal energy from the Sun warms Earth's surface, atmosphere, and water, driving changes of state and the movement of energy through Earth's systems.

Phase	Year	Content
	Year 7	The Earth, Moon, Sun System - Earth, Moon, and Sun form a system with observable and predictable patterns, including Earth's orbit around the Sun. Observations are used to explain these patterns. This provides the foundation for understanding how Earth's movement in relation to the Sun influences the distribution of solar energy, seasonal cycles, and changes in temperature over time.
Phase 4	Year 9	The Solar System - The amount of solar radiation received by a planet is determined by its distance from the Sun. Earth orbits the Sun within the Solar System. This provides the foundation for understanding the role of solar energy in influencing Earth's temperature and driving environmental and climate processes.
	Year 9	Diffusion; Photosynthesis; Cellular respiration (aerobic) - Photosynthesis uses light, water, and carbon dioxide to produce glucose and oxygen. Cellular respiration breaks down glucose using oxygen to release energy and produces carbon dioxide and water. Diffusion moves oxygen and carbon dioxide into and out of cells. This provides the foundation for understanding how carbon dioxide moves between living organisms and the atmosphere, and how matter and energy cycle through biological and environmental systems.
	Year 9	Ecosystem conditions - Ecosystems are influenced by abiotic factors such as air, water, temperature, and light. Different environmental conditions support different types of organisms. This provides the foundation for understanding how changes in temperature, water availability, and other environmental conditions can affect the distribution, survival, and biodiversity of ecosystems.
	Year 10	The water cycle – The Sun warms Earth's surface, heating air, land, and water less strongly at higher latitudes, creating climate differences and influencing weather patterns. Changes of state drive cloud formation, humidity, temperature, and precipitation, shaping weather and influencing climate over time. Heating from the Sun causes evaporation, while cooling causes condensation and cloud formation, driving the water cycle's influence on weather and climate.
	Year 10	Ecosystems and water – Transpiration adds water vapour to the atmosphere, influencing humidity, weather patterns, and interactions between ecosystems and climate. Drought, drainage, and pollution can reduce water availability, affecting ecosystem stability, biodiversity, and responses to climate variability and climate change. Forests, wetlands, and soils regulate water movement by slowing runoff, increasing infiltration, and reducing erosion, influencing flood risk and resilience to environmental change.