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Mana Tohu Mātauranga o Aotearoa  
New Zealand Qualifications Authority

## Level 3 Geography 2024

**91429 Demonstrate understanding of a given environment(s) through selection and application of geographic concepts and skills**

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of a given environment(s) through selection and application of geographic concepts and skills.	Demonstrate in-depth understanding of a given environment(s) through selection and application of geographic concepts and skills.	Demonstrate comprehensive understanding of a given environment(s) through selection and application of geographic concepts and skills.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**You should attempt ALL parts of the question in this booklet.**

Pull out Resource Booklet 91429R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

Do not write in the margins (// // //). This area will be cut off when the booklet is marked.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

Merit

**TOTAL 06**



**INSTRUCTIONS**

Read the resource booklet about wildfires in Canada. Integrate geographic concepts and supporting evidence from any of the resources into your answers.

You may use the space below to plan your responses.

**PLANNING**

- Sustainability
- process
- ~~perspective~~
- ~~Patterns~~
- Interaction
- ~~Change~~
- ~~Environment~~



## QUESTION

- (a) Using evidence from the resources, describe the pattern (spatial or temporal) of Canadian wildfires.

There is a spatial pattern regarding the Canadian wildfires from 1960 through to 2015. In Resource C there is a map that describes the North American Boreal Forest Fires since 1960. A Boreal forest is a forest that grows in Northern Hemisphere regions with colder temperatures. The Boreal forests spread from Alaska through Canada and ends in the Great Lakes region in the United States, however most of it is in Canada, as described in Source B. In the map that describes the ~~the~~ forest fire in the Boreal forest since 1960 there is a spatial pattern. In central ~~Canada~~ Canada the forest fires make up a large cluster pattern. This is similar to both the <sup>Patterns</sup> Eastern part of Canada and the western part, however the clusters are much smaller than the one in the central part of Canada. In between ~~the~~ eastern Canada and central Canada the pattern of forest fires tends to be more dispersed. ~~This is relatively the same for the area between~~ This pattern is not consistent with the area of forest burnt in Canada from 1986-2015. From 1986 to 2015 the pattern of forest burnt has changed slightly year from year however, it is more or less the same. In all the maps given in Figure 3 of Resource C there is always a ~~cluster~~ clustered pattern in the central part of Canada. The rest of Canada is usually more dispersed however in 1986-1990, ~~and~~ 1996-2000, and 2001-2005 there has been a smaller clustered pattern in the eastern part of Canada. The only time where the area burnt is consistent from forest fires since 1960 from Figure 2 is 2001-2005 where there is a large central cluster and two smaller clusters in eastern and western Canada with the rest being dispersed.



- (b) What are two different perspectives related to the wildfires, and why do people hold these perspectives?

Perspective 1: Indigenous Perspective

The Indigenous perspective that relates to the wildfires in Canada mainly consists of the Indigenous people of Canada believing that their approach to wild fires is beneficial. In Recourse D in the section of the Indigenous it describes that Indigenous people do not believe that fire in the forest is all bad. In the section it states that 'indigenous knowledge teaches us that fire is a vital and healthy part of maintaining a balanced landscape. It is described that 'Controlled Burns' can be used as a tool to 'stimulate biodiversity and thin out overgrown areas that might fuel out of control fires'. It is described in figure 7 that a low intensity fire that is controlled can come with benefits such as Thicker Bark, fire break, and Nutrient rich Mineral Soil. The first fire suppression policy in Canada was enacted in 1960 and to this day was disapproved on the indigenous perspective of fire. Indigenous people do not agree with the arrangements that put their lands under provincial and federal authorities, stated Cliff Buettner, the director of forestry and at the Prince Albert Grand council. Dore Desouza, a citizen of the indigenous Métis nation and former wild fire fighter stated that she 'saw a connection between today's fires and the restriction of indigenous practices'. The indigenous people of Canada believe that the use of small controlled fires is beneficial because it limits the possibility of a large out of control fire from occurring which would seriously affect the Indigenous people of Canada.



## Perspective 2: Scientific Perspective.

The Scientific Perspective that is described in source 1 mainly consists of wildfires ~~being~~<sup>happening</sup> much more ~~due to~~<sup>due to</sup> ~~Wildfire~~ Climate Change. A report from scientists at the Intergovernmental Panel on Climate Change in 2021 found that 'fire weather (dry, hot, windy conditions) make it more likely for fires to take and they will be much more common in regions such as Canada if Climate Change gets worse. Norman Billet stated that Canada's human induced Climate change rates are "twice the global average rate". This change in Canada's climate is apparent with Canadian scientists finding a significant rise in Canada's wild fires ~~and~~ area burnt since 1951, this is impacted by the fact the fire season has begun to begin ~~and~~ approximately a week earlier and ending a week later. This increase in fire season ~~and~~ is due to the rising temperatures affecting Canada's environment because of Climate Change. In 2023 fire season was different because it was not isolated into a single province. What linked the provinces was higher temperatures and a widespread drought, all caused by ~~the~~ Climate change. ~~The~~ In figure 8 it shows the projected increase in days that are over  $25^{\circ}\text{C}$  from 2051-2070. Due to climate change it is expected that places like Yellowknife and Kitchener will have 6 times the amount of days over  $25^{\circ}$  which could seriously decrease the chance of wild fires occurring. Scientist want to make it clear that wild fires start in many different ways including human interaction but the ~~and~~ scientific evidence is clear that climate change seriously affects the likelihood of wild fires occurring in Canada.



- (c) Wildfires are an environmental disaster with significant environmental, economic, and social costs. Evaluate the consequences of wildfires for people and the environment.

Wildfires are an environmental disasters that significantly affects the environment and people.

According to Source E

~~Wildfires~~ Extreme Wildfires often result in a vast amount of smoke that often leads to severe amounts of Air pollution. This affects both the Environment and the health of many people. In 2023 the US Government had to issue air quality alerts for the virtually the entire west coast. ~~also~~ due to the wildfires in Canada. New York Citizens said the smoke made it 'hard to breathe' and people who worked outside had to resort to wearing masks to work ~~to~~ ~~to~~ try and preserve their health. The situation was so bad that even the New York Governor, Kathy Hochul regarded the situation as an emergency crisis. The pollution index at this time was 8 times above normal meaning that the health of those affected was severely at risk. In Figure 11 it showed a forecast that had levels of smoke. Toronto, New York, and Philadelphia were covered in ~~over~~ ~~level~~ ~~of~~ smoke over ~~150~~ 150 micrograms per cubic metre. This ~~level~~ amount of smoke could severely damage people there and cause in ~~the~~ the health of many to deteriorate.

The event of a wild fire is very bad for the environment, however there are some positives that result from it. According to the 'Natural environment' section in Resource E, Forest fires are a natural and essential part of the cycle for many ecosystems. Also in certain areas plants and animals have 'adapted and depend on wildfires ~~from~~ for ecological balance'. It



positive of wild fires in the environment is that forest fires release nutrients stored in debris in the ~~the~~ forest floor causing new growth. Another positive is that fires open up forest canopy to more sunlight causing more growth. Even with these positive consequences there are far more negatives affecting the environment such as the reduction of carbon sinks that came from the loss of forests. Forest fires also put <sup>certain</sup> animals at risk of extinction, for example the whooping crane in Alberta. ~~The~~ The loss of species could disrupt local ecosystems. Fires also increase the risk of water pollution which could affect the health of animals and humans.

Forest fires ~~has~~ bring about various consequences that affect people and the environment. The fires put the health of humans in jeopardy with an increase in pollution. ~~The~~ Forest fires also affect the environment positively and negatively. ~~The~~ The positive is that wild fires promote new growth and the negatives threaten the life of animals and the balance of ecosystems.



## Merit

**Subject:** Geography

**Standard:** 91429

**Total score:** 06

Grade score	Marker commentary
M6	There is a good description of the pattern of wildfires, linking it to boreal fires without relying entirely on the boreal fires as the pattern itself. The response contains an effective explanation of the reasoning behind two perspectives. Part (a) includes a good explanation of consequences. However, these would need to be effectively evaluated, and more insight shown, to move to Excellence.