



Government of South Australia

Eyre Peninsula Natural Resources
Management Board

What does climate change mean to you, your community, Sea and Country?



Understanding the **impacts** of **climate change**
on **Aboriginal** communities on **Eyre Peninsula**

What does climate change mean to you, your community, Sea and Country?

What is the climate likely to be in the future?

How is the climate likely to affect people and the environment?

Why is it important to plan ahead for climate change?

FOR ABORIGINAL PEOPLES, CLIMATE CHANGE IS NOT NEW

Since the beginning of time, the world's climate has always been changing, and many humans, animals and plants have survived these changes. Aboriginal peoples have lived through bigger changes than what face us now.

So why do we need to know more about climate change now?

Today, how we live on the earth is in some ways different than in our past, so future challenges, such as climate change, may need to be met in new ways.

Knowing about climate change will enable us to be more able to seek opportunities and resources to prepare for change, so we can continue to care for our families, communities and Country.

WHAT DOES 'CLIMATE CHANGE' MEAN?

Climate is the long-term pattern of weather conditions over a particular area.

Climate change means that the pattern of the weather we are used to is likely to change.

WHAT MIGHT SOME OF THE CHANGES BE BY 2030?

- Heat waves are likely to last longer, resulting in discomfort and heat related health conditions for some people, plants and animals.
- Existing rainfall patterns may change and rain will become more unreliable.
- Incidents of high rainfall may occur more often in summer and autumn, but with less rain in spring.
- Rising sea level, which is likely to result in flooding of low level coastal land and damage to property.
- Dust storms will cause air pollution, which may result in poor health.



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What are some of the changes to climate on the Eyre Peninsula likely to be?

1 Air Temperature

Climate change is likely to affect many aspects of the **weather** and **seasons**. Most of these changes are being driven by a **rise in air temperature**.

HOW WILL THESE AIR TEMPERATURES AFFECT OUR WATER SUPPLY?

- Heat waves are likely to increase demand for water for:
 - Keeping cool, such as showers, drinking water, children's pools and evaporative air coolers.
 - Caring for plants and animals.
- There may be increased evaporation losses from dams and open tanks.
- Water supply may be unpredictable, as power cuts will affect electric pumps – this will make it harder to access water when we need it, such as during fires.



HOW WILL HIGHER AIR TEMPERATURES AFFECT HEALTH?

- As heat waves get longer, hotter and occur more often, some people's health is likely to suffer, which may result in an increase in hospital admissions.
- People with existing illness such as heart disease, renal or respiratory ailments are at greater risk.
- Frail aged and young children are also at greater risk.
- The likely increase of mosquito borne diseases such as Ross River Virus may also affect health.



- For some people, poor housing design and lack of insulation will make it more difficult to stay cool, which may increase heat related discomfort and illness.



Recent events of extreme temperature have already shown that we need to be prepared. The January and February 2009 heatwave in Adelaide saw approximately 690 people attending hospitals with heat-related illnesses. During this time up to 80 sudden deaths were reported, and authorities are investigating if any of these fatalities may have been influenced by stresses associated with the high temperatures (*The Australian, 2009*).

HOW WILL HIGHER AIR TEMPERATURE AFFECT HOUSEHOLDS' ENERGY SUPPLY AND DEMAND?

- The 2008 and 2009 Adelaide heat waves caused many power failures, and many people were unable to use cooling devices which are dependent on electricity.
- People in very hot houses will need to go to cooler places, especially Elders, young children and people with pre-existing health conditions.
- Power cuts may affect water supplies that use electric pumps.
- Food in fridges may spoil, which may result in food poisoning and medicines which require refrigeration may lose their potency.
- Power bills will get bigger as many houses use a lot of power to keep cool during a heat wave.



Most households can put in place simple and affordable improvements to reduce costs and discomfort associated with high temperatures, such as:

- Large eaves and extended verandas
- 'Green walls' – using plants.
- Shades and blinds.
- Good airflow – spinners to extract hot air.
- Wall and ceiling insulation.



2 Rainfall Patterns

It is projected that by:

2030

- Rainfall is likely to be less, with a projected decrease of 1% to 10%.

2070

- We will have even less rain (decreased by 2% to 30%).
- We will have lower rainfall throughout all the seasons, but even less in spring.

HOW WILL LIKELY CHANGES IN RAINFALL PATTERNS IMPACT ON THE LAND?

- Underground water sources are likely to become saltier.
- Spring and autumn seasons may be drier.
- There will be larger amounts of summer rainfall on the Nullarbor through to Kimba, but more unpredictable, which will make it harder to collect and store water.
- Cropping may become more risky and paddock feed may become unreliable in some areas.
- Water for stock is likely to become less reliable.



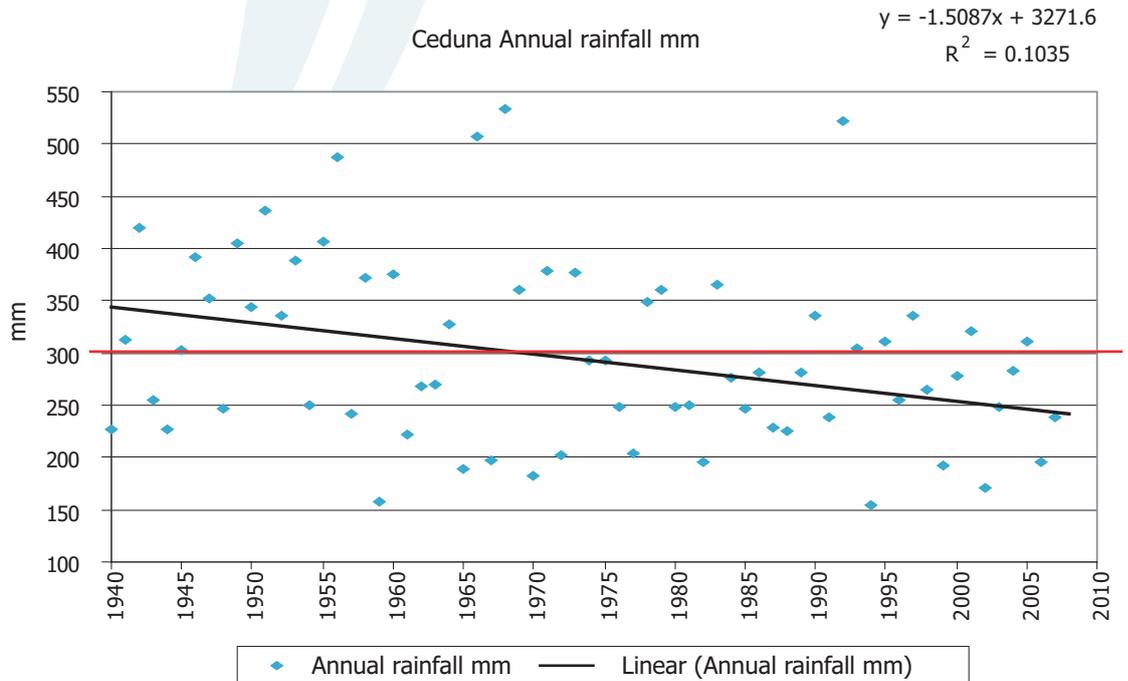
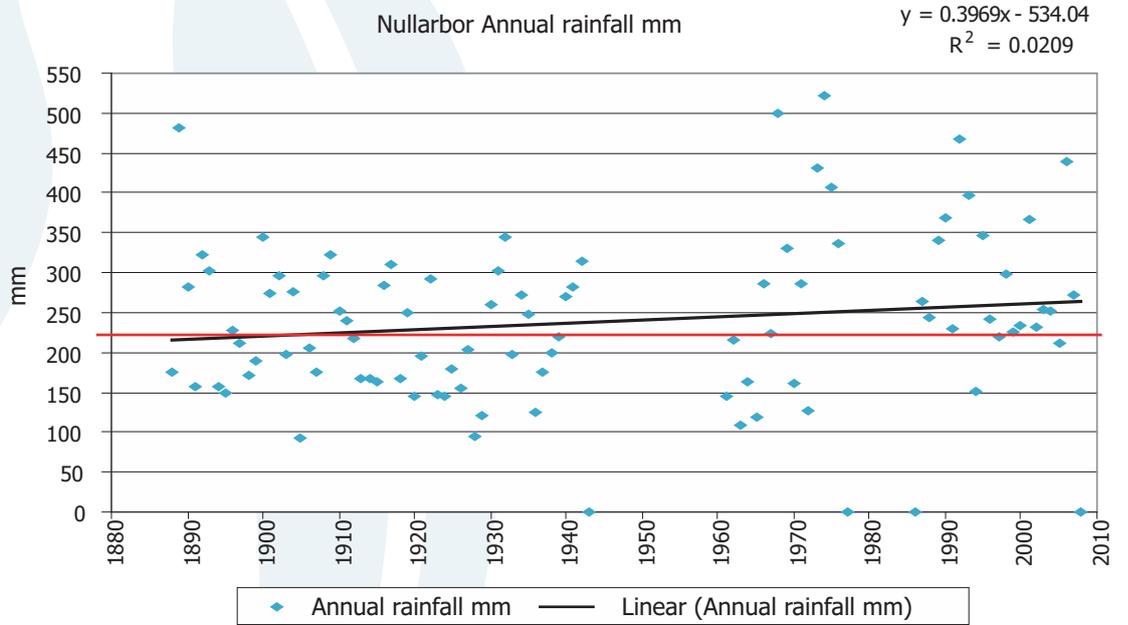
HOW WILL THESE CHANGES IN RAINFALL PATTERNS IMPACT ON OUR HOMES?

- Some houses are not built for optimum collection of rainwater, and we will need to change gutter designs and tank sizes to catch more rain.
- Existing shade trees and gardens may not survive without help, such as extra watering and mulching.
- With unpredictable rainfall, we need to be more careful in how we collect and use freshwater sources, and more active in how we dispose of or re-use other sources, such as grey water.



RAINFALL - NULLARBOR AND CEDUNA 1940 TO 2008

Changing rainfall patterns in recent decades are likely to continue across the region



Derived from Bureau of Meteorology climate data

3 Sea Surface Temperatures

Sea surface temperatures in Spencer Gulf and the Bight have risen at about half the rate of land-based temperatures (0.05°C per decade from 1900 to 2005, and 0.11°C per decade from 1950 to 2005).

What is the likely impact on the sea, marine life and coastal areas of rising sea surface temperatures?

- Sea breezes may give less relief from hot land temperatures in coastal areas.
- Some fish and shellfish may move from their current habitats (e.g. razor fish and scallop).
- Change in habitat for natural fish nurseries (e.g. mangroves and salt marsh) is likely to result in differences in mature populations.
- Estuaries are especially vulnerable to changes in sea surface temperatures and sea level rise.
- As oceans get warmer they expand - as they expand the water level rises.
- Melting ice from the polar ice caps may also contribute to sea level rises.



HOW ARE WARMING SEA SURFACE TEMPERATURES LIKELY TO EFFECT THE WAY WE LIVE?

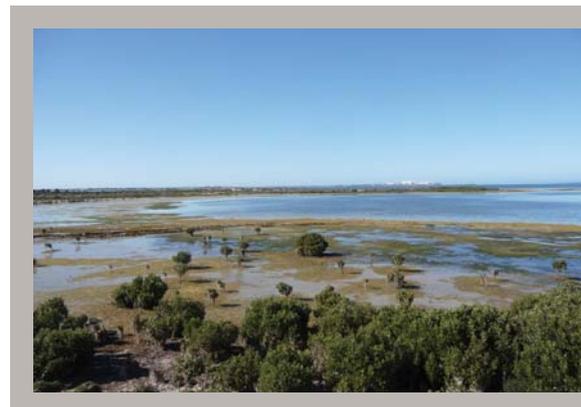
We may experience higher tides and sea level rise, which is likely to cause flooding of low lying coastal areas. These floods might damage buildings and infrastructure (e.g. roads, sea walls, stormwater pipes, communications and marinas).

The most vulnerable coastal areas are low lying, which are often scenic or have sheltered bays that are valued by people, such as:

- Built areas - urban centres, ports and holiday resorts.
- Natural features - estuaries, inlets, beaches and bays.

This combination of sea level rise and human activities may contribute to:

- Loss of coastal wetlands and mangroves, resulting in the loss of protective buffers (i.e. dunes, plants), which will leave these areas vulnerable during storms, which may then cause damage to infrastructure and land.
- Changes to the habitat of marine life (such as mangrove and salt marsh fingerlings), which is likely to impact on the recruitment of fish populations, with consequences for recreational and commercial fishing.



4

Changes to Winds



HOT DRY WINDS

It is likely that there will be a significant increase in hot dry winds, which will create a range of problems for people and land.

HOW MIGHT CHANGES TO WINDS AFFECT US?

Housing

- More cleaning of houses due to dust build up.
- Damage to fences, gardens and trees.
- Cost of repairs and insurance likely to increase.



Power and transport

- Roads may have more problems, with sand drifting over them.
- Increased maintenance costs from clearing sand drifts.
- Greater wear and tear on vehicles.

Farming Production

Cropping may become more risky, and more awareness of best practice in land use is needed.



For example:

- Activities that expose soil (such as high animal and machine activity) may increase dust, sand drift and soil erosion.
- Overgrazing will keep crops short and shallow rooted, which can lead to more erosion.

The diagram to the left demonstrates differences in root lengths. Ideally, plants are more hardy and drought resistant if they are not shallow-rooted.

Health

Dry winds cause more airborne dust, which may increase instances of:

- Respiratory conditions and illness (e.g. asthma, chest infections and nose infections).
- Eye conditions.
- Allergies, such as hay-fever.



Bushfires

Hot dry winds are likely to contribute to more occurrences of bushfires, which can cause:

- Respiratory problems (e.g. asthma and smoke inhalation).
- Increase risk of injuries to animals and people.
- Higher levels of stress and depression.
- Damage to machinery, homes, infrastructure and properties.



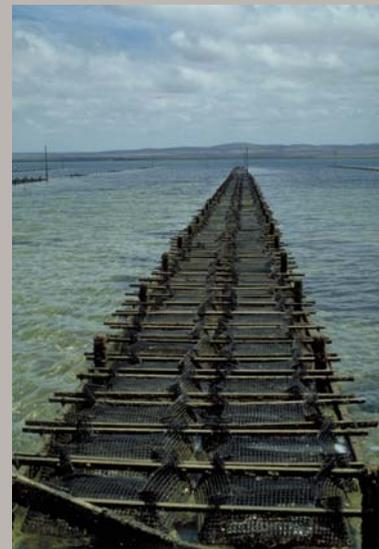
What can we do to meet the

Some effects of climate change will be more important to you than others, as impacts will vary from place to place, community to community and person to person.

You can take action to lessen the likely impacts of climate change on you, your community, Sea and Country.

As a family or individual, some things you might be able to do include:

- Increase your water collection – such as installing rainwater tanks and bigger gutters.
- Reduce how much water your household uses – stop any wastage.
- Look at how you can re-use your grey water.
- Plant drought tolerant shade trees around your house and shade your house walls with non-flammable vines ('green walls').
- Put extra insulation in your roof and walls.
- Install roof vents ('spinners' or 'mushrooms').
- If your house gets too hot during heat waves or you have a vulnerable family member, plan where you could go to get relief from the heat.
- Make use of the government rebate schemes – for items such as insulation, solar panels, grey water recycling and rainwater tanks.



Challenges of Climate Change?

As a landowner or farmer, some things you might be able to do include:

- Get involved with property management planning activities and consider changing your current use of the land (e.g. setting up alley farming and alternative crops).
- Plant drought tolerant wind breaks that are not fire hazards.

As a community, some things you might be able to do include:

- Having multiple water sources (mains, rain, bore).
- A bushfire safety plan.
- A back-up power supply that can work off-grid.
- Avoid living in low lying coastal areas, or prepare a flood response plan.
- Install culverts under access roads that cross low lying areas.
- Seek and acquire funding to participate in opportunities.
- Share your knowledge of climate change and possible responses.
- Make input into policy development.
- Identify the areas of need and vulnerability for communities.

The projected changes may appear minor and far into the future, but we do need to prepare now, so that the future of our children, our grandchildren and our Country, and all the plants and animals that we share the land with, are well cared for.



For further information please contact Adrian Simpson at the Eyre Peninsula Natural Resources Management Board on 8682 7555.



Where can we find more information on taking positive action?

For more information on:

- Climate change, visit the Tackling Climate Change in SA website www.climatechange.sa.gov.au
- Home water self-audits, and advice on saving water in your home and garden, visit the SA Water website www.sa.water.com.au
- Communities, households and businesses, visit the federal Department of Climate Change website www.climatechange.gov.au
- What indigenous peoples around the world are doing about meeting the challenges of climate change, emerging carbon markets, water and energy efficiency, visit the United Nations University Traditional Knowledge Initiative website www.unutki.org

REBATE SCHEMES

SA Government:

Rebates are available for households and communities to become more energy efficient. For further information about rebates with installing:

- Solar Hot Water systems
- Solar Photovoltaic (PV) Panels

Contact Department for Transport, Energy and Infrastructure, Energy Division – Advisory Service on (08) 8204 1888 or their website: www.dtei.sa.gov.au/energy/rebates

For information on rebates to increase households' energy efficiency:

- Rainwater tank and plumbing
- Water efficient shower head
- Dual flush toilets
- Washing machine
- Water efficient garden goods

Visit the SA Water website: www.sa.water.com.au or phone the Water Rebates Hotline on 1800 130 952.

Australian Government:

For information on rebates such as:

- The Homeowner Insulation Program – ceiling insulation
- The Low Emission Assistance Plan for Renters – ceiling insulation
- The Solar Hot Water Rebate
- Rainwater and Greywater Initiative
- Renewable Energy in Remote Areas
- Solar Panels
- Green Loans – up to \$10 000 per household.

Visit their website: www.environment.gov.au/rebates or www.environment.gov.au/energyefficiency or phone the information line on 1800 808 571.