WATER Kidz

Climate Change

This past June saw World Environment Day celebrations being held all across the world. This year's focus was on the effects of climate change – an issue affecting everybody on Earth.

WHAT'S THE BIG DEAL?

The climate of the world varies from one decade to another, and changing climate is natural and expected. Why are we worried about it now? Growing scientific evidence is suggesting that human industrial and development activities of the past two centuries are causing changes over and above natural variation.

Climate change is the natural cycle through which the Earth and its atmosphere are going to accommodate the change in the amount of energy received from the sun. The climate goes through warm and cold periods, taking hundreds of years to complete one cycle (think of the ice age, for example). Changes in temperature also influence the rainfall, but the biosphere is able to adapt to a changing climate if these changes take place over centuries.

Unfortunately, human activities are causing the climate to change too fast (using climate computer programs scientists predict the mean air temperature over South Africa could increase with an estimated 2°C over the next century).

WHAT CAUSES IT?

The global climate system is driven by energy from the sun, thus warming the Earth. Several gases in the atmosphere act to trap the energy from the sun, thus warming the Earth. These gases are called 'greenhouse gases' and the process is called the 'greenhouse effect'.

Without the greenhouse effect, the Earth would not be warm enough for human, plants, and animals to live. But if the greenhouse effect becomes stronger, extra warming may cause problems for humans, plants and animals. Human activities, such as the burning of fossil fuels (such as coal and oil), and deforestation (chopping up of natural forests) is increasing the amount of greenhouse gases (such as carbon dioxide) in the atmosphere.

Whenever we ride in or drive a car, we are adding greenhouse gases to the atmosphere. The trash we send to landfills produces a greenhouse gas called methane. Methane is also produced by the animals we raise for dairy and meat products. Also when factories make the things we buy and use everyday, they too are sending greenhouse gases into the air.

HOW MIGHT CLIMATE CHANGE INFLUENCE SOUTH AFRICA?

At this stage we don't know for certain what will happen (climatologists are not fortune tellers!) but science provides some clues. According to the South African Weather Service higher temperatures will influence the rainfall, but it is still uncertain how the annual rainfall will change. It could increase in some parts of the country and decrease in other parts. South Africa is already a water-scarce country, and a reduction in rainfall amount or variability, or an increase in evaporation (due to higher temperatures) would place further strain on our limited water resources.

Climate change may also the magnitude, timing and distribution of storms that produce flood events. Arid and semi-arid regions, which cover nearly half of South Africa, are particularly sensitive to changes in precipitation (i.e. rainfall), and desertification, which is already a problem in South Africa, could intensify.

In addition, there are several important insect-carried diseases which are sensitive to climate. A small increase in temperature would allow, for instance, malaria to spread into areas which are currently malaria-free, and would increase its severity where it already occurs.

HELPFUL WEBSITES

http://www.weathersa.co.za/References/Climchange.jsp
http://soer.deat.gov.za/themes.aspx?m=519
http://epa/gov/climatechange/kids/index.html
http://tiki.oneworld.net/global_warming/climate_home.html
http://globalwarmingkids.net
http://science.howstuffworks.com/global_warming.htm
www.coolkidsforacoolclimate.com
www.pewclimate.org/global-warming-basics/kidspage.cfm
www.deat.gov.za
www.dwaf.gov.za

www.sxc.hu

Growing world populations and a rise in industrialised cities are leading to a rise in greenhouse gases.

Historically, maize production has contributed to about two thirds of grain production in South Africa. If the climate becomes hotter and drier, maize production will decrease by about 10% to 20% over the next 50 years. An increase in pests and diseases would also have a detrimental effect on the agricultural sector, and invasive plants could become a greater problem.

If the warming of ocean water were to continue unabated, the polar icecaps will melt and the sea level will rise. This is anticipated in the next century. The consequences in South Africa of a small sea level rise are not very extensive because the coastline is relatively steep. However, changes in the oceans due to climate change could result in major changes in fish resources, which will affect South African communities dependent on fishing as a source of food and income.

CLIMATE CHANGE WORDS

Atmosphere: The mixture of gases surrounding the Earth. The Earth's atmosphere consists of about 79,1% nitrogen (by volume), 20,9% oxygen, 0,036% carbon dioxide and trace amounts of other gases. The atmosphere can be divided into a number of layers according to its mixing or chemical characteristics, generally determined by temperature.

Climate: Climate is the average of weather over time and space. A simple way of remembering the difference is that 'climate' is what you expect (for example, cold winters) and 'weather' is what you get (for example, a rain storm).

Climatologist: A person who studies climate.

Global warming: Global warming refers to an average increase in the Earth's temperature, which in turn causes changes in climate. A warmer Earth may lead to changes in rainfall patterns, a rise in sea level, and a wide range of impacts on plants, wildlife and humans.

Greenhouse effect: The effect produced as greenhouse gases allow incoming solar radiation to pass through the Earth's atmosphere, but prevent most of the outgoing infrared radiation from the surface and lower atmosphere from escaping into outer space. This process occurs naturally and has kept the Earth's temperature warmer than it would otherwise be. Present life on Earth could not be sustained without the natural greenhouse effect.

Greenhouse gas: Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapour, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), halogenated fluorocarbons (HCFCs) , ozone (O_3), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).

Weather: Weather is the specific condition of the atmosphere at a particular place and time. It is measured in terms of such things as wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather can change from hour-to-hour, day-to-day, and season-to-season.

Source: EPA

Plants, in particular, have trouble keeping up with rapid climate change. Small, isolated populations could go extinct as a result. South Africa is home to about 10% of all the plant species in the world, of which about half occur nowhere else on Earth. Warming, and a change in the seasonal rainfall of the Cape floral kingdom, which is unique to South Africa, are issues of particular concern to conservationists.

WHEN DO YOU SEND GREENHOUSE GASES INTO THE AIR?

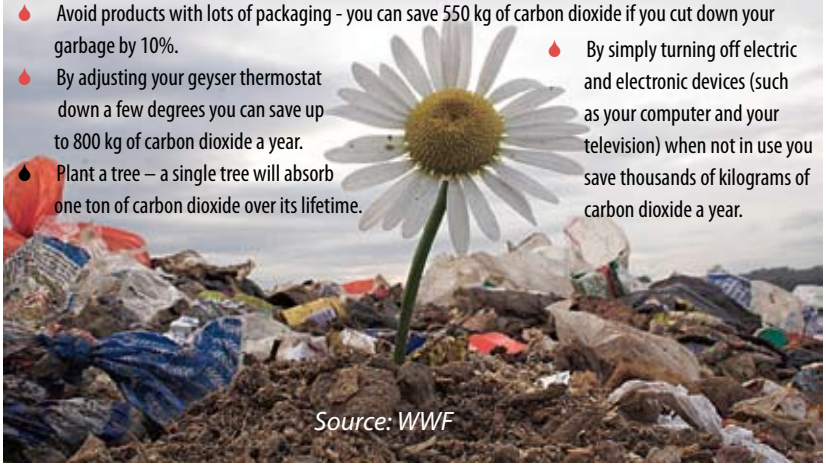
Whenever you:

- Watch TV
- Use the air-conditioner
- Play a video game
- Listen to a stereo
- Turn on a light
- Use a hairdryer
- Wash or dry clothes
- Use a dishwasher
- Microwave a meal

Why? To perform any of these functions, you need electricity. Electricity comes from power plants, which use coal and oil to make electricity. Burning coal and oil produces greenhouse gases.

WHAT CAN YOU DO TO SLOW DOWN CLIMATE CHANGE?

- Replace regular light bulbs with compact fluorescent light bulbs.
- Walk, bike, carpool or take public transport – you will save 0,5 kg of carbon dioxide for every kilometre you don't drive.
- Recycle more – you can save 1 100 kg of carbon dioxide a year by recycling just half of your household waste.
- Avoid products with lots of packaging - you can save 550 kg of carbon dioxide if you cut down your garbage by 10%.
- By adjusting your geyser thermostat down a few degrees you can save up to 800 kg of carbon dioxide a year.
- Plant a tree – a single tree will absorb one ton of carbon dioxide over its lifetime.
- By simply turning off electric and electronic devices (such as your computer and your television) when not in use you save thousands of kilograms of carbon dioxide a year.



Source: WWF