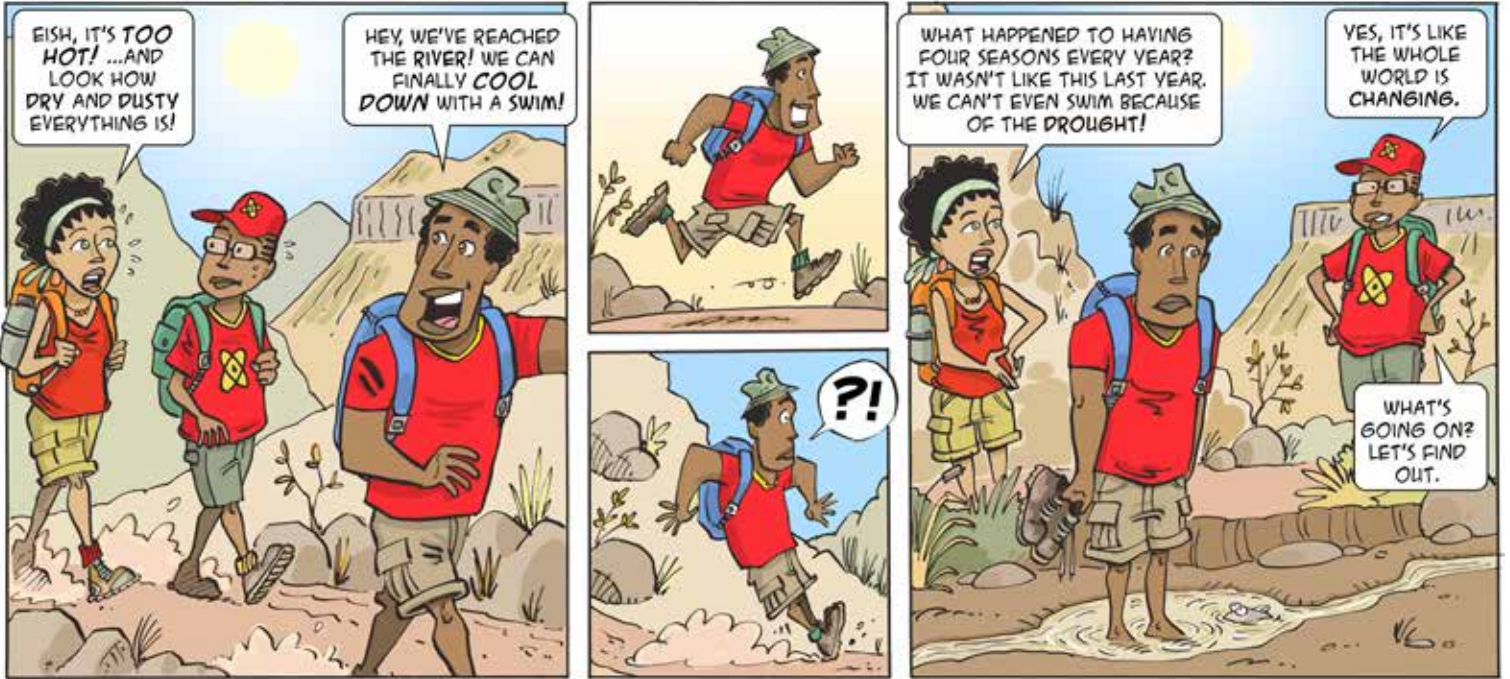




CLIMATE CHANGE



SAEON LEADING THE WAY FOR MEASURING CLIMATE CHANGE

THE SOUTH AFRICAN ENVIRONMENTAL OBSERVATION NETWORK (SAEON) IS RECORDING THE LEVELS OF SOIL MOISTURE IN PARTS OF THE DRakensBERG MOUNTAINS TO DETERMINE THE IMPACT OF CLIMATE CHANGE.



ACTIVITY: BUILD A RAIN GAUGE

YOU WILL NEED:

- 2 PLASTIC BOTTLES
- SCISSORS
- MEASURING CUP/ SPOONS
- PERMANENT MARKER
- WOODGLUE OR TAPE

1 CUT THE BOTTOM OFF ONE OF THE BOTTLES, AND KEEP THE LID ON.



2 USING THE MEASURING CUP, POUR 10 ML OF WATER INTO THE TOP PART OF THE BOTTLE AND MARK THE LEVEL OF THE WATER. ADD ANOTHER 10 ML AND MARK THE NEW LEVEL AGAIN, AND REPEAT THIS UNTIL YOU HAVE A FEW MARKINGS UP THE BOTTLE. THEN EMPTY THE BOTTLE.



3 CUT THE TOP OFF THE OTHER BOTTLE AND REMOVE THE LID.



4 USING THE GLUE OR TAPE, STICK THE TOP OF THE SECOND BOTTLE INTO THE FIRST BOTTLE TO CREATE A FUNNEL.



5 FIND A PLACE OUTSIDE TO PUT YOUR RAIN GAUGE, AND WAIT FOR THE RAIN! AFTER IT HAS RAINED, CHECK YOUR RAIN GAUGE TO SEE HOW MUCH RAIN YOU GOT. YOU CAN THEN LET THE WATER OUT BY OPENING THE LID, AND YOU'RE READY FOR THE NEXT RAINFALL!

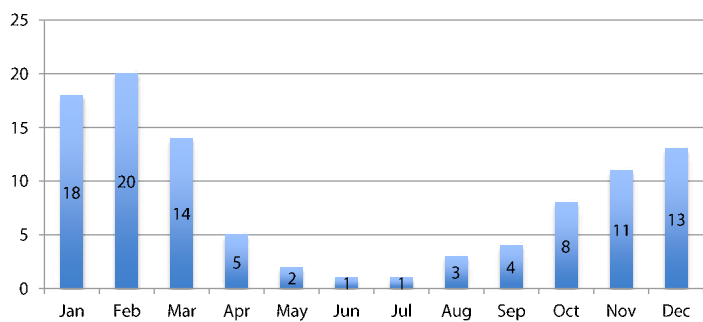
TRY TO FIND A WAY TO MAKE YOUR RAIN GAUGE STAND STRAIGHT UP SO THAT IT WON'T BLOW OVER. YOU CAN TRY TYING IT TO A POLE, OR PUTTING IT IN A HOLE IN THE GROUND AND SURROUNDING IT WITH ROCKS TO KEEP IT UP



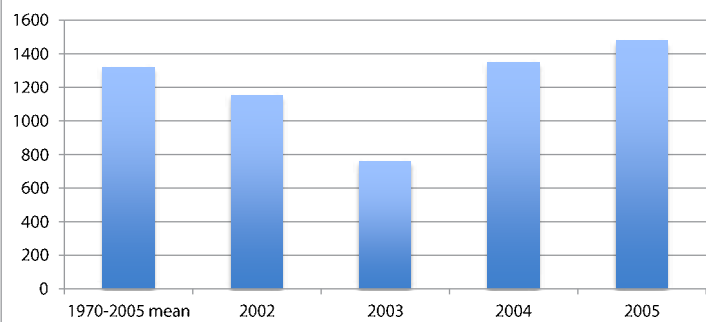
WHAT'S HAPPENING HERE?

Scientists will make measurements very similar to this, and record the measurements over time. From this they can see how things change over time, and deduce whether there are any trends. As you can see here, Cathedral Peak in the Drakensberg gets more rainfall in summer than in winter. You can also see how the amount of rainfall can change over the years.

Average Rainfall Per Month in the Cathedral Peak Area (% of total rainfall)

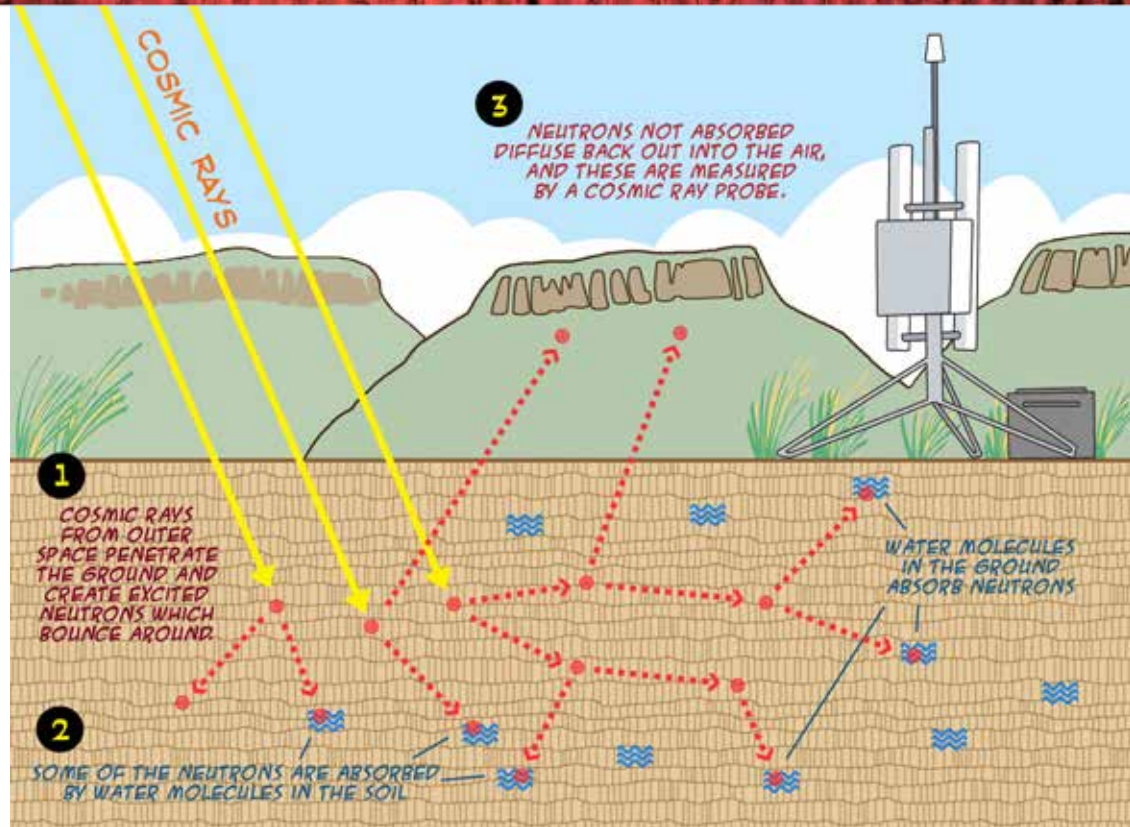


Annual Rainfall in the northern Drakensberg (mm)

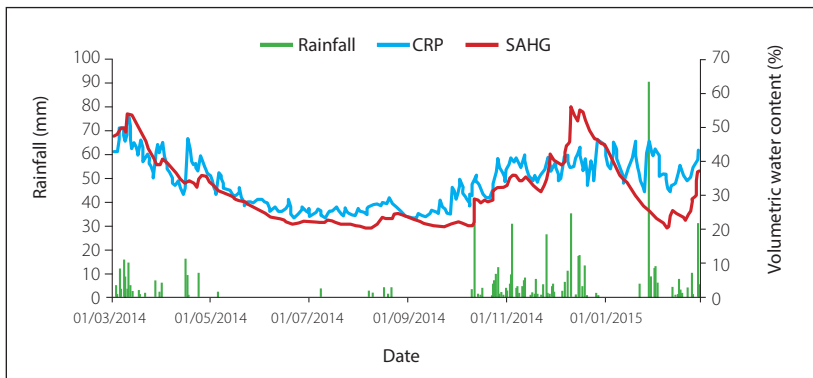


SAEON

SAEON are doing similar measurements in the Cathedral Peak area of the Drakensberg, but they measure soil moisture using a special piece of equipment called a cosmic ray probe. This calculates the amount of water in the soil by measuring the number of fast neutrons in the air. Here's how it works:



IN THIS GRAPH, THE **RED LINE** REPRESENTS THE READINGS FROM THE SATELLITE APPLICATIONS AND HYDROLOGY GROUP AT UKZN. THE **BLUE LINE** REPRESENTS THE READINGS FROM THE COSMIC RAY PROBE.



They have been gathering these data for a very long time. The findings can be used to track how the climate has varied over the years, and to predict what the climate might do in the future. This is also very useful for forecasting water demand, especially in water scarce regions like South Africa.



CAREERS:

Ecologist

Ecologists study the relationships between living things (like animals or plants) and the environment, such as the different vegetation that grows with different amounts of soil moisture, and how we can use this information to make better decisions about planting crops etc.

Climatologist

Climatologists analyse data from soil, water, air, plant life and even ice cores to study the Earth's climate and learn how weather patterns might affect us.

Feroza Morris

received an MSc studentship at the Centre for Water Resources Research (CWRR) at the University of KwaZulu-Natal (UKZN), which focused on improving the spatial understanding of rainfall patterns in the Cathedral Peak catchments in the Drakensberg Mountains. During her MSc, Feroza has presented her work in numerous conferences, and has been awarded a number of accolades for her presentations.



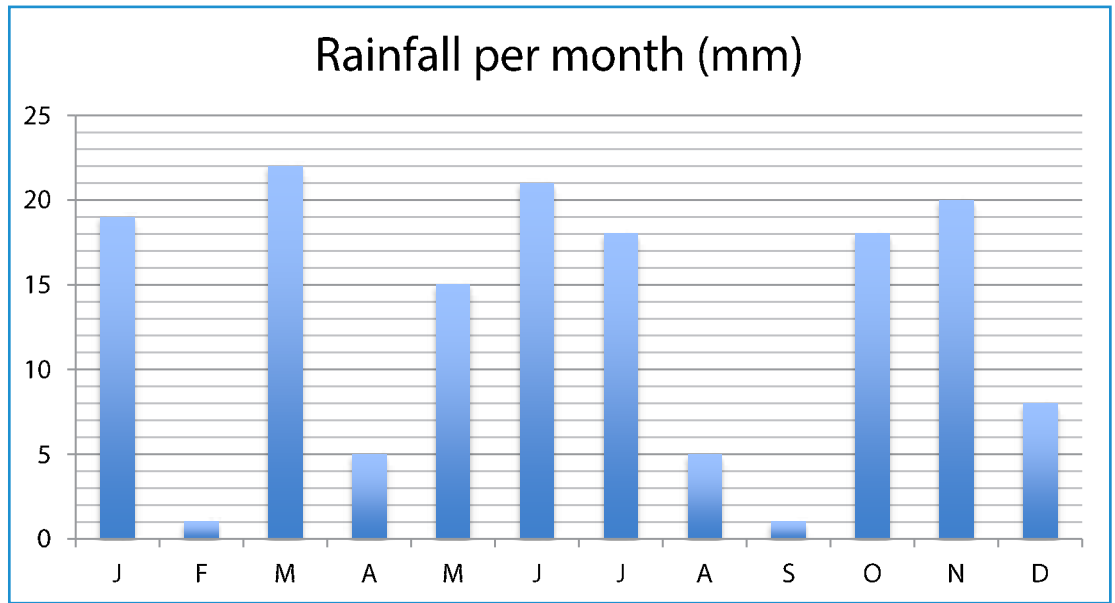
CURRICULUM LINKS

- **GRADE 8:** Geography – Natural resources
- **GRADE 9:** Geography – Sustainable use of resources
- **GRADE 10:** Geography – The atmosphere
- **GRADE 11:** Geography – The atmosphere



PUZZLE YOUR MIND!!!

READ THE VALUES FROM THE GRAPH AND COPY THEM INTO THE CORRECT SQUARE FOR EACH MONTH. THEN FIND THE CORRESPONDING LETTERS TO FIND THE HIDDEN MESSAGE!



J	F	M	A	M	J	J	A	S	O	N	D

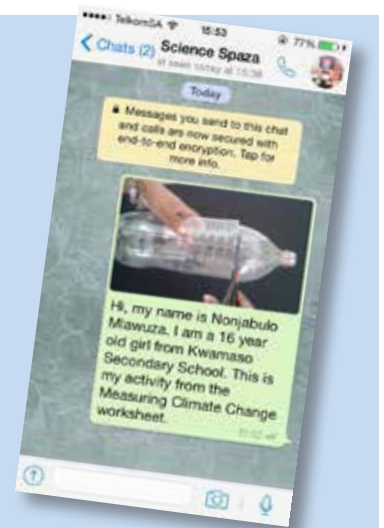
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

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Remember to include your name, age and gender, as well as the name of your school and name of your science club. Also say which Activity Resource you are replying to.



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SAEON is a comprehensive, sustained, coordinated and responsive South African environmental observation network that delivers long-term reliable data for scientific research and informs decision-making for a knowledge society and improved quality of life.



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