

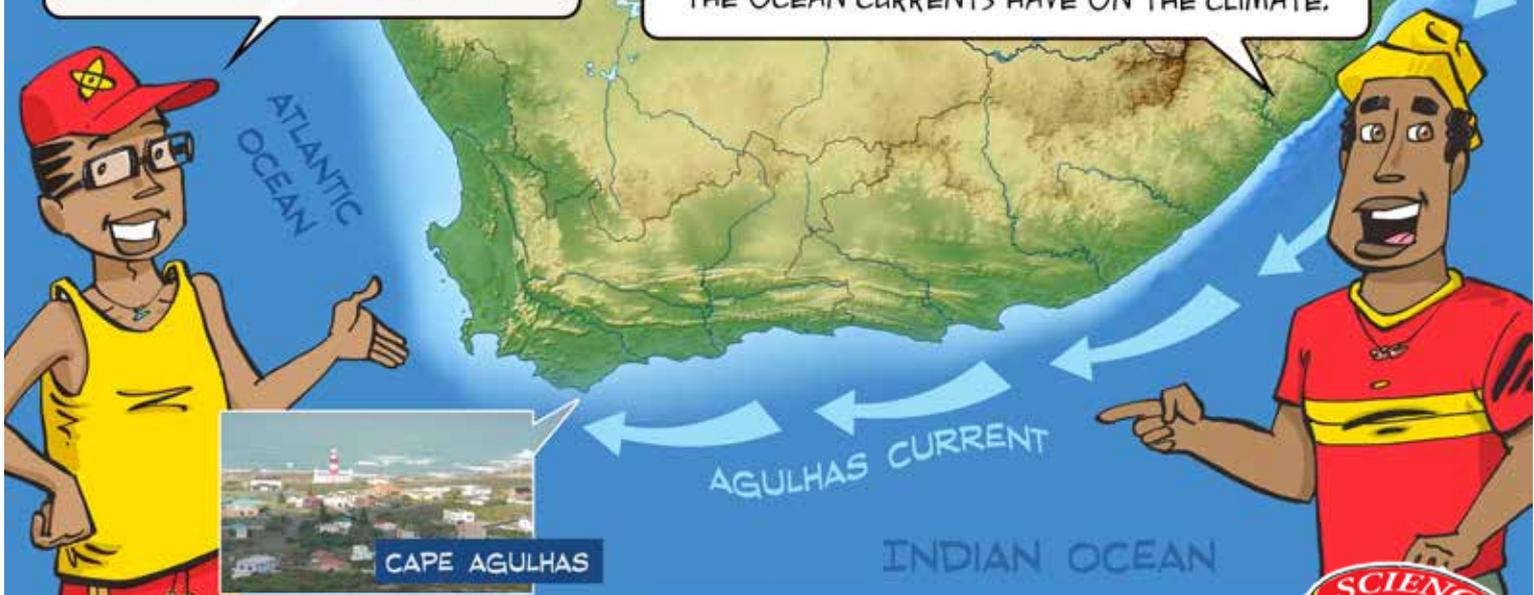
THE AGULHAS CURRENT



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CAPE AGULHAS IS THE SOUTHERNMOST TIP OF AFRICA, AND THE PLACE WHERE THE INDIAN AND ATLANTIC OCEANS MEET.

SCIENTIST ARE STUDYING THE AGULHAS CURRENT HERE. THEY ARE USING THE **AGULHAS SYSTEM CLIMATE ARRAY** TO FIND OUT WHAT EFFECTS THE OCEAN CURRENTS HAVE ON THE CLIMATE.



ACTIVITY: OBSERVE WATER CURRENTS

YOU WILL NEED:

- 2 TRANSPARENT CUPS OF THE SAME SIZE/ EMPTY GLASS OR PLASTIC JARS
- HOT AND COLD WATER
- RED AND BLUE FOOD COLOURING
- PAPER

IF YOU DON'T HAVE FOOD COLOURING YOU CAN USE A BIT OF COLOURED JUICE INSTEAD. IF YOU ONLY HAVE ONE COLOUR, THAT'S FINE TOO - AS LONG AS YOU CAN SEE THE DIFFERENCE IN COLOUR BETWEEN YOUR TWO CUPS!



1 FILL ONE CUP WITH HOT WATER AND ONE CUP WITH COLD WATER. MAKE SURE THEY'RE FILLED RIGHT TO THE BRIM.



2 PUT A FEW DROPS OF RED FOOD COLOURING IN THE CUP WITH HOT WATER AND A FEW DROPS OF BLUE FOOD COLOURING IN THE CUP WITH COLD WATER.



3 FOLD THE PAPER IN HALF AND HOLD IT AGAINST THE TOP OF THE CUP WITH COLD WATER. HOLDING THE CUP CLOSED WITH THE PAPER, CAREFULLY PLACE IT UPSIDE-DOWN ON TOP OF THE OTHER CUP (SOME WATER MIGHT SPILL BUT THAT'S ALRIGHT).



4 HOLDING THE CUPS STEADILY AGAINST EACH OTHER, SLOWLY REMOVE THE PAPER FROM BETWEEN THEM AND OBSERVE WHAT HAPPENS TO THE DIFFERENT COLOURS.

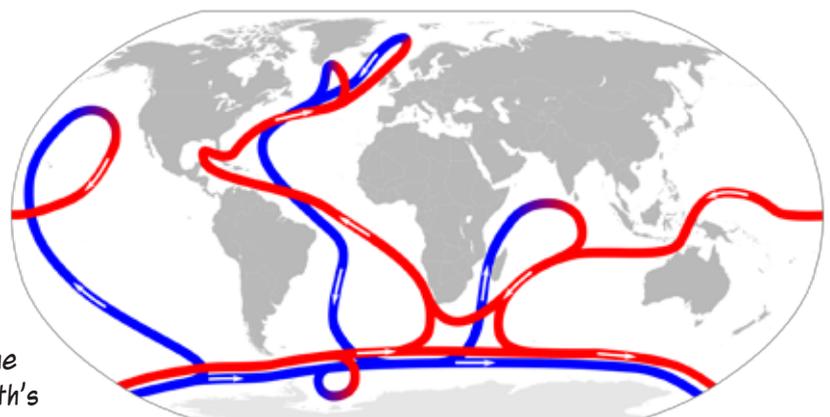


WHAT'S HAPPENING HERE?



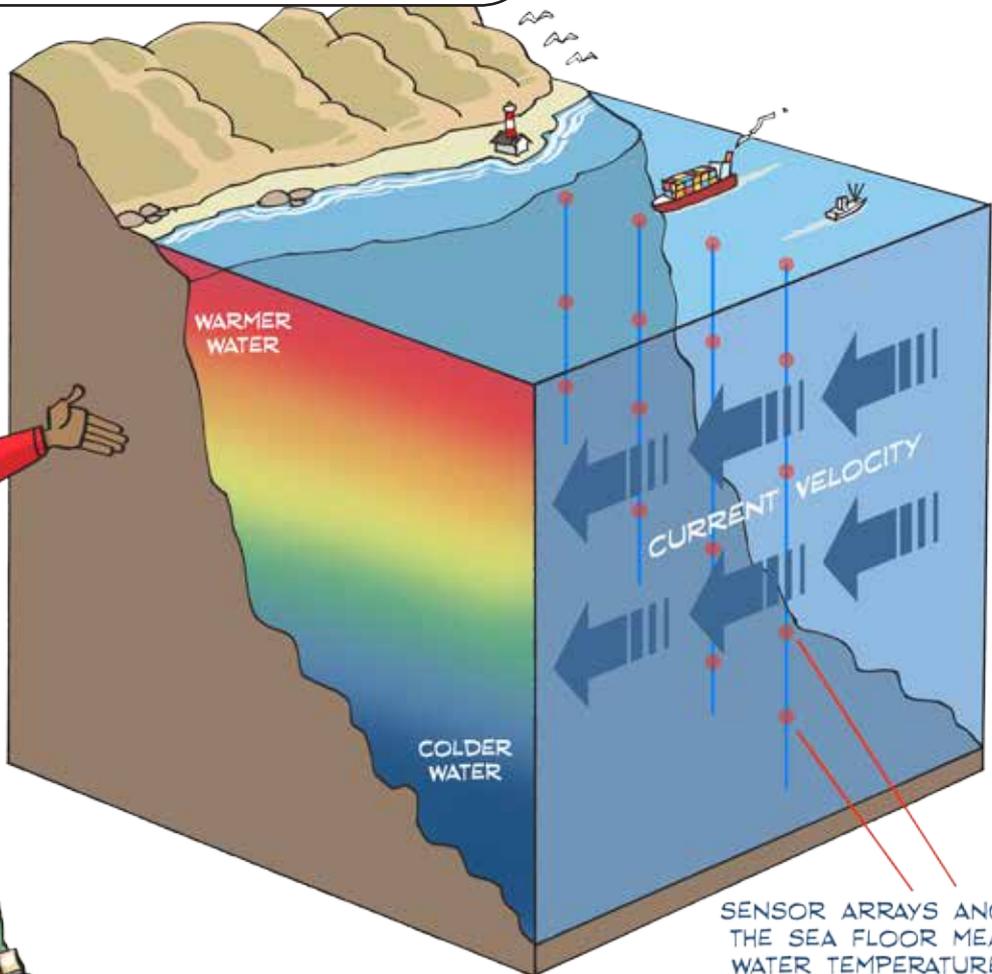
YOU SHOULD HAVE NOTICED HOW THE COLOURS STARTED MIXING AS THE HOT AND COLD WATER MET EACH OTHER. THIS IS BECAUSE OF THEIR **DIFFERENT DENSITIES!** WATER DIFFUSES FROM AN AREA OF HIGH DENSITY TO AN AREA OF LOW DENSITY. HEAT AFFECTS THE DENSITY OF WATER: THE HOTTER THE WATER, THE LOWER THE DENSITY.

The ocean is no different! The water in the ocean has different densities in different places due to the temperature and salt content of the water. These varying densities create currents, which move the water around the globe. This helps to regulate the earth's climate, as it distributes heat globally.



AGULHAS SYSTEM CLIMATE ARRAY

THE AGULHAS CURRENT RUNS FROM THE INDIAN OCEAN TO THE ATLANTIC OCEAN, AND PROVIDES A **PATHWAY OF HEAT AND SALT DISTRIBUTION**. SOUTH AFRICA IS HOSTING AN INTERNATIONAL COLLABORATION TO STUDY OCEAN CURRENTS AND THE **EFFECT THAT THEY HAVE ON THE CLIMATE** USING THIS KEY FEATURE OF THE SOUTH AFRICAN COASTLINE.



SENSOR ARRAYS ANCHORED TO THE SEA FLOOR MEASURE THE WATER TEMPERATURE AND THE VELOCITY OF THE OCEAN CURRENT.

THE **AGULHAS SYSTEM CLIMATE ARRAY** IS AN ARRAY (AN ORDERED ARRANGEMENT) OF DEVICES WHICH MEASURE THE VOLUME, HEAT AND SALT CONTENT OF THE WATER IN THE AGULHAS CURRENT.

CAREERS:

Chemical Oceanographers

study the chemical composition of seawater, and use chemistry to understand how ocean currents move seawater around the globe, as well as studying ocean resources that can be used for things such as medicine.

Physical Oceanographers

study the physical processes of the ocean such as waves, currents and tides, as well as coastal erosion and the interactions between the atmosphere and the ocean.



Fisokuhle Mbatha

was born and raised in the small township of Newcastle, KZN. She is currently doing her master's degree at UCT in Applied Marine

Science. Based at the SAEON Egagasini node, her tasks include, amongst other things, coordinating oxygen sampling during the ASCA cruise and leading SAEON Transformation Investigation project.

CURRICULUM LINKS

- **GRADE 10:** Geography - The World's Oceans
- **GRADE 10:** Physical Science - The Hydrosphere
- **GRADE 11:** Geography (The atmosphere) - The Earth's energy balance
- **GRADE 11:** Geography (The atmosphere) - Africa's weather and climate

PUZZLE YOUR MIND!!!

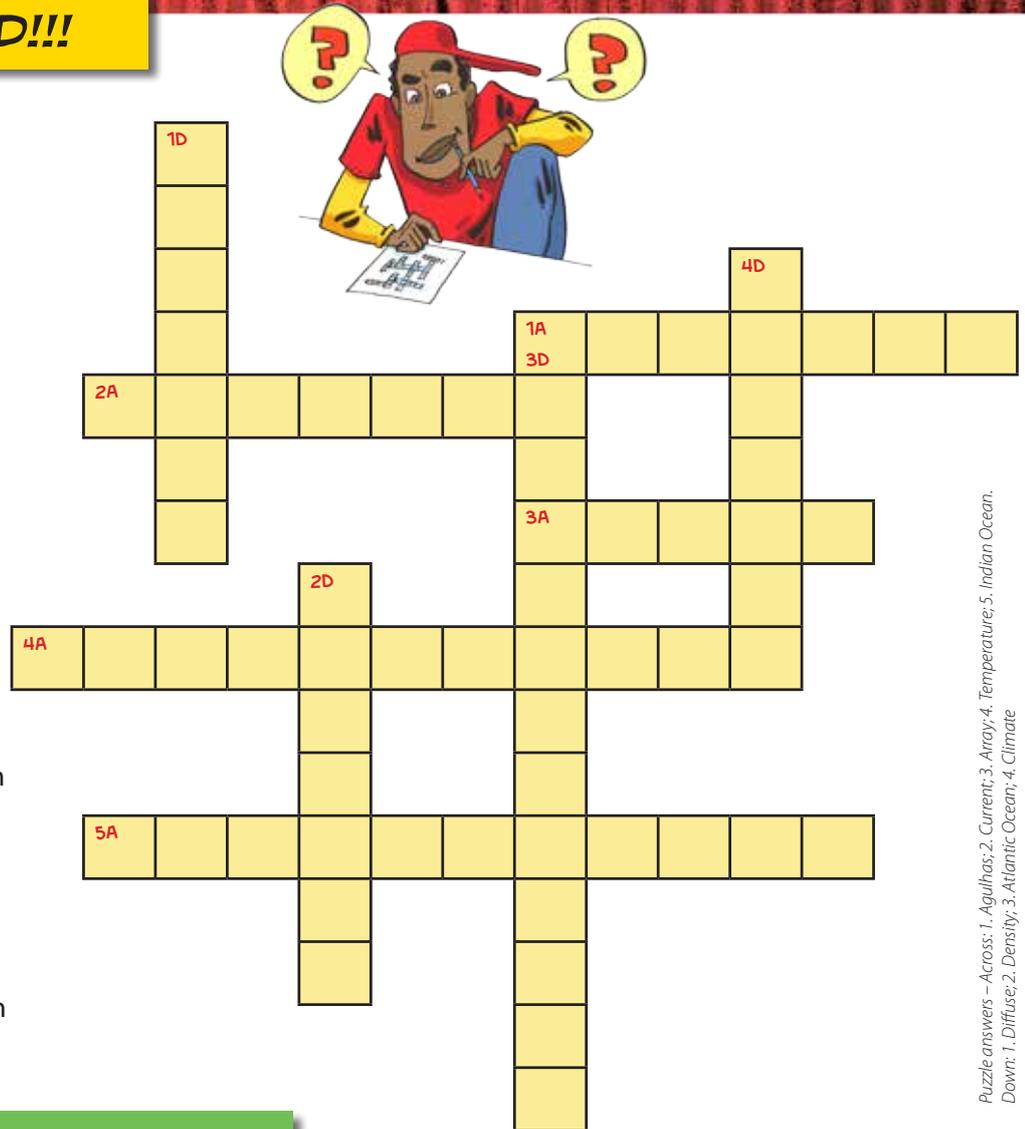
USE THESE CLUES TO FIND THE WORDS IN THE PUZZLE:

Across

1. Cape _____ is where SAEON is studying ocean currents.
2. Water moving in a definite direction.
3. An ordered arrangement of something.
4. The degree of heat that something has
5. The ocean from where the Agulhas current flows (east of Africa).

Down

1. Water will _____ from an area of high density to an area of low density.
2. The compactness of something.
3. The ocean into which the Agulhas current flows (west of Africa).
4. The general weather conditions of an area.



Puzzle answers – Across: 1. Agulhas; 2. Current; 3. Array; 4. Temperature; 5. Indian Ocean.
Down: 1. Diffuse; 2. Density; 3. Atlantic Ocean; 4. Climate

WE WANT YOUR FEEDBACK!

We want to hear from you! Send us a picture of you doing the activity, or a picture of your completed puzzle, or just any news from your science club.

You can send us your feedback in any of the following ways: Whatsapp or SMS number **076 173 7130**; email us at info@sciencespaza.org; Facebook us at **ScienceSpaza** or contact us through our website www.sciencespaza.org

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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