# Adopt a Float – The Argo Floats Programme
# Egagasini Science Education and Outreach

*1st Ocean Observers Workshop*
*Oceanopolis, Brest, France*
*13 – 14 June 2017*

*Thomas Mtontsi*
South African Environmental Observation Network

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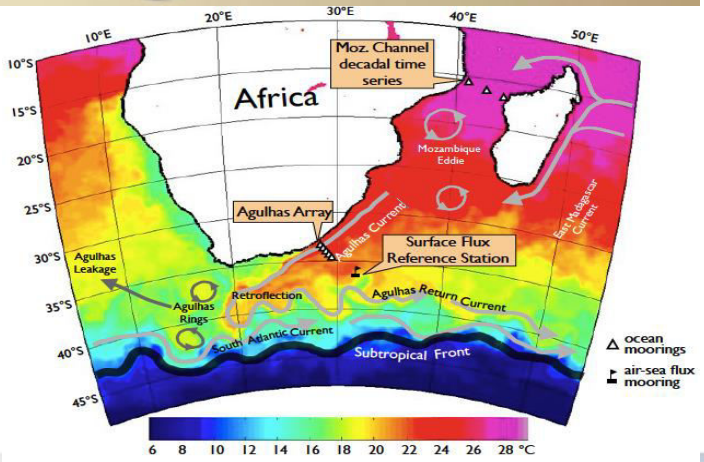
Euro Argo

NRF National Research Foundation
SAEON South African Environmental Observation Network


A custom-designed observation network across South Africa and its surrounding oceans

Observation

**SAEON**

Data

Long-term data and value-added environmental information

Outreach

Educational outreach activities designed to inspire future scientists

# EGAGASINI – PLACE OF WAVES

## Egagasini Node

- Marine Offshore Systems
- Observation, Data Management and Education
- Collaborations with Government Departments, Universities, South African Weather Service, NGOs etc.
- Long term monitoring - bases on same principle of LTER (long term Ecological Research)

## Target:

- Oceanography, Marine Sciences and Marine Science Education

# Environmental Science Education Outreach

- To create a platform where Marine Science Research can be integrated into School Science curriculum
- To promote an understanding of, create awareness and generate an interest about our Oceans
- Support the development of Science skills

Interactions - Scientists, Learners, Teachers and Students

"He climbs highest who helps another up"
Zig Ziglar

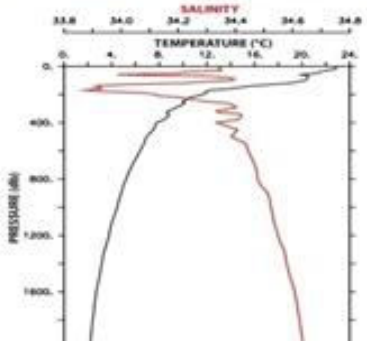
# Environmental Science Education Outreach

## School Based Monitoring

- Learners monitoring changes from school
- The use of Argo Floats Data to track salinity & temperature changes at sea.
- Interpretation of data, use in translation tasks support development of learner science skills.
- Working with this context support awareness and encourage interest in ocean sciences.

## Educator Support

Educators are drivers of learning.
Science Education is therefore key




# Environmental Science Education Outreach

## Adopt a Float Programme

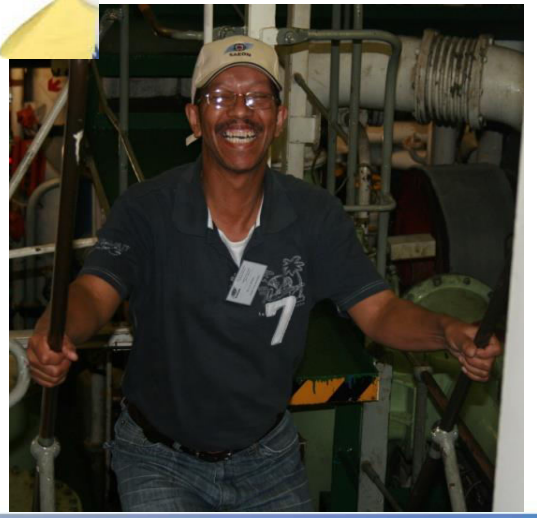
- Five Schools
- Grades 9-11Monitoring Teams
- December 2009 first two South African floats
- Four more floats deployed during SEAmester on the ASCA line

Complimented by

- Sea going opportunities
- Onsite Weather and Climate Programme





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# SAEON Educator Academy

25-27 November 2016

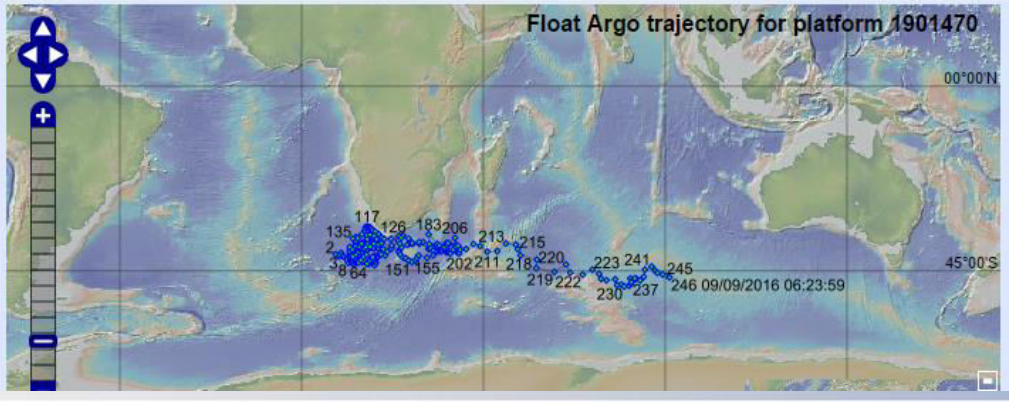
Betty's Bay

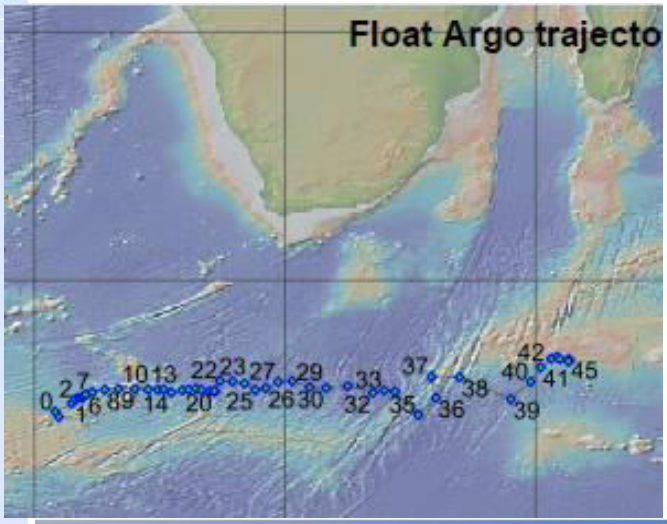
| Date | Time | Activity | Facilitator |
|---|---|---|---|
| Friday, 25 November | 15h30-16h00 | Arrive at the venue & settle in (Betty's Bay) | All |
| | 16h00 – 17h30 | Tour of the Herold Potter Botanical Gardens | Thomas |
| | 18h30 – 19h30 | SUPPER | |
| | 19h30 – 20h00 | Welcome & Overview of Programme | Thomas |
| | 20h00 – 20h30 | Human Bingo | All |
| | 20h30 – 21h00 | "Teacher at Sea" | Mrs Naomi Julius |
| Saturday, 26 November | 7h00 - 8h00 | BREAKFAST | |
| | 8h30 – 9h00 | Recap Overview of Programme & Focus of the Academy | Thomas |
| | 9h00– 10h00 | Science Skills Development & Activity | Dr Inam Yekwayo |
| | 10h00 – 10h45 | Alumni of Education Programme - A student's perspective & Discussion of Booklet | Miss Tania Moyikwa |
| | 10h45 – 11h00 | TEA BREAK | |
| | 11h00 – 12h30 | Biodiversity - Deep Sea mysteries Revealed | Mrs Zoleka Palmer |
| | 12h30 – 13h30 | How to work with science material & Activity | Dr Charine Collins |
| | 13h30 – 14h20 | Marine Science Programme (ARGO + ADP + Weather Station) | Mr Jethan d' Hotman |
| | 13h30 – 14h20 | LUNCH | |
| | 14h30 – 15h30 | Reflective Practice: Check-in | Mr Jimmy Khanyile |
| | 15h30 – 16h30 | U-Journaling (Diary) | |
| | 16h30 – 16h40 | TEA BREAK | |
| | 16h45 – 17h45 | 3D Sculpturing | Mr Jimmy Khanyile |
| | 17h45 – 18h30 | Reflective Practice: Check Out (as part of the Life coaching session) | |
| | 19h00 – 20h00 | SUPPER | |
| Sunday, 27 November | 7h00-08h00 | BREAKFAST | |
| | 8h00 – 9h00 | Evaluation of the SAEON Programme and Educator Academy | Thomas |
| | 9h00 – 10h00 | 2017 Science Engagement (What should the support be) | |

# The incredible founders

- 1901470 Almost 250 cycles in about 7 years – beating the odds
- Providing a real opportunity for oceans observers
- 1901469 Getting stuck - creating interesting questions for students

| | |
|---|---|
| Code | 1901470 |
| Name | PROVOR Profiling Float |
| Description | ARGO SOUTH AFRICA |
| Project | ASA |
| Institution | South Africa (Unknown) |
| Data Assembly Center | IF : CORIOLIS |
| Activity | Inactive |
| Status | |
| Comment | |
| First station date | 13/12/2009 01:48:00 |
| Last station date | 09/09/2016 06:24:00 |
| Float cycles | 246, 245, 244, 243, 242, 241, 240, 239, 238, 237, 236, 235, 234, 233, 232, 231, 230, 229, 228, 227, 226, 225, 224, 223, 213, 212, 211, 210, 209, 208, 207, 206, 205, 204, 203, 202, 201, 200, 199, 198, 197, 196, 195, 194, 193, 192, 191, 190, 180, 179, 178, 177, 176, 175, 174, 173, 172, 171, 170, 169, 168, 167, 166, 165, 164, 163, 162, 161, 160, 159, 158, 157, 156, 155, 154, 153, 152, 151, 150, 149, 148, 147, 146, 145, 144, 143, 142, 141, 140, 139, 138, 137, 136, 135, 134, 133, 132, 131, 130, 129, 128, 127, 126, 125, 124, 123, 122, 121, 120, 119, 118, 117, 116, 115, 114, 113, 112, 111, 110, 109, 108, 107, 106, 105, 104, 103, 102, 101, 100, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79, 78, 77, 76, 75, 74, 73, 72, 71, 70, 69, 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57, 56, 55, 54, 53, 52, 51, 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0 |
| Stations | in Ascii, in Netcdf |
| Trajectory data | in Ascii, in Netcdf |
| Graphics of individual profiles | Verticals profiles, Immersion profiles |
| Map | |

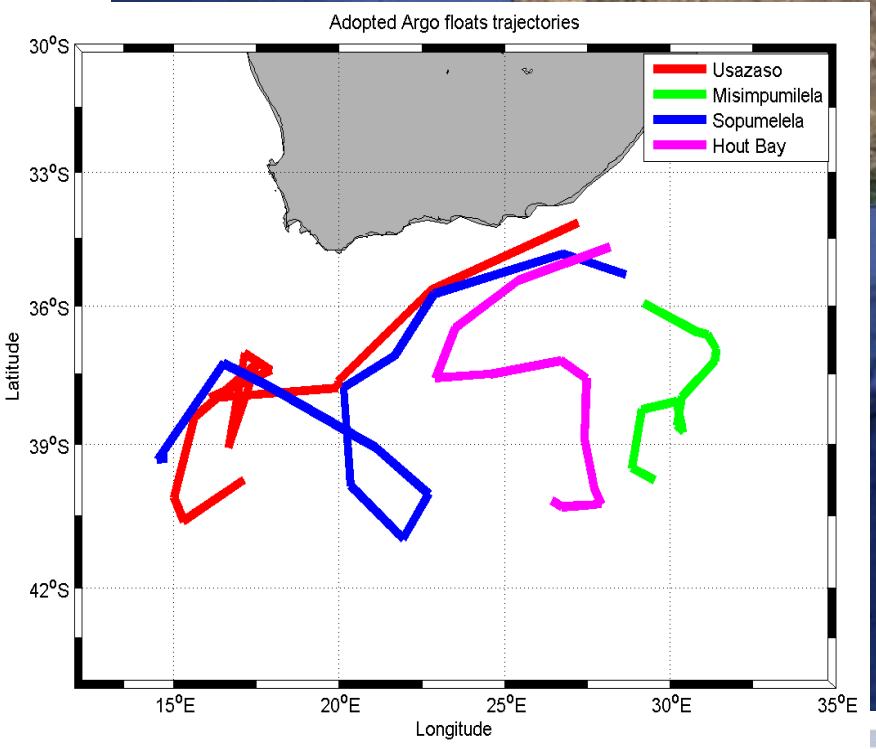


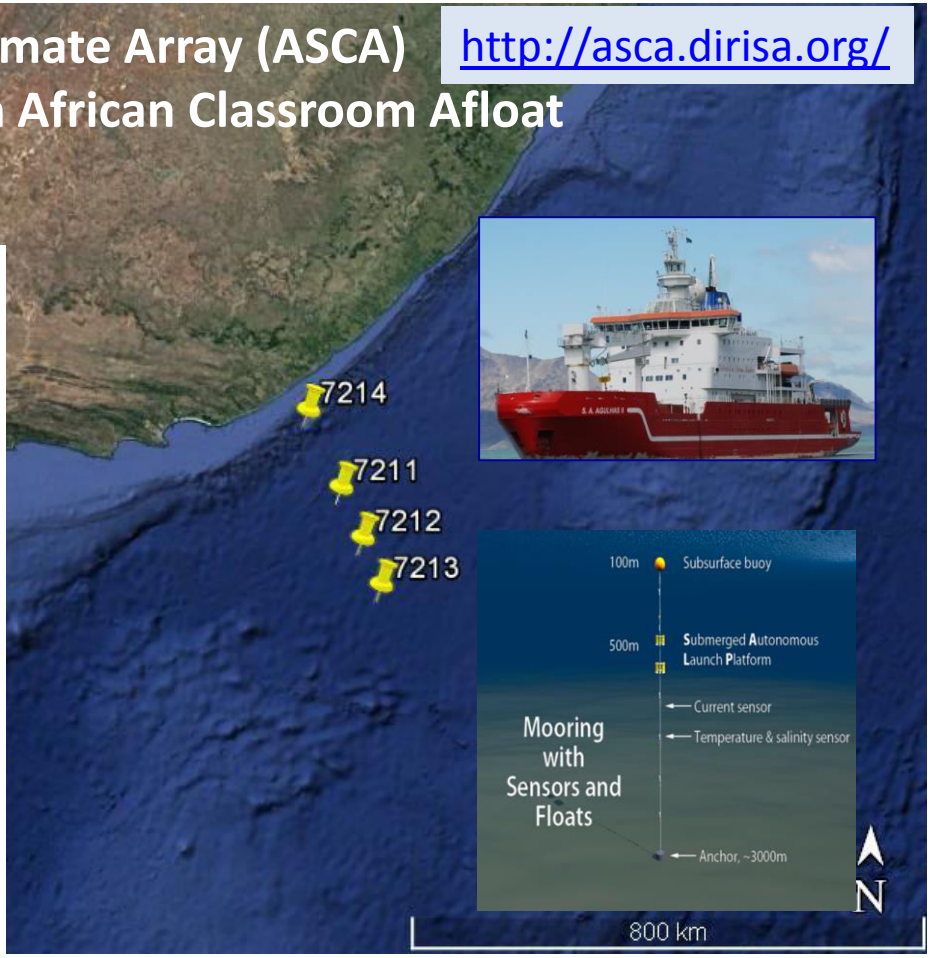



# The deployment of the Argo floats

**Agulhas System Climate Array (ASCA)** http://asca.dirisa.org/

**SEAmester - South African Classroom Afloat**

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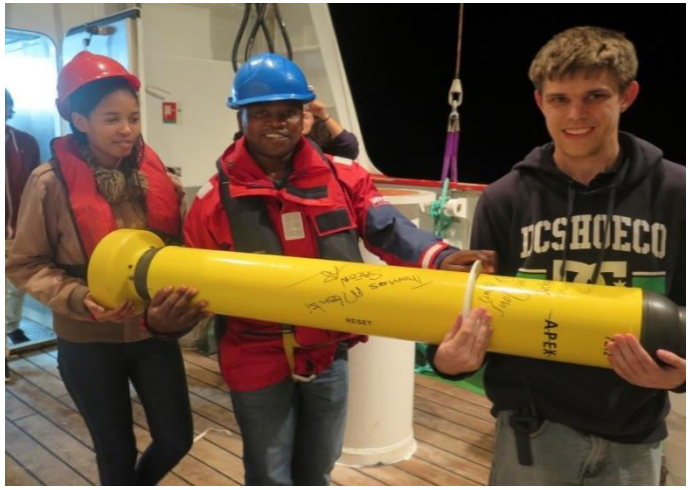
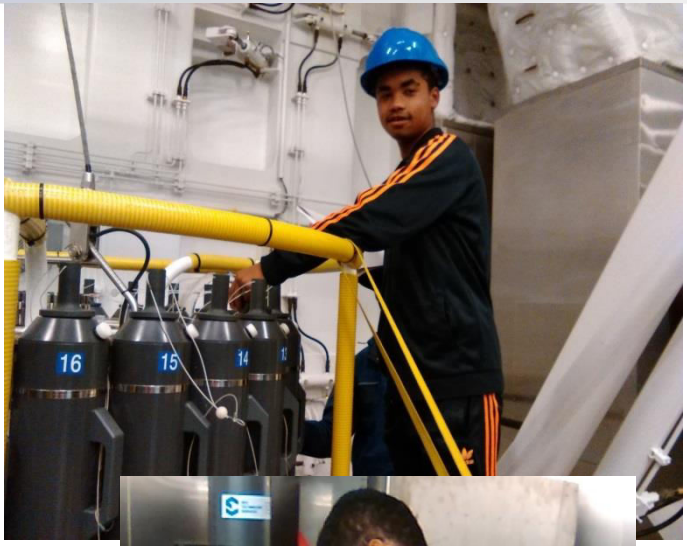
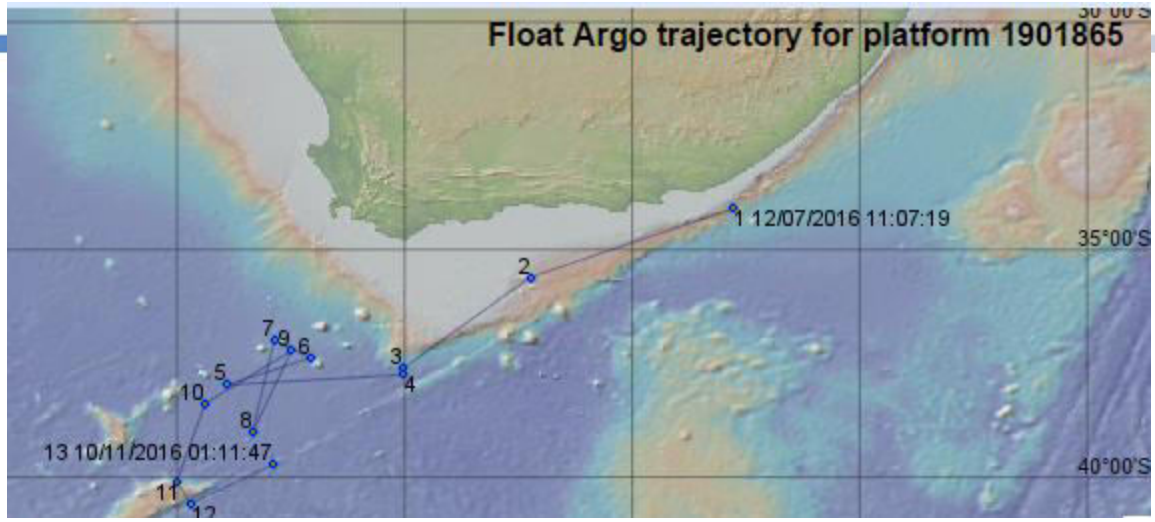
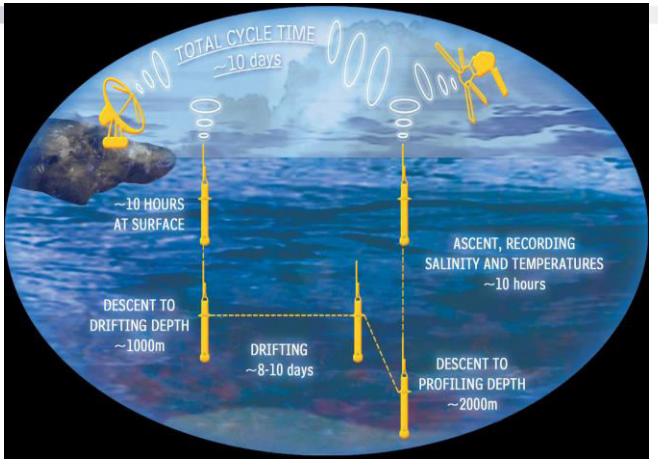
# 2016 Float Deployments

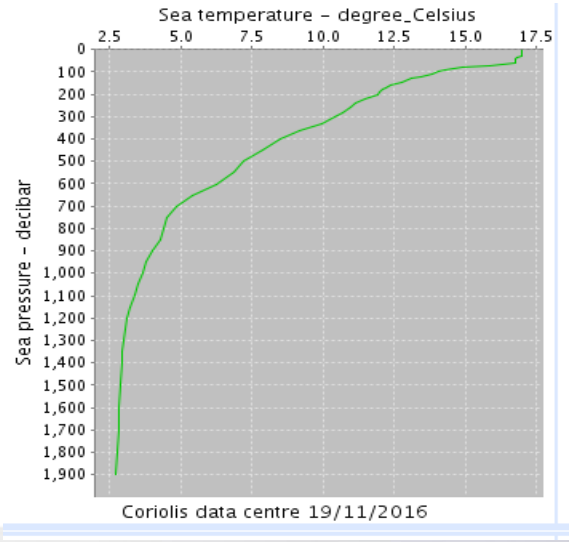


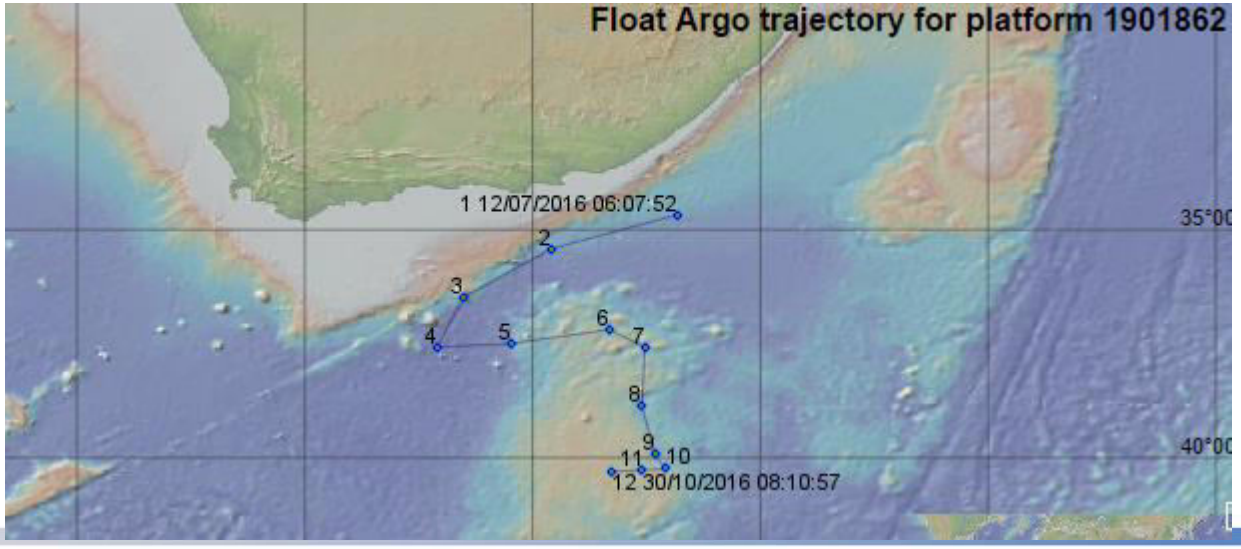

# Clarence Daniels Grade 10 Houtbay High School – Shifts on board

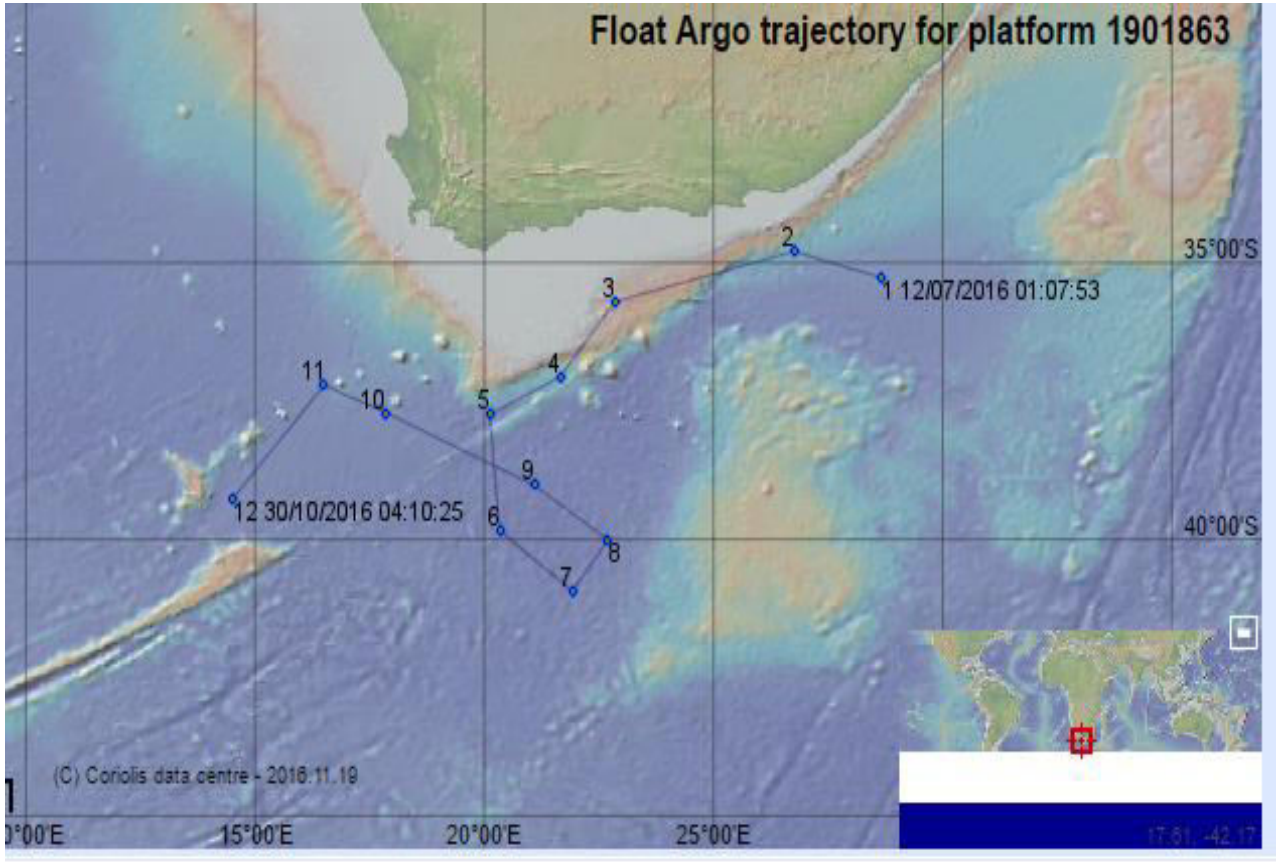


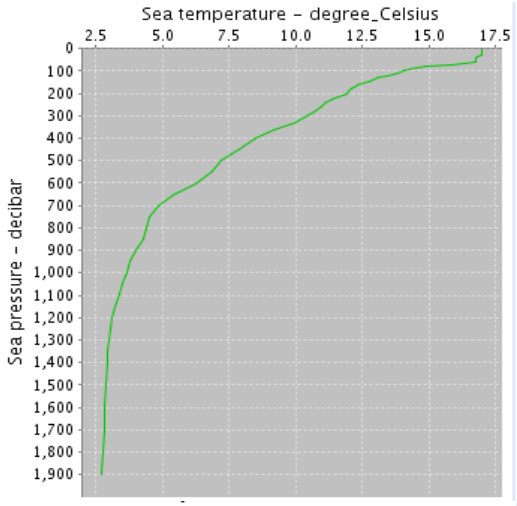


Float Argo trajectory for platform 1901865
1 12/07/2016 11:07:19
35°00'S
40°00'S
13 10/11/2016 01:11:47

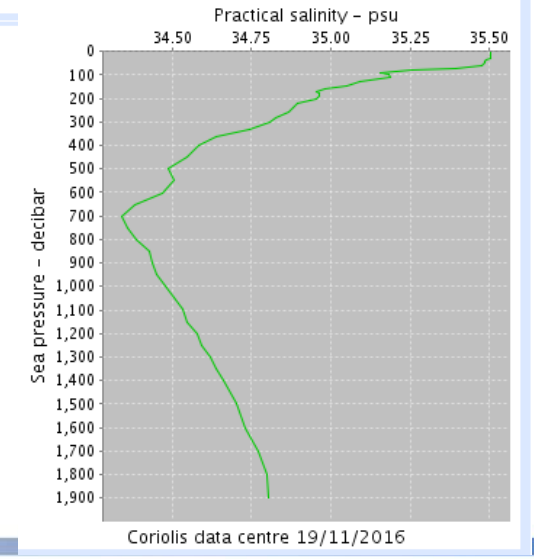

TOTAL CYCLE TIME
~10 days
~10 HOURS AT SURFACE
ASCENT, RECORDING SALINITY AND TEMPERATURES ~10 hours
DESCENT TO DRIFTING DEPTH ~1000m
DRIFTING ~8-10 days
DESCENT TO PROFILING DEPTH ~2000m


Sea temperature – degree_Celsius
Sea pressure – decibar
Coriolis data centre 19/11/2016

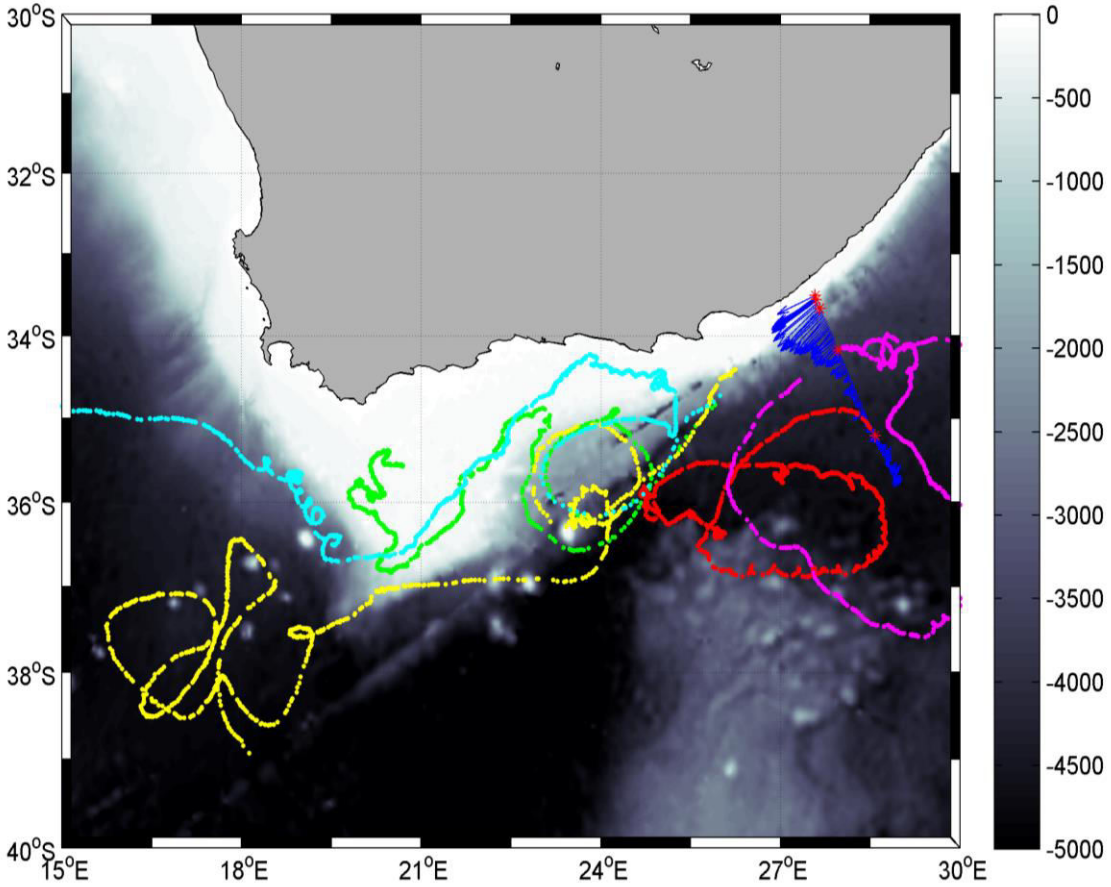

Float Argo trajectory for platform 1901862
1 12/07/2016 06:07:52
12 30/10/2016 08:10:57

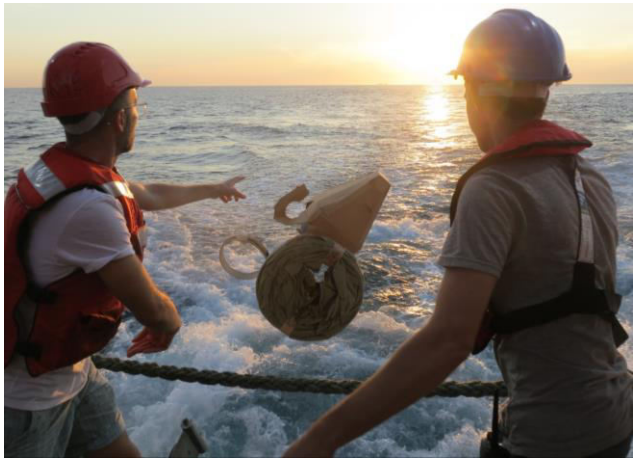

Float Argo trajectory for platform 1901863
1 12/07/2016 01:07:53
12 30/10/2016 04:10:25
35°00'S
40°00'S
15°00'E
20°00'E
25°00'E
(C) Coriolis data centre - 2016.11.19


Sea temperature - degree_Celsius
Sea pressure - decibar


Practical salinity - psu
Sea pressure - decibar
Coriolis data centre 19/11/2016

# Surface Drifter Trajectories



# Argo Floats and the Curriculum

**Scientific Inquiry and problem solving skills.**

- Ability to identify and question phenomena and plan an investigation.
- To conduct an investigation by collecting and manipulating data.
- To analyse, synthesize and evaluate data and communicate findings.

**Construction and application of scientific knowledge.**

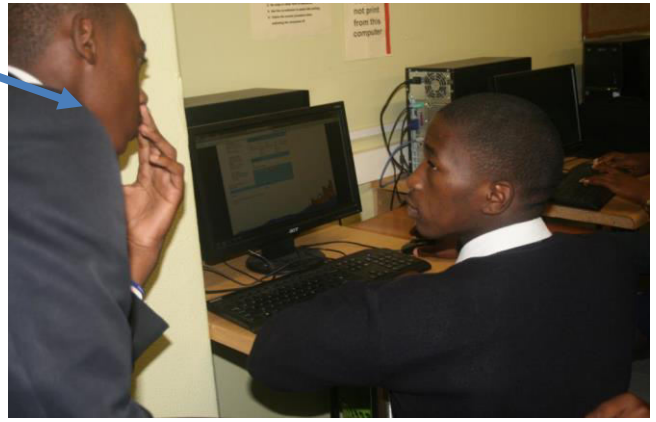
- To access, interpret and make meaning of scientific knowledge.
- Show understanding of how scientific knowledge is applied in everyday life.

**Science, Technology, environment and society.**

- Ability to explore and evaluate the scientific ideas of the past and the present cultures.
- To compare and evaluate the use of development and their impact on the environment and society.
- To compare the influence of different beliefs, attitudes and values on scientific knowledge.

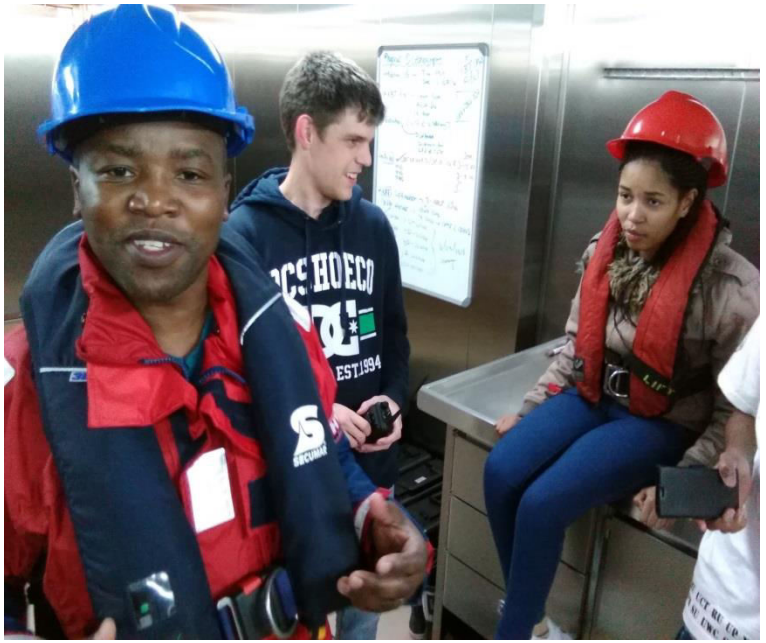
# Nurturing &Tracking learners: Egagasini Node

| School | Learners | Bachelor (B) | HEI | Degree |
|---|---|---|---|---|
| Houtbay | Pozisa Nqenqa | B | CPUT | Marine Science |
| | Melikhaya Mdubeki | B | CPUT | Business Manageme |
| | Thozama Mdluli | B | | |
| | Siphesihle Blayi | B | | |
| | Everysha Foroma | B | UJ | LLB |
| | Samantha Miselo | B | | |
| | Siphe Xhaso Dyani | B | | |
| | Samkelo Mpokela | D | | |
| | Philisiwe Buqa | D | | |
| | Zimkhitha Luvalo | H | | |
| | | | | |
| Masiphumelel | Noncedo Yayi | D | False Bay | Management |
| | Lulekwa Zanyiwe | B | | |
| | Sibusiso Sabokhwe | B | | |
| | Nosivuyile Mayiya | B | | |
| | Anita Mntu | H | | |
| | | | | |
| Ocean View | Tylo Delcarme | B | UWC | BSc |
| | Diego Roberts | B | | |
| | Melvin Lemon | B | UWC | BCOM |
| | Luke Delcarme | B | | |
| | Simeone Liebenberg | B | | |
| | | | | |
| Sophumelela | Collen Samkelo Sounder | B | UCT | BCOM |
| | Yolanda Xubani | B | CPUT | Maths tech |
| | Zimasa Ndumela | B | UWC | BSc |
| | Aphele Gwilika | D | | |
| | Alfred Ncube | D | NS | NS |
| | Anelisiwe Kahla | B | UCT | BSc |
| | Phila Dyantjie | B | UWC | BSc |
| | Siphokazi Mtshwelo | D | CPUT | Marine Science |
| | Sesethu Mbali | D | | |
| | Anele Mabele | B | NS | NS |
| | | | | |
| Usasazo | Zandiswa Mankayi | B | | |
| | Zandile Khanzi | B | | |
| | Siziphiwe Xego | B | | |
| | Ayaduma Qonono | B | UCT | Medicine |
| | Asive Marele | B | Rhodes | BSc |
| | Buhle Fanaphi | B | CPUT | Marine Science |
| 5 | 36 | 27 | 9 | |



s Works
ne 2017

Sea Sickness are but some of the challenges to deal with



Chief Scientists Prof Isabelle Ansorge taking a moment to explain to the students what and how a CTD works before the operation.


Possible Careers:


happens when plants
liquid substances?

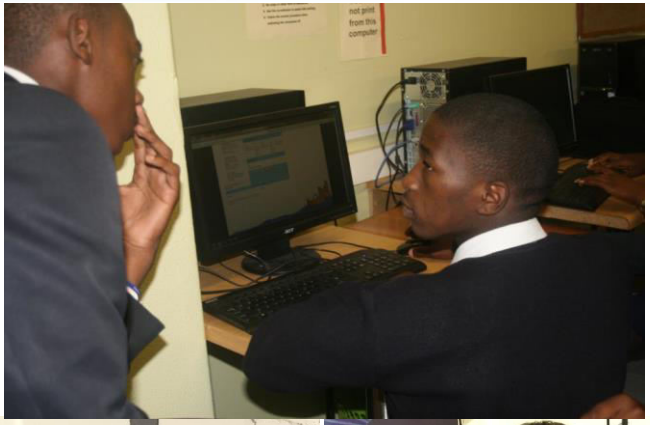
# Acknowledgements


- **Mathieu Belbéoch *(JCOMMOPS, France)* for invitation and support**
- **Emanuela Rusciano, (JCOMMOPS, France) - support**
- **Juliet Hermes *(SAEON, South Africa)* - support**
- **The South African Weather Service**


"Nobody cares how much you know until they know how much you care."
David Jeremiah

**Thank You**

# Argo Day The signing ceremony



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