HOSST

TRANSATLANTIC RESEARCH SCHOOL

summer school 2018

Helmholtz (HOSST)

Transatlantic (TOSST)

Graduate Research School

"Ocean System Science and Technology"

Summer School

held in

Mindelo, Sao Vincente, Cape Verde

May 27 - June 8, 2018

"Seafloor Structures and Life on Cape Verde"

TOSST TRANSATLANTIC RESEARCH SCHOOL

HOSST TRANSATLANTIC RESEARCH SCHOOL

HOSST-TOSST Cabo Verde Summer School 2018

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Concept of the Summer School

The Summer School on "Seafloor Structures and Life on Cape Verde" is a joint Summer School of the "Helmholtz Ocean System Science and Technology" (HOSST) graduate school, based at GEOMAR and Kiel University, Kiel, Germany and the NSERC CREATE "Transatlantic Ocean System Science and Technology" (TOSST) research school of Dalhousie University, Halifax, Canada. During the HOSST-TOSST Summer School on Cape Verde 2018 we will experience marine science and life on Cape Verde. The focus during the Summer School will be on the geological structures and socio economic aspects of the Cape Verde Islands. Field trips, lectures, site visits and group projects will be done. Participants of the summer school will include both Kiel- and Halifax-based PhD-Candidates and Students from Cape Verde University and Cape Verde's National Institute of Fisheries Development (INDP).

The Summer School will combine lectures by scientists from GEOMAR, University Cape Verde, INDP, the Ocean Sciences Centre Mindelo (OSCM), Cape Verdean Ministries, regional companies, and NGO's, together with on-site visits and demonstrations.

The focus will be on learning the importance of geological structures and processes, which link natural science to life in Cape Verde. The knowledge gained during the Summer School will be pulled together in group work, in which the students will be asked to develop a poster or sign, which explains the scientific, ecological and cultural significance of seafloor structures around Cape Verde.

The outcome of the group work will be presented orally to an invited audience, giving them direct feedback on their presentations. As the topics are relevant for use by the public, the efforts should be longer lasting than the Summer School: The single group projects are envisioned to result in signs that can be used along a "geo-trail".

After the summer school, HOSST intends to invest some effort in changing the contents of the presentations and posters into a website which can be accessed by interested persons in Cape Verde (maybe including producing a flyer which can go in hotels/tourist info). The places will be pointed to with QR codes, linked to the website.

Overview Time Table

		Offical - Invited Guests		Seafloor Structure and Group Project		Socio Economic Aspects of the Islands (SEA)-talks		Excursion	
HOSST Summerschool in Cape Verde 2018 --- Overview									
		9:00-10:30 h	**Break**	**11:00 - 12:30 h**	**Lunch Break**	**14:00 - 15:30 h**	**Break**	**16:00 - 17:30 h**	**17:30 - 19:00 h**
		9:00-10:30 am	**Break**	**11:00 am - 0:30 pm**	**Lunch Break**	**2:00 - 3:30 pm**	**Break**	**4:00 - 5:30 pm**	**5:30 - 7:00 pm**
Saturday	**26.05.18**				Arrival of HOSST+TOSST				
Sunday	**27.05.18**			Overview Excursion - Monte Verde and the Island					Icebreaker: Traditional Cape Verdian Snacks and Dancing
Monday	**28.05.18**	Opening and Welcome/Introduction to Summer School Program	Opening Reception / Coffee break	12:00 -13:00 h Puragua / Water Processing and Bottling		SEA: (Energy and Water) in two groups after one hour group switch: Eletricity production and distribution / Water desalinization and distribution.		Tour of labs at OSCM / Barbecue	
Tuesday	**29.05.18**	Overview Excursion - continued				SEA: Biogeography of Cape Verdean Fish (Rui Freitas) at University	15:00 -17:00 h Port and Fish Processing Plant		
Wednesday	**30.05.18**	8:30 h Talk + Fish Market + INDP Labs Day 1: groups 4,5,7 / Day 2: groups 1,2,6 *parallel:* Geological field introduction to group work Day 1: groups 1,2,6 - Day 2: groups 4,5				Economic Activities (ca. 19:00h) Cheese factory / A Farm / Museum / Clubs -games - Community Calhau			
Thursday	**31.05.18**					14:15-15:15 h- ETAR waste management (CMSV-municipality)		SEA: Conservation and preservation (P. Rendall) +SEA (A. Soares)	
Friday	**01.06.18**	Geological field group work			**Public Holiday / swap places*	Preparation time for group work "Office"			
Saturday	**02.06.18**	free time				Sustainable Fisheries Partnership Agreement EU and Cape Verde: where is the sustainability?	3:00 pm- Coastal Ecosystems in Cape Verde and Snorkeling - Corrine Almeida (Baia das Gatas)		
Sunday	**03.06.18**	Geological field group work - Office work as needed			*leave at 13:00 h*	Take off 14:55 - 16:50 pm			
Monday	**04.06.18**	FOGO Seafloor Structure Excursion Return: 16:35 -20:15 h							
Tuesday	**05.06.18**								
Wednesday	**06.06.18**	10:00 - 12:00 h CVAO visit / Shrimp farm				Plankton exercise	Preparation time for group work "Office"		
Thursday	**07.06.18**	"Dress Rehearsal" for Group work				Preparation time for group work "Office"			
Friday	**08.06.18**	Preparation time for group work			Thank you Lunch	**14:00 - 16:00 h Presentation of group work**		Drinks and Desert	18:30 h Sunset at Terralodge
Saturday	**09.06.18**			Departure of HOSST+TOSST					

Agenda

Saturday, May 26, 2018

11:40 h	Arrival of HOSST and TOSST Participants on Sao Vincente	
	Pick up at Airport Cesaria Evora drive to Hotel Terra Lodge and Vila Mira Mar	
13:00 h	"Light Lunch"	Terrace "Terra Lodge"
	Free time	

Sunday, May 27, 2018

10:00 h	Arrival of Cape Verdian Students	"Terra Lodge"
10:30 h	All meet on Terrace Terralodge	"Terra Lodge"
10:45 - 17:30 h	Overview Excursion Monte Verde and the Island P.D. Dr. Thor Hansteen (HOSST-GEOMAR, Kiel) Prof. Christian Dullo (HOSST- GEOMAR, Kiel) Dr. Christel van den Bogaard (HOSST, GEOMAR, Kiel)	Start at Hotel "Terra Lodge" – Day Tour with Busses
18:00 h -	Icebreaker Traditional Snacks and Dancing	"Terra Lodge"

Monday, May 28, 2018

08:20 h	Meet at Terralodge -> Bus drive to INDP	
09:00 – 9:05 h	Welcome to HOSST-TOSST Summer School 2018 Coordinators Christel van den Bogaard (HOSST) Kirsten Laing (TOSST) Tatiana Cabral (Cabo Verde)	INDP Conference Room
09:05 – 9:15 h	Welcome to HOSST-TOSST Summer School 2018 on Cabo Verde Presidente INDP - Osvaldina Duarte Silva Honorary Consulate Germany - Carlos Ferreira Santos	
09:15 – 9:30 h	The HOSST-TOSST Graduate School – "What is behind it" The Summer School " Seafloor Structures" HOSST-Leader Prof. Dr. Christian Dullo	
09:30 – 09:40 h	Geology of Cape Verde - Overview P.D. Dr. Thor Hansteen	
09:40 – 09:50 h	The Summer School " Seafloor Structures and Life on Cape Verde" TOSST-Leader Prof. Dr. Doug Wallace	
09:50 – 10:30 h	Topics of the group work presented by group members	

	"What we are interested in" Members of groups (Intro Portuguese and English) 5 minutes each group	
10:30 – 11:30 h	Welcome Coffee Break with invited guests	INDP Foyer
11:30	Closing remark – Prof. Dr. Dullo	
12:00 – 13:00 h	Visit of Puragua / Water processing and bottling	Bus Pick up at 11:45 outside INDP
14:00 – 16:00 h	Visit of ELETRA (Energy and Water) in two groups, after one hour groups switch 1- Electricity production and distribution 2 -Water desalinization and distribution	Bus Ride
16:30 – 17:00 h	OSCM visit - Tour through Labs	OSCM
17:00 - 19:00 h	Barbecue	OSCM Patio

Tuesday, May 29, 2018

08:30	Meet at Terralodge	Bustour
09:00 – 12:30h	Overview Excursion continued P.D. Dr. Thor Hansteen (HOSST-GEOMAR, Kiel) Prof. Christian Dullo (HOSST- GEOMAR, Kiel) Dr. Christel van den Bogaard (HOSST, GEOMAR, Kiel)	Start at Hotel "Terra Lodge"
12:30 – 14:00 h	Lunch at Cafeteria - University Cabo Verde	Uni CV
14:00 – 14:45 h	Presentation: Biogeography of Cape Verdean Fish Rui Freitas (Uni Cabo Verde)	Uni CV Seminar Room
15:00 – 17:00 h	Port and Fish Processing Plant	Bus transfer

Wednesday, May 30, 2018

08:00	Bus transfer	Bus tour	Meet at Terralodge
08:30 – 09:00 h	Presentation on Fisheries Activities in Cape Verde - Albertino Martins (INDP) Fish Market activity by Albertino Martins and team (INDP)	Groups 1, 2 and 6, with PIs Hansteen/Dullo/v.d.Bogaard (HOSST, GEOMAR) for Field Introduction	
09:00 – 10:00 h	Group 7+5 Fish Market		
10:15 – 10:45 h	Group 7+5 INDP Lab		
10:30 – 11:30 h	Group 7+4 Fish Market		
11:45 – 12:15 h	Group 7+4 INDP Lab		
	Lunch on their own		

13:30 h	Pick up at Terralodge	
14:00 – ca.19:00 h	Economic Activities Cheese factory / A Farm / Museum / Clubs -games – Community Calhau	Calhau

Thursday, May 31, 2018

08:30	Taxiride to Fishmarket	Bus Tour	Start at Terralodge
09:00 – 10:00 h	Groups 1+2/2+(7) Fish Market	Groups 4 and 5, with PIs Hansteen/Dullo/v.d.Bogaard (HOSST, GEOMAR) for Field Introduction Group 1 joins in after the Fish market activity	
10:15 – 10:45 h	Groups 1+2/2+(7) INDP Lab		
10:30 – 11:30 h	Groups 2/2+6+(7) Fish Market		
11:45 – 12:15 h	Groups 2/2+6+(7) INDP Lab		
	Lunch		Lunch at INDP
14:00 – 15:15 h	ETAR - Visit Waste management (CMSV Municipality)		Bus Pick up at INDP
16:00 – 17:00 h	Presentation: Conservation and preservation - Patricia Rendall Rocha (Biosphera) Presentation: Socio Economic Aspects of the Islands - Alveno Soares (Plataforma Djunta Mon)		OSCM Seminar Room

Friday, June 01, 2018

08:00 – 12:30 h	Geological field group work - on their own -	Rides organized
13:00 – 14:00 h	Lunch	"Terra Lodge"
14:00 – 19:00 h	Preparation time Group work office (Offices/ Labs available at OSCM)	Offices/Labs available on request

Saturday, June 02, 2018

08:00 – 13:30 h	Free time	
13:30 – 13:45 h	Bus ride to University	Busses leave "Terra Lodge" at13:30 h
14:00 – 15:00 h	Presentation "Sustainable Fisheries Partnership Agreement EU and Cape Verde: where is the sustainability?"	Uni CV Seminar Room
	Dr. Corinne Almeidas – Uni Cabo Verde	
15:00 – 19:00 h	Coastal Ecosystems in Cape Verde and Snorkeling (Baia das Gatas)	Baia Das Gatas
	Corrine Almeida – Uni Cabo Verde Dinner at Baia das Gatas	Busses – to Terra Lodge / Vila Miramar

HOSST-TOSST Cabo Verde Summer School 2018

Sunday, June 03, 2018

08:00 – 12:00 h	Preparation time Group work office – field work on request (Offices/ Labs available at OSCM) Support from Supervisors Devey, Dullo, Hansteen (HOSST, GEOMAR)	Offices/Labs available on request
12:00 – 13:00	Light Lunch	"Terra Lodge"
13:00 h -	Leave for Airport	Pick up by Bus
14:55– 16:50 h	Flight to Fogo via Praia	Transfer to Hotel
18:00 – 19:00 h	Two - Day Excursion with Topic Groups (1-7) and PIs Prof. Colin Devey, P.D. Dr. Thor Hansteen, Prof. Christian Dullo, Dr. Christel van den Bogaard (HOSST-GEOMAR) Talk at local community	 tbc

Monday, June 04, 2018

8:30 –	Leave to Cha de Caldera Geological Excursion Team HOSST GEOMAR Kiel	Cars, Busses
	Packed Lunch	
	Overnight in Cha de Caldera	
18:00 h	Dinner at "Mariza"	

Tuesday, June 05, 2018

08:00 h	Day Excursion around the Island Fogo Team HOSST GEOMAR Kiel	Cars, Busses
	Lunch on the go	
16:35 – 20:15	Flight from Fogo to Sao Vincente via Praia	
	Optional: One hour guided tour through Praia (during connecting time)	tbc

Wednesday, June 06, 2018

10:00 – 12:00 h	In two groups: swap after 1 hour CVAO visit - Luiz Mendes (CVAO) Shrimp farm - Tatiana Cabral (Fazenda de Camarão de Cabo Verde)	Busses
	Lunch on your own	
14:00 – 15:30 h	Mystery Activity - Dr. Julie LaRoche (TOSST-Uni Dalhousie)	Terralodge
15:30 – 19:00 h	Preparation time Group work office	Offices/Labs available at OSCM on request

HOSST-TOSST Cabo Verde Summer School 2018

Thursday, June 07, 2018

09:00 – 14:00 h	"Dress Rehearsal" for Group work. In the field. All groups go to see all the topic sites together! Supervision: Prof. Devey, Prof. Dullo, Dr. Hansteen, Dr. Christel van den Bogaard	Bus pick up at Hotel
	Lunch during the Excursion (likely in Sao Pedro)	On the way
15:30 – 19:00 h	Preparation time Group work office – Finalization of posters! - pdf to be given to the HOSST Coordinator at 21:00 h the latest	Offices/Labs available at OSCM on request

Friday, June 08, 2018

09:00 – 12:30 h	Preparation of Summer School Project Presentation	Offices/Labs available at OSCM on request
12:30 – 14:00 h	Poster Presentation Official Thank you Lunch – Invited Guests	OSCM
14:00 – 16:00 h	Opening Remarks Honorary Consulate Germany - Carlos Ferreira Santos Minister of Marine Economy – Paulo Veira HOSST-TOSST Student representatives - Helen Packer, Lisa Samrock Prof. Christian Dullo - HOSST Spokesperson Project Presentations to Invited Guests 6 Groups, 12 Min + 8 Min Questions Starting with summary in Portuguese by Cabo Verde Student Closing remarks: Dr. Julie La Roche - TOSST Representative Prof. Colin Devey - HOSST Spokesperson	INDP Conference Room
16:00 – 16:30 h	Chill out with Dessert and Drinks	OSCM
18:30 –	Sunset at Terra Lodge – Farewell	Terrace "Terra Lodge"

Saturday, June 09, 2018

10:00 h	Leave for Home Pick up at Hotels for Drive to Airport Flight at 12:30 h – 12:35 h+	Pick up at 10:00 h Vila MiraMar / Terra Lodge

Group Project and End Product

During the HOSST-TOSST Summer School on Cape Verde 2018 we will experience marine science and life on Cape Verde. The focus during the Summer School will be on the geological structures and socio economic aspects of the Cape Verde Islands. Field trips, lectures, site visits and group projects will be done.

The group project is supposed to emphasize the holistic nature of ocean sciences: without the islands and seamounts which interact with the ocean and atmosphere, the Cape Verde environment would be totally different – so a volcano is important because it interacts with ocean circulation to stir the ocean, a tuna finds the food it needs because of that stirring etc. etc.

While working on the group projects, we will learn about the importance of geological structures and processes, which link natural science to life in Cape Verde. What we mean by "Life in Cape Verde" is left vague on purpose, as this could be life of people living there, it could be habitat for turtles, fish, plankton, etc.

All together we came up with 8 projects that we thought to be relevant and to be possible to worked on within the given time. The project topics are described in the attached document.

The projects will be addressed in small groups of four members: members of each group will include 1 geologist, 1 HOSST participant, 1 TOSST participant and 1 student from Cape Verde.

In the last month we have also held discussions with HOSST and TOSST doctoral candidates about the end product of this group work. The topics are relevant for the public and the efforts of the group projects could be longer lasting than the Summer School itself. Together we decided that the single group projects are ideal to result in signs for a "geo-trail".

Thus the work in the group project will be to

- develop a **poster or sign** which explains the scientific, ecological and cultural significance of seafloor structures around Cape Verde.
- The group projects will be the basis to design a set of informative, common look-and-feel, accessible web-pages that could, perhaps, be hosted by the Ocean Science Centre Mindelo (or by TOSST-HOSST).
- The web-pages could be linked to using QR codes that could actually be physically located along a "geo-trail" (compare "nature trail" or "Naturpfad") around Sao Vicente.
- The group projects would be to design, find, link and create the material/ text/ graphics for a public outreach/ educational web-page
- amenable to a powerpoint presentation at the end of the school

(The actual HTML coding and printing of the QR codes/ labels and web-site construction will be done after the school by professionals.)

At the final summary presentation on the last Friday

a) each groups needs an A0 poster on their topic ready

(electronically and printed - pdf for print ready Friday morning at 8:00 am,

a template will be provided, posters will stay at OSCM)

It is very important that, for each poster, there is a summary as well as all figure captions also in Portuguese

b) give a ppt presentation of the contents of the poster for the OSCM/INDP audience

For the presentation, the CV student in each group should present a summary of the results in Portugese before the HOSST/TOSST presentation in English begins

→ the audience for the poster and presentation are addressed in their language to enable a greater impact.

After the summer school we at HOSST would then probably invest some effort in changing the ppt contents into a website which can be accessed by interested persons in Cape Verde (maybe including producing a flyer which can go in hotels/tourist info.). The places will be pointed to with QR codes, linked to the website.

There will be time in the Summer School schedule for you to work on the topics and its presentation, and also a chance, through the Summer School, to discuss your concept with the School leaders.

Group Topics

	Project title	Study area (site for Information Board)	Relevant features	Why should someone from CV care? Where is the link to "life"
1	Land to live on: How the Cape Verde archipelago formed	Mounte Verde OSCM	The view from the mountain top. Islands in all stages of evolution are visible. What controls these stages? Are all equally inhabitable?	This is the basis for the CV state. Shows clearly the interaction between sea, land and atmosphere
2	Islands from ash? How does a volcano build habitable land in the middle of an ocean	Sao Pedro Bay – Light-house way	When magma enters water it makes ash – not great building material for an island! Solid lava and the channels it moves through to get to the surface (dikes) form a "skeleton" to hold this ash together. Does a CV island look like this all the way through? How stable are ash, lava and dike rocks? How does their stability affect the landscape?	On CV the only way to use ash to build anything is to mixing it with cement. Nature cannot do that, so how is an island "held together". How does this affect where people choose to build houses, roads etc.?
3	As rare as diamonds: The Cape Verde carbonatites	Cancelled because of lack of interest		
4	Falling apart: The ever-present danger on ocean islands	Debris Avalanche and Praia Grande deposits	Landslides on volcanic islands happen all the time and pose a significant long-term risk. Most information about past landslides is on the seafloor – what does it look like? What can it tell us about the risk of living on CV? What makes a landslide hazardous? What sort of seafloor do they leave behind and how is this relevant for fish?	This is a real danger of living on an ocean island – a good example is the north coast of Santo Antao (option for excursion). They have sculpted the islands to their present form.
5	Volcanoes and life on CV: How old is the volcanism on the Island?	Calhau Cinder Cone and lavas entering the sea	How quickly are the islands changing relative to the time they have been inhabited? How can we put geological processes into the human time-scale? When was the last eruption? How does land grow? How do hills grow? What happens when lava enters the sea? How does it affect life there?	Human society on islands like Fogo is directly impacted by volcanism, creating and destroying livelihoods, harbours etc.
6+8	Where does all this sand come from? White beaches on black-rock islands – how does that work? Dust and the impacts on the islands	Sand dunes - Next to Calhau the Atmospheric Site	The CV are known for their beautiful beaches and the creatures, such as turtles, whose lives depend on them. But where does the sand come from? The CV volcanic rocks don't have any white minerals to make them. So, does the sand come from ocean currents? Is it windblown from the Sahara? Or does it come from more local sites? The answer is in the sand and tells a story of land, sea and air interactions of national importance. Impacts of dust on health, economy, ocean productivity (nutrients)	Sand is a highly valuble construction material, its illegal mining is destroying beaches. Are there alternatives? Why does beach sand make bad mortar? How quickly can mined beaches regenerate? Are sandstorms good for Cape Verde?
7	Fish Central: Why shallow seamounts make great fishing grounds.	Close to fishmarket – INDP? Port?	This is the quintessential HOSST-TOSST project. What is a seamount? How does it form? How does it influence ocean currents? Why does this make it so fish-rich? Are seamount species different from near-shore ones? Local population or also migratory species? Interconnection between seamount populations. Etc., etc.	The best fishing grounds in open waters around the CV are the shallow seamounts (Senghor etc.) – why are they so fish-rich?

Topic Groups

Groups in HOSST-TOSST Summerschool Cape Verde 2018

	Last Name	First Name	Programm	
1)	Land to Live on: How the Cape Verde archipelago formed			
1	Samrock	Lisa	HOSST	geologist
2	Rakshit	Subhadeep	TOSST	
3				
4	Mendes	Elizier	Uni CV - Praia	geologist
2)	Islands from Ash? How does a Volcano build habitable land in the middle of the ocean			
1	Bertlich	Jacqueline	HOSST	geologist
2	Troup	Meghan	TOSST	
3	Chua	Allison	TOSST	
6	Fortes	Manuel	Uni CV - Mindelo	
4)	Falling apart: The ever-present danger on ocean islands			
1	Herrero	Tatum	HOSST	geologist
2	Shajahan	Najeem	TOSST	
3	Yao	Wanxuan	HOSST	
4	Delgado	Katelene	Uni CV - Mindelo	
5)	Volcanoes and life on CV: How old is volcanism on the island?			
1	Aali	Masoud	TOSST	geologist
2	Corbalan	Ana	TOSST	geologist
3	Lochte	Annalena	HOSST	geologist
4	da Graca	Francisco	Uni CV -Mindelo	

8) + 6)	Dust and the impacts on the islands - Where does all the sand come from? White beaches on black-rock islands – how does that work?				
1	Vehling	Falko	HOSST	geologist	
2	Duplessis	Patrick	TOSST		
3	Geißler	Felix	HOSST		
4	Dos Santos	Maldini	Uni CV - Mindelo		
7)	Fish Central: Why shallow seamounts make great fishing grounds				
1	Packer	Helen	TOSST		
2	Arruda Monteiro da Silva	Ricardo	TOSST		
3	da Cruz	Nivaldo	CV		
4	Monteiro	Ivanice	INDP/Uni CV		

Summer School Participants

Summer School Participants

HOSST PhD Researchers

Jacqueline Bertlich
Felix Geißler
Tatum Herrero
Annalena Lochte
Lisa Samrock
Falko Vehling
Wanxuan Yao

TOSST PhD Researchers

Masoud Aali
Ricardo Arruda Monteiro da Silva
Allison Chua
Ana Corbalan
Patrick Duplessis
Helen Packer
Subhadeep Rakshit
Najeem Shajahan
Meghan Troup

Uni Cabo Verde Students, PhD Researchers

Francisco Da Graca
Nivaldo da Cruz
Katelene Delgado
Maldini Dos Santos
Manuel Fortes
Elizier Mendes
Ivanice Monteiro

HOSST Project Speaker

Christian Dullo (GEOMAR)
Colin Devey (GEOMAR)

TOSST Project Speaker

Doug Wallace (Dalhousie University)
Markus Kienast (Dalhousie University)

HOSST Coordinator

Christel van den Bogaard

TOSST Coordinator

Kirsten Laing

Tatiana Cabral (Cabo Verde)

HOSST-TOSST Cabo Verde Summer School 2018

HOSST PIs

Thor Hansteen (GEOMAR)

TOSST PIs

Mladen Nedimovic (Dalhousie University)

David Barclay (Dalhousie University)

Julie LaRoche (Dalhousie University)

Student Guests

Anne Brauer (Uni Greifswald)

Mayara Lourenço (Uni CV)

TOSST Guest Participants

Brent Robicheau-Thomas (Dalhousie University)

Supervisors of Summer School Participants

HOSST Supervisors GEOMAR, CAU	PhD Candidate	
	HOSST	TOSST
Eric Achterberg	Wanxuan Yao	
Andy Dale		Subhadeep Rakshit Meghan Troup
Colin Devey	Tatum Herrero	Allison Chua
Gernot Friedrichs	Florian Lange	Patrick Duplessis
Ingo Grevemeyer		Ana Corbalan-Castejon
Thor Hansteen	Lisa Samrock	
Heidrun Kopp		Masoud Ali
Arne Körtzinger		Ricardo Monteiro da Silva
Sebastian Krastel		Meghan Troup
Dirk Nürnberg	Jacqueline Bertlich	
Andreas Oschlies	Wanxuan Yao	
Janne Repschläger	Annalena Lochte	
Lars Rüpke	Falko Vehling	Najeem Shajahan
Jörn Schmidt		Helen Packer
Ralph Schneider	Annalena Lochte	
Klaus Wallmann		Subhadeep Rakshit

TOSST Supervisors Dalhousie University	PhD Candidate	
	HOSST	TOSST
Christopher Algar		Subhadeep Rakshit
Megan Bailey		Helen Packer
David Barclay		Najeem Shajahan Meghan Troup
Erin Bertrand	Wanxuan Yao	Scott McCain
Rachel Chang		Patrick Duplessis
Katja Fennel	Wanxuan Yao	
Markus Kienast	Jacqueline Bertlich Annalena Lochte Kirsten Meulenbroek	
Randall Martin		Patrick Duplessis
Mladen Nedimovic	Tatum Herrero Lisa Samrock Falko Vehling	Masoud Aali Ana Corbalan-Castejon
Doug Wallace	Felix Geißler Florian Lange	Allison Chua Ricardo Monteiro da Silva

PhD Candidates Short CV

Masoud Aali

TOSST

Geophysicist
M.Sc. in Exploration Geophysics - Gubkin University, Russia

If you're interested in Paleo sea-level change, then we can be good friends! I use state-of-the-art geophysical and petrophysical methods to study sea-level change. In my research, I try to constrain the complex forcing functions tying evolution and preservation of the margin stratigraphic record to Sea-level changes. By using 3D seismic imaging to map and characterize nearshore features (e.g., meandering rivers, incised shelf valleys), we determine the sedimentological properties of near-shore features and associated facies that were developed during periods of known eustatic variations. It will lead us to understanding the evolution of shorelines and quantifying timing and amplitude of the eustatic changes in each geological period. Cool eh?

Supervisor: Prof. Mladen Nedimovic
Transatlantic Co-Supervisor: Prof. Dr. Heidrun Kopp

Ricardo Arruda Monteiro da Silva

TOSST

Oceanographer
M.Sc. in Physical, Chemical & Geological Oceanography - University of Rio Grande (FURG)

I started my studies in oceanography from my bachelors degree, I choose this field because it presents a mix of disciplines, such as chemistry, biology, geology and physics, and they are all connected. During my bachelors I worked mainly with biology, in my masters I switched to physical oceanography. Now on my phd I'm focusing on chemical oceanography with the title "Air-Sea CO_2 Fluxes Spatio-Temporal Variability in the North Atlantic Ocean". For that an estimation of the fluxes of CO_2 between the atmosphere and the ocean will be done using different measuring systems, making it possible to compare those systems and start investigating what are the main drivers causing the variability of these fluxes. This is important to understand how the ocean is responding to the increasing concentration of atmospheric CO_2.

Supervisor: Prof. Dr. Doug Wallace
Transatlantic Co-Supervisor: Prof. Dr. Arne Körtzinger

Jacqueline Bertlich

HOSST

Geologist I Biogeochemist I Paleoceanographer
M.Sc. in Geosciences – WWU Münster, Germany

Being out there in the field and feeling the Earth's power, either on land or water, as a geologist, it's beyond any imagination. After my studies of the research field geosciences at the University of Münster (Germany), I definitely see our nature from a new, different perspective.
Currently I am a third year doctoral researcher at GEOMAR, the Helmholtz Centre for Ocean Research in Kiel within the HOSST graduate school. My research focuses on marine biogeochemical processes and foraminiferal isotope geochemistry.
I am still fascinated how a tiny calcite shell (foraminifera), not bigger than 400 µm, provides information about past temperatures and salinities of the oceans surface, which further gives us an approximation about past changes in climate (i.e. changes in the global ice volume). After a foraminifer's life cycle, their dead shells sink down in the water column and are preserved for thousands of years in the sediment at the oceans seafloor. With certain research vessels we are able to collect these sedimentary material. To gain accurate paleoceanographic reconstructions I am developing and assessing the applicability of a new direct indicator (foraminiferal Na/Ca proxy) for past sea surface salinities.
Beside that I am a passionate photographer and painter, but what's better than combining hobby and work.

Supervisor: Prof. Dr. Dirk Nürnberg
Transatlantic Co-Supervisor: Prof. Dr. Markus Kienast

Current publications and projects:

- Bertlich, J., Nürnberg, D., Hathorne, E. C., de Nooijer, L. J., Mezger, E. M., Kienast, M., Nordhausen, S., Reichart, G.-J., Schönfeld, J., and Bijma, J.: Salinity control on Na incorporation into calcite tests of the planktonic foraminifera *Trilobatus sacculifer* – Evidence from culture experiments and surface sediments, Biogeosciences Discuss., https://doi.org/10.5194/bg-2018-164, in review, 2018.

- PhD-research project: "*The fate of the Laurentide Ice Sheet and its freshwater signature in the North Atlantic*"

Allison Chua

TOSST

Engineer/Oceanographer
MASc. Materials Engineering - Dalhousie University, Canada; BEng. Mechanical Engineering

In 1955, renowned oceanographer Henry Stommel compared oceanographic observational approaches to meteorologists studying the atmosphere with "*half a dozen automobiles and kites to which air sounding instruments were attached and doing all their work on dark moonless nights when they couldn't see what was happening in their medium.*" The story of how I came to study oceanography can't be told in a paragraph, but Stommel's comparison captures the thought in my mind the moment I decided to quit my full-time engineering job in the shipbuilding industry and return to school.

My research focuses on the development and use of autonomous underwater vehicles (AUVs) and how they can be used in ocean measurement and exploration. Unlike AUVs, alternative methods of oceanographic data collection (e.g. using ships) remain costly and are largely inadequate for capturing the evolution of events in three dimensions. The ability to rapidly collect data in three-dimensional space combined with decision-making and autonomous capabilities has far-reaching consequences beyond the scientific community – for example, AUVs can be (and have been) used in studies aimed at anticipating submarine volcanic eruptions or for rapid environmental assessments after oil spills. Our understanding of ocean phenomena that have traditionally suffered from undersampling, such as animal migration and marine nutrient cycles) has been greatly enhanced through technological advances in robotics and autonomy. However, technology is often still the limiting factor in our understanding of large and rapidly-evolving phenomena, an understanding that is particularly relevant in light of the diverse and unprecedented threats facing the ocean today.

Supervisor: Prof. Dr. Doug Wallace
Transatlantic Co-Supervisor: Prof. Dr. Colin Devey

Ana Corbalan-Castejon

TOSST

Geophysist
M.Sc. in Seismology - Colorado State University, USA

During the last years of my undergraduate studies, I participated in several oceanographic surveys studying the volcanoes and seamounts at the Atlantic Ocean. These experiences made me realize of how much I liked to work in such a stunning and peaceful setting, surrounded only by the sea.
Originally from Spain, I did my undergraduate studies at Universidad Complutense de Madrid in Geological Engineering and an MSc in seismology at Colorado State University. In 2016, I started a PhD at Dalhousie University in marine seismology.
My Ph.D. focuses on the mid-ocean ridge in the Southwest Indian Ocean. This ridge is very particular because it is spreading at an unusually slow pace, which results in broad exposures of rocks derived from the mantle at the seafloor. The exposed mantle rocks react with the seawater and become hydrothermally altered by a process known as serpentinization. Said process has major implications on the geophysical, geochemical and biological characteristics of the marine system. Serpentinized mantle rocks are present in many other geological settings, but they are not always easy to identify because other rocks mask their geophysical signature. Therefore, my project aims to better understand the geophysical fingerprints of serpentinized mantle rocks in the Southwest Indian Ridge and to apply the new gained knowledge to more complex settings, for example, offshore Eastern Canada.

Supervisor: Prof. Dr. Mladen Nedimović
Transatlantic Co-Supervisor: Prof. Dr. Ingo Grevemeyer

Thesis title: "Geophysical fingerprints of an exhumed serpentinized mantle domain at the ultraslow Southwest Indian Ridge and their application to the rifted margins of Eastern Canada."

Patrick Duplessis

T O S S T

Physics / Atmospheric Science / Meteorology
B.Sc. Earth and Atmospheric Sciences / UQÀM, Montréal, Canada

Low visibility can be a significant hazard for transportation and cause important economic losses notably when it is inaccurately forecasted. Particles like dust, sea spray, and even bacteria that are suspended in the air can act as a surface on which fog droplets will form when humidity is very high. My main project focuses on the chemical and physical characteristics of these particles and how they affect the fog life cycle. How is fog different when it is formed out of continental air versus oceanic air? Is it different at night than in the middle of the day? By measuring meteorological data and analyzing fog composition at various sites on the Canadian east coast and on ships, we are hoping to find some answers to these questions.

Supervisor: Prof. Dr. Rachel Chang (co-supervisor: Prof. Dr. Randall Martin)
Transatlantic Co-Supervisor: Prof. Dr. Gernot Friedrichs

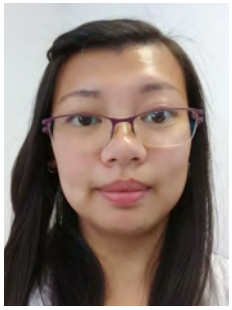
Felix Geißler

H O S S T

Chemist
M.Sc. in Chemistry / Kiel University, Germany

In order to improve our knowledge of the biogeochemical processes and their interactions and connections to the global climate the ocean needs to be characterized on a broad spatial and temporal scale. Parameters of interest are for example the temperature, salinity, nutrient concentrations or the content of dissolved gases like oxygen or carbon dioxide. For this purpose the conventional sampling-analysis approach is nowadays unfavored as it is very laborious, expensive and prone to contaminations. To overcome these drawbacks remote sensing and the use of integrated autonomous in situ sensor systems are the way to go.
In my PhD project I am focusing on the development, validation and deployment of Lab-on-Chip sensors for the quantification of iron and manganese in marine waters. These sensors are based on microfluidic technology which means that the whole analysis, conventionally done by hand in a laboratory, is miniaturized on a chip of 20 cm diameter to measure nutrient concentrations autonomously and in situ. This project is a great opportunity to combine my background in chemistry with my environmental and technological research interests.

Supervisor: Prof. Dr. Eric P. Achterberg
Transatlantic Co-Supervisor: Prof. Dr. Douglas Wallace



Tatum Miko Herrero

HOSST

Volcanologist
M.Sc. in Volcanology / Université Blaise Pascal, France

The abyssal plains of the North Atlantic seafloor is riddled with small volcanic constructs such as pimple-like cones and piled-up lava flows comparable to those formed along the Mid-Atlantic Ridge. Some of these volcanoes are as old as the seafloor they are sitting on since they are birthed at the mid-oceanic ridge, but other volcanoes give indications that they are actually much younger than the seafloor they are built on which gives signs for a kind of intraplate volcanism different from large-scale mantle plumes and hotspots. My task is to locate and classify the volcanic areas to understand the underlying geologic processes that result to the unexplained volcanism in the deepest parts of the seafloor.

Supervisor: Prof. Dr. Colin Devey
Transatlantic Co-Supervisor: Prof. Dr. Mladen Nedimovic

Annalena Lochte

HOSST

Paleoceanographer
M.Sc. in Palaeobiology / Earth Sciences – Uppsala University, Sweden

In my PhD project, I use marine sediment to reconstruct past ocean conditions, such as temperature, salinity and productivity. By applying different tools, I am able to detect past glacial meltwater fluxes and their impact on ocean circulation and atmospheric temperature. This will help to improve future predictions of current climate change.

I chose to work in ocean science, because our planet is blue for a reason.

Fun fact: I am scared of pigeons.
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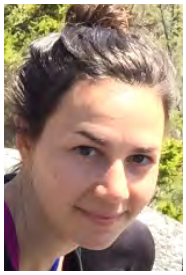
Supervisor: Dr. Janne Repschläger, Prof. Dr. Ralph Schneider
Transatlantic Co-Supervisor: Prof. Dr. Markus Kienast

PhD Thesis Title : "Holocene variability in the Labrador Current"



Helen Packer

TOSST

Sustainable Tuna Industry
M.Sc. in Marine Resource Management /Wageningen, The Netherlands; B.Sc. in Marine Biology/Swansea, UK

Ahoy! Originally from France, I grew up by the Atlantic Ocean and spent many summers by the Mediterranean Sea, either swimming, sailing, snorkeling or surfing. Following my love for the oceans and a travel, I left my home country to study marine biology (B.Sc.) and marine resource management (M.Sc.) in the UK and the Netherlands. During this time, my passion for the ocean kept growing, especially how humans as individuals and organizations manage and interact with the marine environment. After my studies, I moved to California, where I managed a science and sustainability program for Anova Food USA, an importer of sashimi grade frozen yellowfin tuna. During this time, I became involved in several Fishery Improvement Projects (FIPs) with artisanal and industrial tuna fisheries in the western and central Pacific Ocean, with the goal of achieving certification against Marine Stewardship Council (MSC) standard for sustainable fisheries. I became fascinated with the complexity of tuna fisheries and how their migratory and transboundary nature leads to interesting scientific, political and socio-economic dimensions that need to be managed to achieve sustainability. Observing those challenges from the perspective of a North American tuna companies is what led me to pursue a PhD at Dalhousie University with Dr. Megan Bailey. I started my PhD in September 2016 and will be looking at Corporate Social Responsibility (CSR) in the tuna industry. More specifically, I will be investigating the business case for mid-chain tuna suppliers to engage in CSR programs that support the sustainable development of small-scale and artisanal tuna fisheries in the developing world. What are the incentives and accountability mechanisms that make businesses care about sustainable tuna fisheries? How can we make them care more and contribute to better results? CSR programs in the seafood (including tuna) industry can go from pushing fishing companies to become MSC certified, setting business codes of conducts, FIPs, philanthropic donations to conservation organizations and much more. What issues do these programs address, what strategies do they represent and are they working?

Thesis title: The Business Case for Corporate Social Responsibility Programs for Improving Developing World Tuna Fisheries

Fun Fact: the most endangered species of tuna is the Atlantic Bluefin tuna. They (and other species of tuna) are unlike any other fish in that they are warm blooded, can swim to up 70km/h and they can live for up to 50 years. The largest Atlantic blue fin tuna was caught off Nova Scotia, Canada and weighed 1,496 lb (679 kg). Before Japanese people started eating Bluefin tuna, paying up to $1.76 million for 1 tuna, Bluefin tuna was canned and used for cat food.

Supervisor: Dr. Megan Bailey
Transatlantic Co-Supervisor: Dr. Jörn Schmidt

Subhadeep Rakshit

TOSST

Geology, biogeochemistry.
B.Sc - M.Sc. in Geological Sciences – Indian Institute of Science Education and Research (IISER) Kolkata, India.

Why Ocean? 70% of the earth surface is ocean, and 95% of the ocean is still unexplored. We know more about the Mars surface than we know about our oceans. Starting from the Mystery of origin of life to the driver of climate system, everything depends on how the ocean responses.

Summary: All life form needs N to grow. However only some microbes can fix the atm N_2 in a bioavailable form. Ocean productivity often depends on the availability of this bioavailable N. Some specific bacteria again convert this to N_2 gas depending upon O_2 concentration in water and/or sediment. This is how N recycles within our environment. However, human practice delivers loads of bioavailable N to ocean in terms of fertilizer, waste water etc. How this is going to affect the normal functioning of the N cycle? I hope my thesis will help us to understand N cycle a little better and try to answer this question.

Supervisor: Dr. Christopher Algar
Transatlantic Co-Supervisor: Dr. Andrew Dale

Title: "Sediment-water fluxes in the Bedford Basin with focus on nitrogen cycling "

Lisa Samrock

HOSST

Geologist
M.Sc. in Earth Sciences - Uppsala University, Uppsala, Sweden; B.Sc. in Geosciences – University of Potsdam, Potsdam, Germany

Why did you chose to work in Ocean Sciences?
As a geologist, I have always been fascinated by volcanoes and was interested in how the land we stand on formed. Oceanic volcanism is special, because it not only forms islands, but also vast landscapes in the deep ocean, hidden from our eyes. To study these oceanic volcanoes and to understand how they formed, we need multidisciplinary approaches and many different data sets and methods, both on- and offshore.
My research focuses on the evolution of the Cape Verde archipelago. To understand the evolution of the Cape Verde archipelago it is vital to compare the temporal and spatial evolution of both island and seamount edifices. An important part of my project is therefore to establish absolute ages, especially for the seamounts in the area, and the onset of volcanism. I am also investigating the composition of the volcanic rocks on the islands, in order to understand the processes within the magma plumbing system. Additionally, I am investigating structural controls on the evolution of the archipelago (e.g. regional fault patterns) in order to account for the spatial distribution of volcanic activity through time.

Supervisor: PD. Dr. Thor Hansteen, Prof. Christian Dullo
Transatlantic Co-Supervisor: Prof. Mladen Nedimović

Najeem Shajahan

TOSST

Physicist
M.Sc. in Physics – Kerala University, India

Different intriguing problems in ocean sciences which involve a wide range of application has drawn my attention in this research field. My topic of interest in oceanography is underwater acoustics because of the physics involved in it and the usefulness of sound in a broad spectrum of fields such as measurement, military, navigation and wildlife conservation. When sound travels through the ocean it interacts with the boundaries and the resultant acoustic field contains information about the ocean environment. In my research, the measured background sound is used to understand the sound generating mechanism of natural processes and extraction of ocean environmental information using data and physics-based models. One of the focus of my research is to measure the noise generated by hydrothermal vents to study the spectral and spatial properties of vent noise. By combining field data and suitable physics-based model, physical properties of the vent can be extracted. Once the acoustic properties of hydrothermal vents are understood, background sound measurement can be later used for the localization of new vent sites. Passive acoustics, signal processing, sound propagation modelling and geo-acoustic inversion are my topics of interest in ocean acoustics.

Supervisor: Dr. David Barclay
Transatlantic Co-Supervisor: Prof. Dr. Lars Rüpke

Meghan Troup

TOSST

Student
B.Sc. in Marine Science- Coastal Carolina University, USA

Why I decided to work in Ocean Sciences: I decided to work in Ocean Sciences for a number of reasons. The most boring of these reasons are that I love the ocean, I want to protect it, and I want to be on the forefront of new ocean technology. But more importantly, I always wanted to be a mermaid, so working in Ocean Sciences is as close as I could get.
Thesis Explanation: Surveying the seafloor can be complicated at depths shallower than 1 meter. My research includes building a hovercraft to act as a surveying platform. This hovercraft can move seamlessly from water to land, which allows data to be sampled near the waterline. I seek to create very detailed maps of physical and biological features of the seafloor using SONAR instruments mounted on the hovercraft platform.

Fun Fact: As a child, I was actively training for the circus by learning how to ride the unicycle.

Supervisor: Dr. David Barclay
Transatlantic Co-Supervisor: Prof. Dr. Klaus Wallman, Dr. Andy Dale

Thesis Title: "Creating an Autonomous Hovercraft for Shallow Water Seafloor Surveys"

Falko Vehling

HOSST

Geophysicist/Geomodelling
Diplom in Geophysics, Christian-Albrechts-Universität zu Kiel, Germany

While studying geophysics at Kiel University, I became very interested in geodynamic processes and how geological systems work. I discovered that numerical models are great tools for gaining deeper insights into geologic systems and for obtaining quantitative answers to scientific questions. During my diploma thesis work I became interested in hot springs and black smoker systems at mid-ocean ridges, which are scientifically named as hydrothermal systems.
My PhD-project aims at using numerical modeling techniques to investigate the pattern of hydrothermal circulation along the Reykjanes Ridge. The objective is to integrate hydrothermal flow models with geophysical data in order to investigate how hydrothermal cooling of young ocean floor and the formation as well as distribution of marine mineral deposits are related to each other. For this purpose, the main part of the PhD project is to develop a novel hydrothermal flow model that resolves multi-phase phenomena and metal transport. The results will be integrated and tested with geophysical data from the Reykjanes Ridge and possibly the East Pacific Rise – depending on data availability.

Supervisor: Prof. Dr. Lars Rüpke
Transatlantic Co-Supervisor: Prof. Dr. Mladen Nedimovic
Title of thesis: Numerical modelling of hydrothermal systems along the Reykjanes Ridge

Wanxuan Yao

HOSST

Biogeochemistry
M.Sc. in Environmental Modelling – Karl von Ossietzky University of Oldenburg , Germany

My reason for choosing working in ocean science.
Transparent yet obscure, the ocean lures us looking deeper into this blue space.

my phd project:
Iron is a micronutrient for the phytoplankton. It is the limitation factor for oceanic primary production in roughly 50% of the ocean surface. Under the climate change, the study of the response of the ocean cannot be done without iron cycle model. However, the current iron cycle models cannot explain the iron data we obtained so far. This indicates that the model is not well tuned, or there are more processes in the iron cycle we have not yet understood. To tackle the problem, I deploy model calibration experiments, which calibrates the model with new accumulated iron observational data. By doing so, I will hopefully get a well-tuned iron cycle model, gain some deeper understanding of the iron cycle processes of the current model and some hint for future development of the model as well.

Supervisor: Prof. Dr. Andrea Oschlies, Prof. Dr. Eric Achterberg
Transatlantic Co-Supervisor: Prof. Dr. Katja Fennel, Prof. Dr. Erin Bertrand

Nivaldo da Cruz

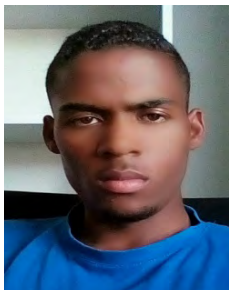
Uni Cabo Verde/ INDP

Graduation in Biological Sciences: Enviroment and fisheries
- University of Cabo Verde (Uni-CV) – Cabo Verde

I am in the final of the graduation and at this moment, I'm looking for a project to do for the thesis of the graduation. I'm researching for articles, books with methodologies for analyze the presence of possible contamination by microplastics in fishes here in Cape Verde.

This is one of the problem the plastic has been causing in the oceans around the world, so the objective is verify if it's already here in Cape Verde, because every year, lots of plastics appears on the coast of the islands, and this can't be good for the marine food trophic chain, since fish can't distinguish plastic from food. But, I am still looking for possibilities to implement the project.

I enrolled in summer school because it is an opportunity to put into practice the knowledge acquired during graduation, to acquire new contents, to live with people from another country, and I'm a person who like new challenges, involving projects related to the environment



Francico da Graca

Uni Cabo Verde

Biogeochemistry
Student of Marine Biology

I was born on September 30, 1996, on the island of Santo Antão. After finishing my degree in Biological Sciences at Cape Verde University, I am now dedicating to my final work (Bachelor).
I really admire the way some living beings can survive in inhospitable environments. Living beings found at enormous depths in the ocean, using as energy source minerals expelled from the Earth's interior are the example of the adaptive success of species on the planet.
I chose to study Biology because it is a science that provides information about life on Earth. I'm fascinated by everything that deals with topics related to Natural Sciences. Through this science we can understand the relationships between the environment and other living beings, and thus define the best way to manage natural resources in a sustainable way.
My final work which theme is "Trophic Ecology: Analysis of the diet of the species Thunnus albacares and Katsuwonus pelamis in the waters of Cape Verde" using the technique of stomach content analysis. There are in Cape Verde few studies related to the trophic ecology of tunas so this study will characterize the diet and provide information on the ecology and feeding of those species.

Katelene Delgado

Uni Cabo Verde

Licensing in Biological Sciences: Enviroment and fisheries
University of Cabo Verde (Uni-CV) – São Vivente, Cabo Verde

At this moment, I am in the final of the graduation and I started the internship with the teacher Raquel Vasconcelos with the title: *The Cape giant gecko. Differences and similarities between the two subspecies of Tarentola gigas. T. gigas gigas,* which occurs only the Islet Raso and the *T. gigas brancaensis,* which occurs only the Islet Branco. The objective is verify the possible differences or similarities based on genetic, morphological and ecological factors in order to try to understand the evolutionary line and to verify if they are really two subspecies, how was affirmed in studies published in years 80 where they based only on morphological characters to distinguish the two subspecies (or not) of the *Tarentola gigas*. In parallel to the thesis, I have another project, to analyze the vital areas of the geckos in the deserted islands

The ultimate goal it's to contribute to the management and conservation of the desert Cabo Verde islands. I was happy to work whit these geckos, that was wonderful being in contact whit them in his natural environment, try understand a little about his life. For me, it's more exciting to be able to help and to be able to contribute to science.

So, when I finish this project I would like to work in the fishing sciences, stay more near the sea, because that is what else we have in Cape Verde. Or work whit environmental conservation areas, because we need to develop the conservation of the environment in our country and I have had experience in this area, working with sea turtles, and I was tempted to follow this area.

I,m a Cape verdean woman with 22 years old, who wants to do something for my country and this world, I don't know what, but I'm still looking for…

Manuel Fortes

Uni Cabo Verde

Student of Biological Sciences-Environment and Fisheries
University of Cape Verde
Faculty of Engineering and Marine Sciences

I was born in Santo Antão on April 5, 1996. Island where I grew up and completed my studies (primary and secondary school). At the beginning of October 2014, I moved to the island of São Vicente where I would begin my degree in biological sciences at the University of Cape Verde. Now that I have finished the course, I am devoting myself to my final work.

I am currently doing my internship at OSCM - Ocean Science Centre Mindelo and INDP - National Institute for Fisheries Development, whose research focuses on the theme, "Characterization of the Water Column in the Northwest Quadrant of Santa Luzia."

Cape Verde, being made up of islands surrounded by the ocean, is a country where the majority of its economy is linked to the sea, as well as several families living in coastal regions, where the sustenance is based on fishing activity. Therefore, the present study - "characterization of the water column in the Northwest quadrant of Sta. Luzia" using special oceanographic equipment (Lander and Wave glider) to record local data, will be an added value, as far as knowledge about the island in particular and the archipelago of Cape Verde in general.

Basically, my research is based on characterizing the water column, based on physic-chemical parameters (oxygen, temperature, salinity, carbon dioxide, chlorophyll and currents) and analyse the spatial-temporal variability of these parameters throughout the study period.

For me Cape Verde, due to its geographic character, climate, etc. was one of the strong reasons why I chose the area of biological sciences as my course, and on the other hand understanding how our nature behaves is one of the most fascinating things in life. Nature looks at us with its beautiful landscapes that are breath taking, which makes anyone love nature, and everything that exists in it.

I am a nature lover, sport, especially walking / traveling with my headphones amusing and taking beautiful photos by the beautiful landscapes by which our nature proves us.

Maldini Gomes dos Santos

Uni Cabo Verde

Graduating in biologie sciences
UNICV, São Vicente

One of the best things to feel free is enjoying the wonders of the nature offer to you. And the biologie is a science that allow us enjoy and marvel with our nature in the most brutal way possible and fight for its conservation.
I always had a fascination by the nature and when I knew that I could make it something that always be part of my life I did not hesitate in my choice.
Now I am in my last year of my graduation from the University of Cape Verde and my final work is about the population dynamics of mackerel scad which is a very appreciated fish in Cabo Verde.
My work will allow to update some information on growth, reproductive period, age structure, mortality, taking into account the pressure that the fishing offers for this resource as well as the climatic change taking into account that it is a small pelagic that ends up be very faithful to their ideal environmental conditions for their survival.

Eliezer Mendes

Uni Cabo Verde

Geologist | Environmentalist
Degree in Geosciences and Environment - Uni CV, Cape Verde

Be a Geologist is to be curious. It is to have nature as your office and make your day an adventure that many want, but never will. We can say that Geology make us to observe the and read the nature in a different way.
Currently I'm not in the academic world, so I'm not developing any research projects. But during my graduation, I did several fieldworks like a visit to Fogo island. I get a opportunity to study the geology of the island, and the community around the volcano.
After that i participated on international conference Fogo eruption 2014 – 2015.
In the end of my degree I developed a project that is Municipal Emergency Plan of Ribeira Grande de Santiago, a project that was accepted by the Municipality and was in charge of continuing in a next phase.
Now my focus is on summer school and hope to give my best contribution to the group.

Degree Project - Proposal of Municipal Emergency Plan of Ribeira Grande de Santiago.

Ivanice Monteiro

Uni Cabo Verde/ INDP

Marine Biologist / Oceanography and management of marine resources M.Sc. Student
Last year of M.Sc.

I did all my studies at marine science at UNICV. First a bachelor degree followed by a graduation on marine biology and fisheries and now trying to increase my knowledge but still focused on marine resources I'm doing my master learning more about the ocean and what it can offer.
On my last year at the M.Sc. course at UNICV, I am an INDP (National Institute for Fisheries Development) staff member at Ocean Science Center Mindelo- OSCM, as laboratory manager.
My thesis title is "Variation of Yellowfin Tuna (*Thunnus albacares)* abundance in the Cabo Verde region using CPUE in relation to environmental anomalies" (subject to change). On these study I intent to show how climate changes can affect the tuna availability at Cabo Verde waters connecting environmental parameter anomalies to CPUE data reported by ICCAT using Long-line Japanese data applying different models and show how difficult is to work with commercial data.

Supervisor: Dr. Heino Fock from Thuenen Institut

Monteiro I., Fock R., Silva P., Linking local fisheries observations to climate - a first analysis of historical data from Cabo Verde. Poster supported through PREFACE EU FP 7 project, INDP, Mindelo, Cabo Verde.
Fock R., Monteiro I., Silva P., Lancker K., Schmidt J., Czudaj S., Catch opportunities of Yellowfin tuna (Thununnus albacares) in the waters of Cape Verde (in Prep.) supported through PREFACE EU FP 7 project.

Speakers from other Organisations

Consulate

Carlos Ferreira Santos	German Consulate in Mindelo	Honorary Consul of the Federal Republic of Germany	

Ministery

Paulo Veiga	Ministery of Maritime Economy Secretary of State		

INDP

Osvaldina Duarte Silva	INDP	President	
Albertino Martins	INDP	Director of DIH	Fisheries Biology and Stock Assessments

INMG

Luís Mendes Neves	INMG	On-site manager of CVAO station	Chemist
Bruno Faria	INMG	Volcanologist	Geologist

UNI Cabo Verde

Corrine Almeida	UNICV	Professor of Oceanography	Marine Biology/Oceanography
Rui Freitas	UNICV	University Teacher – Corals	Marine Biology

Biosfera

Patricia Rendall Rocha	Biosfera, NGO	Biosfera (Santa Luzia and Islets/Protected Areas/Conservation)	Marine Conservation

Plataforma Djunta Mon

Alveno Soares	Plataforma Djunta Mon

Socio Economic Aspects of the Islands - Site Visits

Puragua	Water bottling	Zona Industrial Lazareto Mindelo, Sao Vicente Cabo Verde
Electra	Sea (Energy and Water)-Electricity production	Central de Lazareto: Mr. Horácio Santos – Diretor de Produção da Região Norte h.santos@electra.cv Central de Matiota: Mr. Ricardo Martins – Diretor de Transporte e Distribuição de Eletricidade da Região Norte r.martins@electra.cv Mr. José Neves – Coordenador do Departamento de Distribuição de Água j.neves@electra.cv Ms. Hirondina Évora – Analista Química, Laboratório h.evora@electra.cv Manuel Jesus Silva – Executive Director
Ribhera Community		Cheese factory, Agricultural Farm
Calhau Community		Museum Games
ETAR	Waste Water Management	Câmara Municipal de São VicenteMindelo-SÃO VICENTE Cabo Verde Exmo. Presidente, Mr. Augusto Neves Exma. Vareadora, Ms. Carla Monteiro

Acknowledgements

HOSST - TOSST is very thankful to all guest speakers and lecturers, and community members who took the time to contribute to the Kiel Summer School. Without your efforts the Cabo Verde Summer School would not have been possible.

We are grateful to Germanies Honorary Consul Carlos Ferreira Santos for supporting us with good advice, his contacts and especially for the inspiring opening words to our young researchers.

We kindly acknowledge the visit and interest of the Minister of Maritime Economy in the HOSST-TOSST summer school and the outcome. We appreciate his outspoken wish to continue the networking of young international researchers with Cabo Verde Students.

We thank Dr. Corinne Almeida from University of Cape Verde for her support and making contacts with local students.

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