



RGNO - Regional Graduate Network in Oceanography
SAM NUJOMA CAMPUS & MARINE and COASTAL RESEARCH CENTER
Microbial and Geochemical Oceanography in Upwelling Ecosystems
Program, May 3 to June 4, 2015

Activity

Week 1 May 03-10	Morning	Afternoon	Evening
Sunday 03	Travel to Namibia and pick-up at Walvis Bay and Swakopmund (MD)	Students, TAs and Instructors arrive at the Sam Nujoma Campus in Henties Bay. Rooms in Namsov Residence.	19.30 Get together. Light meal and drinks will be served at the Namsov Residence. Welcome (DEMAR A.S. Catering Service).
Monday 04	07.00 - 08.30 (daily) Breakfast, Namsov Residence 09.00 Opening of Research Discovery Camp "Lappa". (KH) Organization of Course 09.30 Elevator talks by participants 10.30 An Introduction to the global Cycling of reduced (organic) Carbon (TE)	12.30 (daily) Lunch at Namsov Residence 13.30 Getting acquainted with labs, instruments, Update chemical inventory, etc. (ALL). 16.00 Individual Study Time, Preparation of Evening Presentation.	18.00 (daily) Dinner at Namsov Residence 19.00 – 20.30 Student Presentations at the Lappa S1: Felipe Sales de Freitas S2: Lorenzo Lagostina S3: Jessica Cofrancesco, Roethe S4: Stéphanie Follonier
Tuesday 05	08.30 Official Welcome by Mr. Lineekela Kandjengo, Head of the DFAS. Presentation of SANUMARC and the Department for Fisheries and Aquatic Sciences, 09.30 The Namibian coast (BC) 11.00 The bearded goby <i>Sufflogobius bibarbatus</i> : specialist in the Benguela ecosystem (BC)	14.00 Discussing and Designing Research Projects, Sampling Strategies and Experiments (ALL). 15.00 Select best size of Safety Clothing for work on vessel. 16.00 Individual Study Time, Preparation of Evening Presentations.	18.00 Dinner 19.00 – 20.30 Student Presentations at the Lappa S5: Katharina Siedenberg S6: Kaarel Mänd S7: Erastus Uusiku S8: Sally Shiindi S9: Elizabeth Ricci
Wednesday 06	08.30 Harmful Algal Blooms: a global Perspective (CC) 10.00 Longterm environmental trends in Namibia: Using integrated data sets for ocean management (AV)	14.00 Installation and Setup of Laboratory and Study Facilities and Equipment. Preparation for Cruise and Lab Work. (KS, MH, GL, Instructors). 17.00 Individual Study Time, Preparation of Evening Presentations.	18.00 Dinner 19.00 – 20.30 Student Presentations at the Lappa S10: Sten Littmann S11: Hermina Namupala S12: Isabella Ueitele S13: Clara Loureiro
Thursday 07	06.30 Cruise Group 1 departs from Namsov Residence for Swakopmund, Seafarer's Medical Certificate at Medix. Safety Clothing for work on vessel, if necessary. (KSh) 10.00 Tim Eglinton, Seminar at NatMIRC (Please order breakfast and lunch bag from the kitchen the evening before) 08.30 Group 2: Installation and Setup of Laboratory and Study Facilities and Equipment. Preparation for Cruise and Lab Work.	14.00 Phases of Transgression and Regression of the Ocean, duricrusts (Caliche) (field trip to outcrops along the Omaruru river bed and banking) (KH). 16.00 Setting up Experiments	18.00 Dinner 19.00 Student defined activities
Friday 08	08.30 Identification of phycotoxin producing Phytoplankton (CC) 10.00 Organic Carbon Production and Burial on Continental Margins (TE)	14.00 Lab work and demonstrations 16.00 Introduction to Librarybox.ian (DM)	18.00 Dinner 19.00 Student presentation S14: Victor Miti Libuku 19.30 Experience at Sea; review of the 2014 RGNO cruises (TE & DM)
Saturday 09	08.30 Physical Oceanography of the Benguela Upwelling system (SM) 09.30 Investigation of cumulative impacts on the marine ecosystem from mining of phosphorites off the Namibian coast (BC) 10.30 Diversity of macrobenthic fauna inside and outside Oxygen Minimum Zones (OMZ) (SM)	14.00 Lab work and demonstrations	17.30 Dinner 18.00 Summary of achievements, week 1. Planning sampling on cruise and week 2 (ALL) Student defined activities
Sunday 10	08.00 Breakfast, get Lunch bag	Free day. Relax, catch up, explore	No dinner served

Week 2
 May
 11-16
 Monday
 11

Morning

Afternoon

Evening

08.00 Depart for Swakopmund for Cruise instruction (ALL). Get lunch bag !
09.30 Meeting with cruise leaders in the Boardroom of NatMIRC in Swakopmund
 Some time will be made available for last purchases in Swakopmund

If time allows, visiting Walvis Bay salt flats.
15.00 Preparation of Projects and Material for Cruise.

18.00 Dinner
19.00 Student defined activities

Tuesday
 12

Group 1
08.30 Cruise group 1 departs from Namsof Residence for Walvis Bay. Get lunch bag.
11.00 Ready on R/V MIRABILIS
12.00 R/V MIRABILIS departs
Group 2
08.30 Domesticating microbes for biotechnological applications (SF)
10.00 Microbiology for Non-Microbiologists (KH)

Group 1 on cruise leg North May 12 to May 18 with Tim Eglinton

Work program according to Sailing Order

14.00 Lab work, experiments

Student defined activities
19.00 How does degradation of Alkenones affect the paleothermometry concept (FS)

Wednesday
 13

06.30 Cruise Group 2 departs from Namsof Residence for Swakopmund, Seafarer's Medical Certificate (please take certificates right away to Anja van der Plas at NatMIRC). Safety Clothing for work on vessel, if necessary. (KSh)
 (Please order breakfast and lunch bag from the kitchen the evening before)

14.00 Lab work, experiments
 (Arrival of Jake Bailey and Osvaldo Ulloa)

Student defined activities
19.00 A modular approach to nucleic acid extraction (LL)

Thursday
 14

08.30 Marine Geology for Non-Geologists (JB)
10.00 Microbial oceanography of permanent oxygen-minimum-zone Waters (OU)

14.00 Microscopy and Phytoplankton Identification (CC & KH)
16.00 Lab work, experiments

Student defined activities

Friday
 15

06.30 Jake and Osvaldo depart for Medix (please take certificates right away to Anja van der Plas at NatMIRC).
08.30 Molecular microbial Ecology (Recorded Lecture by ML)
10.00 Microbial Processes in the marine Nitrogen Cycle 1: Redox Processes (KH)

14.00 Lab work, experiments

Student defined activities
19.00 The use of stable isotopes in geochemistry: Principles and applications (KS)

Saturday
 16

08.30 Microbial oceanography of coastal upwelling waters (OU)
09.30 Geobiology of the Sulfur Cycle (JB)
11.00 Web-Tools for Scientists (DM)

14.00 Thermodyn Workshop. Please take your own laptop (KH)
16.00 Lab work, experiments

17.30 Dinner
18.00 Summary of achievements, week 2.
 Planning sampling on cruise leg 2 and week 3 (ALL)
 Student defined activities

Sunday
 17

08.00 Breakfast, get Lunch bag

Free day. Relax, catch up, explore

No dinner served

Week 3May
18-23**Morning****Afternoon****Evening**Monday
18

07.00 Breakfast and get lunch bag.
07.30 Sampling equipment ready to be loaded in front of Administration Building
08.00 Cruise **Group 2** departs from Namsof Residence for Walvis Bay.
08.45 Pick up Chibo in Swakopmund
10.00 Ready on R/V MIRABILIS
11.00 R/V MIRABILIS departs

Group 2 on cruise leg South May 17 to May 23 (24) with Daniel Montluçon, Chibo Chikwililwa, Osvaldo Ulloa and Jake Bailey

Work program according to Sailing Order

08.30 Cruise **Group 1** arrives in Walvis Bay. Unloading equipment that is no longer needed on leg 2.
09.30 Pickup. Exchange safety wear and experimental material with group 2
11.00 Return to Henties Bay with a shopping stop in Swakopmund, if necessary.

14.00 Sample storage and processing, lab work, experiments

18.00 Dinner
19.00 Short report on cruise North
 Sample processing and planning experiments. Student defined activities

Tuesday
19

09.00 Research Proposal Presentation by Gadaffi Muhanze Liswaniso, Mariculture Researcher at SANUMARC
10.00 Microbiology for Non-Microbiologists (KH)

14.00 Lab work, experiments

18.00 Dinner
19.00 Student defined activities

Wednesday
20

08.30 Diets for Microbes: How to make growth media for microorganisms (KH)
09.30 Molecular microbial Ecology (Recorded Lecture by ML)
11.00 Review of Redox Chemistry (KH)

14.00 Thermodyn Workshop. Please take your own laptop and have Thermodyn installed and tested (KH)

18.00 Dinner
19.00 Student defined activities

Thursday
21

08.30 Marine Ecotoxicology: Toxicity Testing of Pollutants (EO)
10.00 Microbial Processes in the marine Nitrogen Cycle 1: From Food Chains to geochemical Cycles (KH)

14.00 Lab work, experiments

18.00 Dinner
19.00 Student defined activities

Friday
22

08.30 Bottom-trawling and its effect on benthic life in the Benguela system (SM)
10.00 Microbial Processes in the marine Nitrogen Cycle 2: Redox Transition Zones (KH)
11.30 Why we are here, what we are doing. Contact hour with DFAS students (ALL)

14.00 Statistics exercises with "probit"
15.00 Lab work, experiments

18.00 Dinner
19.00 Student defined activities

Saturday
23

10.30 Cruise **Group 2** arrives in Walvis Bay. Unloading equipment.
10.30 Pickup
11.00 Return to Henties Bay with a shopping stop in Swakopmund, if necessary.
13.00 Late Lunch

14.30 Sample storage and processing, lab work, experiments
16.00 Short report on cruise leg South
17.00 Summary of achievements of week 3 and planning week 4 (ALL).

18.00 Dinner
 Student defined activities

08.30 Geo-biochemical Cycles: Problem solving 1 (KH)
10.00 Applications of NanoSims in Oceanography (SL)
11.00 Geo-biochemical Cycles: Problem solving 2 (KH)

14.00 Lab work, experiments
16.00 Short report by group 2 on cruise leg South
17.00 Summary of achievements of week 3 and planning week 4 (ALL).

Sunday
24

08.00 Breakfast, get Lunch bag

Free day. Relax, catch up, explore

No dinner served

Week 4May
25-31Monday
25**Morning****Afternoon****Evening**

08.30 Oceanography from the South: The Humboldt Current System (OU)

10.30 Group 1: **Geobiology of the Sulfur Cycle** (JB)

10.30 Group 2: **Microbial Processes in the marine Nitrogen Cycle 2: Redox Transition Zones** (KH)

14.00 Lab work, experiments

Student defined activities:
Presentation of
- T-shirt design (LL & KS)
- Course Internet Site design (IU & JC)

Tuesday
26

08.30 Iron and Phosphorus Cycling (JB)

10.30 Group 1: **Microbial oceanography of permanent oxygen-minimum-zone Waters** (OU)

10.30 Group 2: **Diets for Microbes: How to design and make growth media for microorganisms** (KH)

14.00 Lab work, experiments

HOW TO ... (KH)
- Make a poster,
- Make a presentation,
- Write a proposal

Wednesday
27

08.30 Functional Microbial Molecular Ecology: From Metagenomics to Single Cell Genomics to Cell Specific Geochemical Rates (OU)

10.30 Group 1: **Tutorial. Working with genomic Databases** (JB)

10.30 Group 2: **Thermodyn Workshop** (KH)

14.00 Lab work, experiments

18.00 Student defined activities:
Work clothes, boots, hard hats cleaned and ready for storage (FS & SF)

19.00 Good Bye party OsvaldoThursday
28

08.30 Software Tools for Scientists (DM)

09.30 Satellite Data for Ocean Studies (EH)

11.30 Group 2: **Marine Ecotoxicology: Toxicity Testing of Pollutants** (EO)

14.00 Lab work, finish experiments. Start writing proposal

19.00 The marine geochemistry of the Namibian/South African continental margin: Iron, productivity and phosphogenesis (JC)

Friday
29

08.30 Geology of offshore Namibian phosphorite mineral resources and possible impacts of seabed mining (JC)

10.30 Group 2: **Bottom-trawling and its effect on benthic life in the Benguela system** (SM)

14.00 End of Lab work, clean lab. Writing proposal, preparing presentation, designing poster**17.00** introduction to and function of the NCRST: Research opportunities and support for international collaboration (AN)

Student defined activities: Prepare for Outreach Day

Saturday
30

Outreach Day for High School Students and Science Teachers Special Program (SM)

19.00 Summary of achievements of week 4 and planning week 5 (ALL).Sunday
31**08.00** Breakfast, get Lunch bag**Free day. Relax and catch up**

no dinner served

Week 5
 June
 01-05
 Monday
 01

Morning

Afternoon

Evening

08.30 Prepare presentations of results, poster and proposal

14.00 Rehearsal of presentations

Student defined activities

Tuesday
 02

RGNO Open Symposium Day hosted by NatMIRC in Swakopmund.
Scientific Knowledge applied to the Sustainable Use of Coastal Upwelling Ecosystems

08.00 Depart from Namsov Residence
09.30 *Welcome at NatMIRC*
Chris Bartholomae, NatMIRC, MFMR
09.35 *Introduction to the Symposium and Review of the RGNO 2015*
Kurt Hanselmann, ETHZ, CH

Morning Session chaired by
Sam Mafwila, UNAM
09.40 *Phytoplankton of the northern Benguela Upwelling System*
Deon Louw, Nat MIRC, MFMR, NA

10.10 *Benguela Upwelling Ecosystem - Metal Cycling and Pollution*
Edosa Omoregie, SANUMARC, NA

10.40 Break

11.00 *Metabolism in the giant bacteria *Thiomargarita* spp. assayed using a redox-sensitive dye*
Jake Bailey, U. Minnesota, USA

11.30 *Variability of Copepod Abundance along the 20°S Monitoring Transect from 2005 to 2011*

Richard Horaeb, Nat MIRC, MFMR, NA

12.00 Break, Standing Lunch offered by the RGNO

12.45 Presentation of NatMIRC Facility in Groups
 Richard Horaeb, NatMIRC

13.30 Afternoon Session chaired by **Chibo Chikwillwa**
Presentations last 20 / 30 minutes, respectively, discussion included

13.30 **Isabella Ueitele & Lorenzo Lagostina**
Exploring the Ocean as a Source of Antibiotics?

14.00 **Stéphanie Follonier**
Isolation of Bioplastic-producing Microbes from the Benguela Upwelling System

14.20 **Sten Littmann & Clara Loureiro**
Microbiological Diversity and Primary Production in the Benguela Ecosystem

14.50 **Sally Johanna Shiindi**
Famine of Sulfate-reducing Microorganisms in organically rich Sediments

15.10 Break

15.30 **Kaarel Mänd**
Phosphatised Microstructures in ancient and modern Phosphorites

15.50 **Felipe Sales de Freitas**
What controls Reactivity of sedimentary organic Matter across different depositional Settings: A Lipid Biomarker Approach?

16.10 **Katharina Siedenber**
The Application of Stable Isotopes to Reveal the Sedimentary Sulfur Cycle

16.30 **Hermína Namupala and Erastus Shilongo Uusiku**
Heavy Metals and PSTs along the Namibian Coast: A Baseline Study for Quality Assurance

17.00 **Jessica Confrancesco, U Oklakoma, USA**
Impact on the Trace Metal Contents of laterally re-deposited Sediments in the Benguela Upwelling System

17.20 **Victor Miti Libuku**
Re-suspension and Deposition of Sediments from the Upper Shelf

18.00 Bus departs from Nat MIRC

19.30 Dinner at Namsov Residence

Wednesday
 03

08.00 Proposal writing

14.00 Equipment and samples packed for storage and shipping (ALL)

19.00 Graduation dinner and party

Thursday
 04

08.30 Clean Labs (ALL)

14.00 Clean labs cont. (ALL)

End of RGNO 2015

17.00 Deadline for written proposal and poster

Friday
 05

08.00 Check out at Namsov Residence
 Students and Lecturers depart (MD)

Course Directors and Coordinator write reports (EO, SM, EJ, KH)

Saturday
 06

Course Directors and Coordinator write reports (EO, SM, EJ, KH)
 Planning RGNO 2016 (EO, SM, EJ, KH et al.)

Course Directors and Coordinator depart

Instructors, TAs, Lecturers, Students, Course Coordinator, Course Directors, Cruise Leader, Symposium Speakers

JB	Jake Bailey (U Minnesota, USA) baileyj@umn.edu	I, Y, 2	SF Stéphanie Follonier (HES-SO Valais, Switzerland) stephanie.follonier@gmail.com	S, 2
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EO	Edosa Omoregie (SANUMARC, Namibia) omoregie@unam.na	H, L, Y		
KSh	Kaspar Shimooshili (SANUMARC, Namibia) kshimooshili@unam.na	TA		
OU	Oswaldo Ulloa (UdeC, Chile) oulloa@udec.cl	I, Y		
AV	Anja Van Der Plas (MFMR, Namibia) avanderplas@mfmr.gov.na	Y		

Legend	Instructor	I
	Host	H
	Logistics, Visa, Transport, Housing, Cruise	L
	Technical Assistant	TA
	Lecturer / Organizer / Speaker /	Y
	Student Participant	S
	Participation in Cruise Leg #	1, 2

Sponsors

