



## RGNO - Regional Graduate Network in Oceanography

### 4<sup>th</sup> African Ocean Discovery Camp on Integrated Earth Systems Sciences

#### Biogeochemical Oceanography in Upwelling Ecosystems

SAM NUJOMA CAMPUS & MARINE and COASTAL RESEARCH CENTER (SANUMARC) and  
NATIONAL MARINE INFORMATION and RESEARCH CENTER (NatMIRC)

April 13 to May 12, 2017

Week 1					
Week 1	April	13-16	Morning	Afternoon	Evening
Thursday	13		Travel to Namibia and pick-up at Walvis Bay and Swakopmund (TA)	Students, TAs and Instructors arrive in Henties Bay at the EAGLE HOLIDAY FLATS. Main road, Henties Bay,	<b>19.30</b> Welcome and Get Together at De Duine Hotel. Light meal and drinks will be served
Friday	14		<b>09.00 - 10.00</b> Breakfast, De Duine Hotel <b>10.30</b> Transport to SANUMARC <b>10.45</b> Opening of Research Discovery Camp (KH) Organization of Course <b>11.30</b> Elevator talks by participants	<b>12.30</b> Lunch at De Duine <b>14.00</b> Getting acquainted with labs, instruments. Update chemical inventory, etc. (ALL). <b>16.00</b> Individual study time, preparations for evening presentation.	<b>18.00 – 20.00</b> Student's home presentations S1: Nancy Odour S2: Greg Limbo Mbaimbai S3: Marwa Baloza S4: Ibrahima Diack <b>20.15</b> Dinner at De Duine
Saturday	15		<b>07.00 - 08.30</b> Breakfast at De Duine <b>08.30</b> Get Lunchbag at SPAR <b>09.00</b> Introduction to geology for non-geologists (JB) <b>11.00</b> Ocean surface currents - introduction to physical oceanography (VM) Lunch break around 12.30 (daily)	<b>14.00</b> Discussing and designing research projects, sampling strategies and experiments (ALL). <b>16.00</b> Individual study time, preparations for evening presentations.	<b>18.00 – 20.00</b> Student's home presentations S5: Lauren Gillies S6: Essam Adel Moniem El-Shorbagi S7: Veronika Kapula S8: Barbara Lesniak <b>20.00</b> Dinner at De Duine
Sunday	16		Relax, catch up, explore. Breakfast, lunch and dinner on your own. Please let us know where you are going, if you are leaving for a Sunday excursion.		
Week 2					
Week 2	April	17-23	Morning	Afternoon	Evening
Monday	17		<b>07.00 - 08.30</b> Breakfast at De Duine <b>08.30</b> Bus departs from appartments <b>08.45</b> Introduction to Librarybox (DM) <b>09.00</b> Harmful Algal Blooms (HABs): a global perspective (CC) <b>10.45</b> Introduction to marine microbial ecology for non-microbiologists (KH) Organize breakfast bag at SPAR for Tuesday, April 18)	<b>14.30</b> Preparation for cruise and lab work. Installation and setup of laboratory and study facilities and equipment. In between: Select best size of safety clothing, shoes with enforced caps and hard hats for work on vessel. <b>16.00</b> Individual study time, preparation of evening presentations and for missions at sea. Experience at Sea; review of earlier RGNO cruises (DM; slides TE)	<b>18.00 – 20.00</b> Student's home presentations S9: Nicola Krake S10: Bartholomeus Tjandja S11: Anastasiia Ignatova S12: Eugenia Paulus <b>20.15</b> Dinner at the Grill
Tuesday	18		<b>06.30</b> Bus departs from Eagle Holiday Flats for Swakopmund for ALL. (Prepare a breakfast bag the evening before.) <b>07.30</b> Seafarer's Medical Certificates for participants on cruise leg 1 (take certificates to the cruise leader, Deon Louw, at NatMIRC).	<b>12.30</b> Purchase more safety clothing for work on vessel, if necessary. (TA & CC) Time will be available for last purchases in Swakopmund <b>14.00</b> NatMIRC: Briefing by Cruise Leader (DL) <b>15.00</b> Longterm environmental trends in Namibia: Using integrated data sets for ocean management (AV)	<b>18.00 – 19.00</b> Student Presentations S13: Amidou Sonko S14: Natalie Hicks <b>19.00</b> Summary of achievements, so far. <b>20.15</b> Dinner at the Grill
Wednesday	19		<b>06.30</b> Bus departs from Eagle Holiday Flats for Swakopmund for ALL. (Make breakfast bag the evening before.) <b>07.30</b> Seafarer's Medical Certificates for participants on cruise leg 2 <b>Cruise group 1</b> departs with sampling material for Walvis Bay. <b>11.00</b> Ready on R/V MIRABILIS <b>12.00</b> R/V MIRABILIS departs	<b>Group 1</b> on cruise leg North with Daniel Montluçon, Jake Bailey, Volker Mohrholz <b>Group 2:</b> Visiting Walvis Bay salt flats, if time allows after the medical exams.	<b>Group 1:</b> Work program and lecturing according to Sailing Order and time. Lectures on geobiology and ocean physical processes. Jake's lectures: - Geomicrobiology of methane and methane oxidation.

Thursday	20	<b>Group 2</b> <b>08.30</b> Identification of phytoplankton (CC) <b>10.00</b> Where Microorganisms live (KH)	<b>14.00</b> Lab work, experiments	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Friday	21	<b>Group 2</b> <b>08.30</b> Where Microorganisms live cont. (KH) <b>10.00</b> How Microorganisms live (KH)	<b>14.00</b> Lab work, experiments	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Saturday	22	<b>Group 2</b> <b>08.30</b> How Microorganisms live and Introduction to AciBa (KH) <b>10.00</b> Review of Redox Chemistry (KH)	<b>14.00</b> Lab work, experiments <b>15.00</b> Diversity of macrobenthic fauna inside and outside Oxygen Minimum Zones (OMZ) (SM)	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Sunday	23	Relax, catch up, explore. Breakfast, lunch and dinner on your own. Please let us know where you are going, if you are leaving for a Sunday excursion.		

### Week 3

April	24 - 29	Morning	Afternoon	Evening
Monday	24	<b>Group 2</b> <b>08.30</b> How Microorganisms convert Energy and Introduction to Thermodyn (KH) <b>10.00</b> Review of Redox Chemistry (KH)	<b>14.00</b> Lab work, experiments <b>19.00</b> Everthing ready for cruise leg 2	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Tuesday	25	<b>07.30 Group 2:</b> Sampling equipment for cruise ready to be loaded in front of Administration Building <b>08.00</b> Cruise Group 2 departs for Walvis Bay Harbor. <b>10.00</b> Cruise <b>Group 1</b> arrives in Walvis Bay. Unloading equipment from R/V MIRABILIS that is no longer needed on leg 2.	Exchange safety gear and experimental material with group 2 <b>14.00</b> <b>Group 2</b> departs for cruise leg 2 South to 26°S with Daniel Montluçon, Chibo Chikwililwa, Corey Archer and Jake Bailey <b>14.00</b> <b>Group 1</b> get dry ice, visits salt flats and return to Henties Bay with a shopping stop in Swakopmund, if necessary.	<b>Group 2:</b> Work program and lecturing according to Sailing Order and time. Lectures on geobiology by JB: - Geomicrobiology of methane and methane oxidation. - Geomicrobiology of the sulfur cycle <b>18.00 – 20.00</b> Group 1 Preserve and store samples <b>20.15</b> Dinner
Wednesday	26	<b>Group 1</b> <b>08.30</b> How Microorganisms live (KH) <b>10.00</b> Where Microorganisms live (KH)	<b>14.00</b> Lab work, experiments	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Thursday	27	<b>Group 1</b> <b>08.30</b> How Microorganisms convert Energy (KH) <b>09.30</b> Age-structured models in fisheries ecology (MW)	<b>14.00</b> Lab work, experiments	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Friday	28	<b>Group 1</b> <b>08.30</b> Workshop AciBa (KH) <b>10.00</b> Workshop Thermodyn (KH) <b>09.30</b> Cruise <b>Group 2</b> arrives in Walvis Bay. Unloading equipment. <b>11.00</b> Return to Henties Bay with a shopping stop in Swakopmund, if necessary.	<b>14.00</b> <b>Group 1</b> Lab work, experiments <b>15.00</b> <b>Group 2</b> Preserve and store samples	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Saturday	29	<b>09.00</b> Marine nutrients and nutrient recycling (EO) <b>10.30</b> Redox chemistry and Isotope geochemistry in the oceans and in sediments (CA)	<b>14.00</b> Lab work, experiments (ALL) <b>16.00</b> Short report on cruise leg South <b>17.00</b> Summary of achievements of weeks 2 & 3 and planning week 4 (ALL). Add to the diary!!	<b>18.30</b> Early Dinner and preparation for sight seeing tours by those who will do one on Sunday.
Sunday	30	Relax, catch up, explore. Breakfast, lunch and dinner on your own. Please let us know where you are going, if you are leaving for a Sunday excursion.		

<b>Week 4</b>			<b>Morning</b>	<b>Afternoon</b>	<b>Evening</b>
May	01 - 07				
Monday	01		<b>08.30</b> How the composition of cells is regulated by nutrient conditions (KH) <b>10.00</b> Major metabolic processes (KH) <b>11.30</b>	<b>14.00</b> Lab work, experiments	<b>18.00 - 20.00</b> Student guided workshop <b>20.15</b> Dinner
Tuesday	02		<b>08.30</b> Effect of iron and bulk dust supply on Southern Ocean phytoplankton (SF) <b>09.30</b> Ocean Data View Workshop (SF)	<b>14.00</b> Lab work, experiments	<b>18.00 - 20.00</b> Student guided workshop Presentation of T-shirt design <b>20.15</b> Dinner
Wednesday	03		<b>08.00</b> Departure from Appartments to Swakopmund <b>09.00</b> Visit at the Desalination Plant (CC) <b>11.00</b> Visit at the Oyster Hatchery (CC)	<b>13.30</b> Lunch in Swakopmund <b>15.00</b> Selecting T-shirts and Shopping	<b>20.15</b> Dinner
Thursday	04		<b>08.30</b> HOW TO ... (NH & KH) - make a poster, - make a presentation, - write a proposal - design an informative CV <b>11.00</b> Identification of phytoplankton (CC)	<b>14.00</b> Lab work, finish experiments	<b>18.00 - 20.00</b> Student guided workshop on "Basic statistics in Excel" (AI) Presentation of T-shirt design <b>20.15</b> Dinner
Friday	05		<b>08.30</b> Moorings and time series (VM) <b>11.00</b> Diversity of macrobenthic fauna inside and outside Oxygen Minimum Zones (OMZ) (SM)	<b>14.00</b> End of Lab work, clean labs. Put things away and in order.	<b>18.00 - 20.00</b> Student guided workshop on "Diets for Microbes: How to make growth media for microorganisms". Exchange of experiences (MB)
Saturday	06		<b>08.30</b> From food chains to geochemical cycles: Microbial processes in the marine nitrogen cycle in redox transition zones. (KH) <b>10.30</b> Designing geochemical cycles: How do they function today, how did they function in the past? Geo-biochemical cycles and the evolution of microorganisms (KH)	<b>14.00</b> Writing proposal, preparing presentation, designing poster	<b>19.00</b> Summary of achievements of week 4 and planning final week (ALL).
Sunday	07		Relax, catch up, explore. Breakfast, lunch and dinner on your own. Please let us know where you are going, if you are leaving for a Sunday excursion.		

<b>Week 5</b>			<b>Morning</b>	<b>Afternoon</b>	<b>Evening</b>
May	08-12				
Monday	08		<b>08.30</b> Prepare presentations of results, poster and proposal. Poster printing	14.00 Rehearsal of presentations	<b>18.00 – 20.00</b> Student defined activities and workshops <b>20.15</b> Dinner
Tuesday	09		<b>RGNO Open Symposium Day</b> hosted by NatMIRC in Swakopmund. <b>Scientific Knowledge applied to the Sustainable Use of Coastal Upwelling Ecosystems Special Program</b>		
				<b>18.00</b> Bus departs from Nat MIRC	<b>20.15</b> Dinner
Wednesday	10		<b>08.00</b> Proposal writing <b>Clean Labs (ALL)</b>	<b>14.00</b> Equipment and samples packed for storage and shipping (ALL) <b>17.00</b> Deadline for written proposal	<b>19.00</b> Graduation, dinner and party at De Duine Hotel End of RGNO 2017
Thursday	11		<b>08.30</b> Check out at the EAGLE HOLIDAY FLATS.	Students and Lecturers depart	<b>Writing reports by staff</b>

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

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**Legend**

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

**Sponsors**
