

AMME 2021

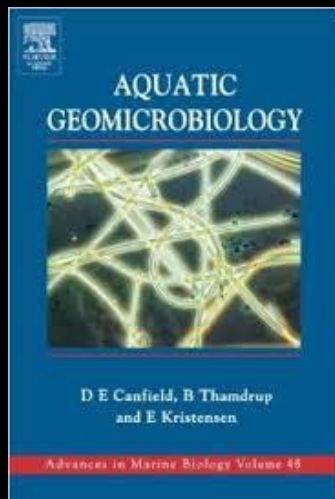
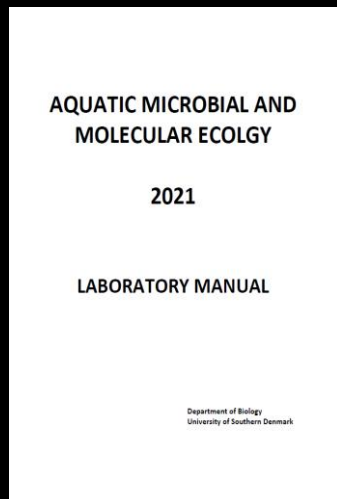
<https://www.sdu.dk/en/AquaticMicrobialMolecularEcology>

7 Teachers:

Ronnie N Glud
Don E Canfield
Bo Thamdrup
Alexander Treusch
Anni Glud
Heidi G Jensen
Zarah Kofoed

23 Students (5 groups):

Adele Maciute
Alex Cabral dos Santos
Alexis Fonseca
Anna Feuring
Chiara Esposito
Darci Swenson
David Yousavich
De'Marcus Robinson
Elisa H. Magana
Elise Lorre
Emma Haxen
Johan Wikström
Karolina Brylka
Kasper Primdahl Olesen
Matthew Pinder
Maya Dodhia
Nicholas Udy
Nicolas Dubosq
Philip Ley
Rickard Stenow
Therese Merl
Vasiliki Papazachariou
Yvonne Yau



AMME 2021

<https://www.sdu.dk/en/AquaticMicrobialMolecularEcology>

Covid-19

Name tags & access cards

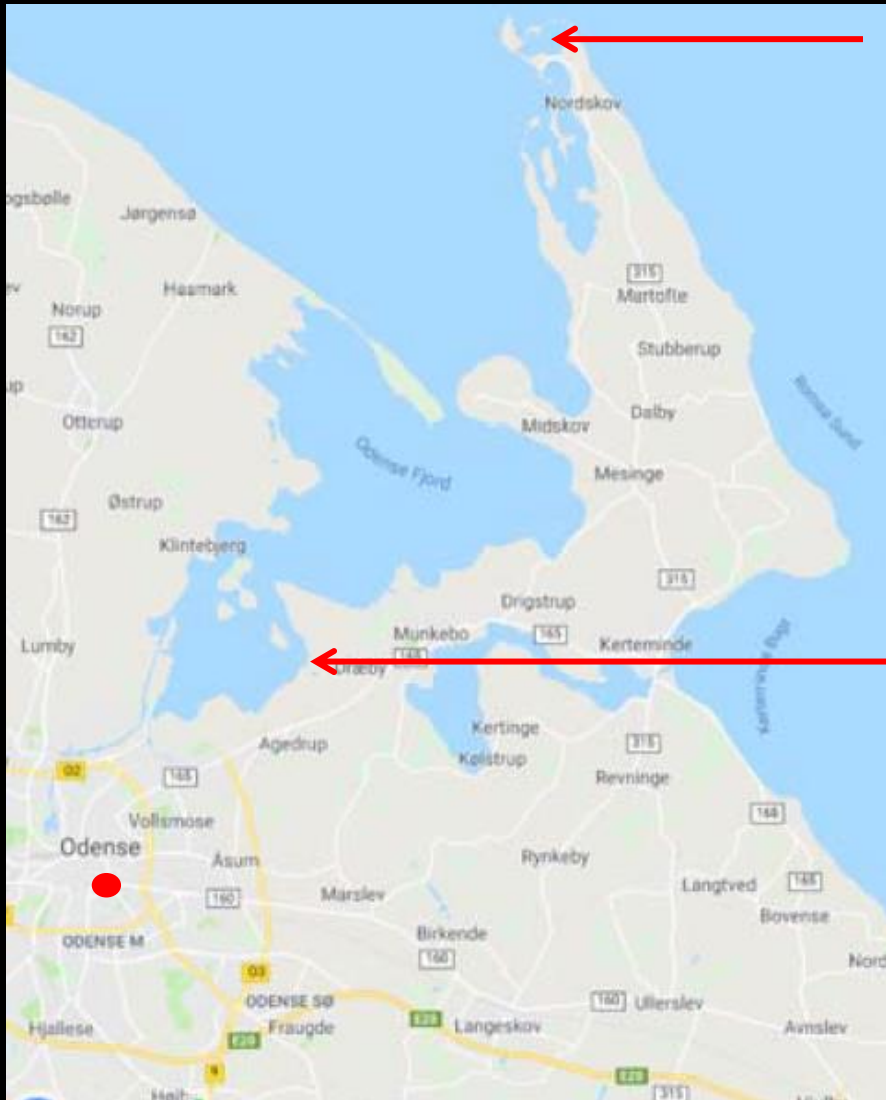
22 Student presentations (max 5 min & 5 slides)

Food – breakfast, lunch, dinner (a team arrange & clean up; 1,2,3,4,5)
(17:30? - No dinner on Saturday's)

Bikes (12), (Alex at 10 - today)

Lab coats?

AMME 2021



Fælles strand (FS, Team 4, 5)

Temp 22.1 °C; Sal 20.7
Light ~80 $\mu\text{mol photons m}^{-2}\text{s}^{-1}$

Kærby Fed

(KF, Team 1, 2, 3)

Temp 20.9 °C; Sal 8.6
Light ~30 $\mu\text{mol photons m}^{-2}\text{s}^{-1}$

AMME 2021

Team 1:

Adele Maicute
Anna Feuring
Darci Swenson
Johan Wikström
Vasiliki Papazachariou

Team 2:

Alex Cabral dos Santos
Alexis Fonseca
David Yousavich
Elisa H. Magana

Team 3:

Chiara Esposito
De'Marcus Robinson
Elise Lorre
Karolina Brylka
Philip Ley

KF

Team 4:

Emma Haxen
Nicholas Udy
Maya Dodhia
Nicolas Dubosq
Rickard Stenow

Team 5:

Kasper Primdahl Olesen
Matthew Pinder
Therese Merl
Yvonne Yau

FS

Team # on name tag

AMME 2021

Workplan for AMME 2021

(AT-Alexander Treusch, BT- Bo Thamdrup, DEC - Don E Canfield, RNG – Ronnie N Glud)

Sun 15.08:	14:00 – 18:00	Excursion to field sites and collection of sediment & water RNG+AT
	18:00 –	Icebreaker barbecue (ALL?)
Mon 16.08	8:30 – 9:00	Introduction – RNG
	9:15 – 10:00	Lecture; The role of prokaryote diversity - AT
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Tues 17.08	8:30 – 10:00	Lecture; Structure & growth of microbial populations - AT
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Wed 18.08	8:30 – 10:00	Lecture; Microbial energetics - RNG
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Thur 19.08	8:30 – 10:00	Lecture; Oxygen cycling & dynamics – RNG
	10:30 – 12:00	Oral student presentations
	13:00 – 17:00	Laboratory work
Fri 20.08	8:30 – 10:00	Lecture; The biogeochemistry of nitrogen - BT
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Sat 21.08	8:30 – 10:00	Lecture; The biogeochemistry of methane - BT
	10:30 – 12:00	Oral student presentations
	13:00 – 17:00	Laboratory work
Sun 22.08		Off or/and additional sediment sampling
Mon 23.08	8:30 – 10:00	Lecture; Carbon cycling - RNG
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work

Tues 24.08	8:30 – 10:00	Lecture; The biogeochemistry of Sulfur - DEC
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Wed 25.08	8:30 – 10:00	Lecture; The biogeochemistry of Iron and manganese - DEC
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Thur 26.08	8:30 – 10:00	Lecture; Molecular microbial ecology - AT
	10:30 – 12:00	Laboratory work
	13:00 – 17:00	Laboratory work
Fri 27.08	8:30 – 12:00	Student Data presentation
	13:00 – 16:00	Report writing & discussions
Sat 28.08	8:30 – 12:00	Report writing & discussions
	13:00 – 16:00	Report writing & discussions
	18:00 –	Joint dinner
Sun 29.08	8:30 – 12:00	Report writing & discussions
	13:00 – 13:15	Group photo
	13:15 – 16:00	Report writing & discussions

AQUATIC MICROBIAL AND
MOLECULAR ECOLOGY

2021

LABORATORY MANUAL

Department of Biology
University of Southern Denmark

AMME 2021

CONTENTS

General introduction.....	6
EXERCISE 1: Determination of sediment characteristics (density, water content, organic content and chlorophyll <i>a</i> content).....	11
EXERCISE 2: Measurement of sediment oxygen, carbon dioxide and dissolved inorganic nitrogen exchange in light and darkness.....	15
EXERCISE 3: Determination of O ₂ microdistribution and diffusive O ₂ exchange in surface sediments	20
EXERCISE 4: Measurement of sulfate reduction by the ³⁵ S technique.....	24
EXERCISE 5.1: Measurement of denitrification in the sediment by the ¹⁵ N isotope-pairing technique.....	29
EXERCISE 5.2: Measurement of potential nitrification (ammonium oxidation) in sediment slurry.....	33
EXERCISE 6: Determination of vertical TCO ₂ , DIN (NH ₄ ⁺ and NO ₂ ⁻ +NO ₃ ⁻) and SO ₄ ²⁻ profiles in the sediment	35
EXERCISE 7: Determination of particulate iron profiles in the sediment.....	37
EXERCISE 8: Molecular analysis of microbial community structure and function.....	40

Date	Team 1	Team 2	Team 3	Team 4	Team 5
	KF	KF	KF	FS	FS
Mon 16.08 10:30-17	1A 7 8ABC	1A 7 8ABC	1A 7 8ABC	1A 7 8ABC	1A 7 8ABC
Tue 17.08 10:30-17	1B 2ABCD	1B 4AB	1B 6AB	1B 4AB	1B 5.1 & 5.2
Wed 18.08 10:30-17	1C 4AB	1C 2ABCD	1CDI	1C 4CDE	1C 6AB
Thu 19.08 13-17	6AB	2E	1DII 2ABCD	5.1 & 5.2	1DI
Fri 20.08 10:30-17	4CDE	1DI	2E 4AB	2ABCD	1DII 3AB
Sat 21.08 13-17	1DI	1DII 5.1A & 5.2	3AB	2E 6AB	4AB
Mon 23.08 10:30-17	1DII	4CDE	5.1 & 5.2	3AB	2ABCD
Tue 24.08 10:30-17	5.1 & 5.2	3AB	4CDE	1DI	2E
Wed 25.08 10:30-17	3AB Demo	6AB Demo	Demo	1DII Demo	4CDE Demo
Thu 26.08 10:30-17	8DE	8DE	8DE	8DE	8DE
Fri 27.08	Student data presentation & Report writing				
Sat 28.08	Report writing				
Sun 29.08	Report writing				

AMME 2021

Report, based on average values (remember cover, names & email)

Once experimental work completed for a given exercise send to rnglud@biology.sdu.dk

Exercise 3

III. Questions and figures to be considered in the report:

1. Present one set of profiles including the one measured in darkness and at the four respective light levels for both sites. See Fig 3 for units and layout.
2. Describe and discuss the shape of the profiles.
3. Present the derived O₂ penetration depth and the DOE/NetPP as a function of the light intensity for the compiled datasets from the two respective sites. What can be learned from such a figure?
4. How does DOE measured in darkness compare to the total oxygen uptake (TOU) measured during intact core incubations? Discuss potential reasons for any differences.
5. Is the sediment net heterotrophic or autotrophic when integrated over a normal 24h day/light cycle?
6. Discuss if the resolved benthic primary production is important on system level.

AMME 2021

LAB tour!

Green & Red Room, Green Lab, Yellow Lab, Aquarium Room, Kitchen, Eating Place,