

ECORD Summer School

Ocean crust processes: magma, faults, fluxes, and life

Venue: MARUM, University of Bremen, Germany

August 31 – September 11, 2015

Monday

09:00 - 09:15

August 31

Welcome to the Summer School, Dierk Hebbeln

Introductory Lectures to the Topic

09:15 - 10:45

Lecture: Formation and alteration of the ocean crust from a scientific drilling perspective, *Wolfgang Bach / Damon Teagle*

10:45 - 11:15

Coffee break

11:11 - 12:45

Lecture: Life as IODP Shipboard Scientist, *Benoit Ildefonse*

12:45 - 14:15

Lunch

14:15 - 15:30

IODP and ECORD: Structure and objectives and an introduction to the "Virtual ship"; *Rüdiger Stein and Ulla Röhl, Gretchen Früh-Green*

15:30 - 16:00

IODP Core curation; *Walter Hale*

16:00 - 16:30

Tea break

16:30 - 17:30

Guided tour through MARUM and IODP Bremen Core Repository (BCR)

17:30 -

ECORD Summer School Icebreaker

Tuesday

09:00 - 09:15

September 01

Crustal accretion

Review of previous day's contents by participants

09:15 - 10:45

Lectures: Lower crustal accretion, concepts and challenges, *Jürgen Koepke and Riccardo Tribuzio*

10:45 - 11:15

Coffee break

11:15 - 12:45

Lectures: Crustal accretion – seismology and tectonics, *Vera Schlindwein and Tim Schroeder*

12:45 - 14:15

Lunch

14:15 - 15:15

Presentations by participants

15:14 - 15:45

Tea break

15:45 - 16:15

Virtual ship: Core description – introduction to laboratory exercise #1; Tim Schroeder

16:15 - 16:45

Virtual ship: Physical properties – introduction to laboratory exercise #2; Benoit Ildefonse

17:00 - 17:30

Virtual ship: Thin sections – introduction to laboratory exercise #3; Wolfgang Bach

Wednesday**September 02****Mantle processes**

09:00 - 09:15

Review of previous day's contents by participants

09:15 - 10:45

Lectures: Mantle melting and melt segregation, *Margot Godard and Carlos Garrido*

10:45 - 11:15

Coffee break

11:15 - 12:45

Lectures: Mantle rocks and hydrothermal processes, *Gretchen Früh-Green and Frieder Klein*

12:45 - 14:15

Lunch

14:15 - 15:15

Presentations by participants

15:15 - 15:45

Tea break

15:45 – 18:00

Virtual ship: Core description #1; *Tim Schroeder***Virtual ship:** Physical properties #2; *Benoit Ildefonse***Virtual ship:** Thin sections #3; *Wolfgang Bach***Thursday****September 03****Rock geochemistry**

09:00 - 09:15

Review of previous day's contents by participants

09:15 - 10:45

Lecture: From geochemistry to processes, *Margot Godard, Carlos Garrido*

10:45 - 11:15

Coffee break

11:15 - 12:45

Practical: From geochemistry to fluxes, *Damon Teagle*

12:45 - 14:15

Lunch

14:15 - 15:15

Presentations by participants

15:14 - 15:45

Tea break

15:45 - 18:00

Virtual ship: Core description #1; *Tim Schroeder***Virtual ship:** Physical properties #2; *Benoit Ildefonse***Virtual ship:** Thin sections #3; *Wolfgang Bach***Friday****September 04****Flow of fluids and heat**

09:00 - 09:15

Review of previous day's contents by participants

09:15 - 10:30

Lecture: Crustal hydrology, *Heiner Villing*

10:30 - 10:45

Photo shooting: Group photo of all participants

10:45 - 11:15

Coffee break

11:15 - 12:45

Practical: From heat flow to fluid circulation, *Heiner Villing*

12:45 - 14:15

Lunch

14:15 - 15:15

Presentations by participants

15:15 - 15:45

Tea break

15:45 - 18:00

Virtual ship: Core description #1; *Tim Schroeder***Virtual ship:** Physical properties #2; *Benoit Ildefonse***Virtual ship:** Thin sections #3; *Wolfgang Bach***Saturday****September 05****Free time to explore Bremen****Sunday****September 06**

10:00 - 18:00

Full day field trip to visit Muenster Museum of Natural History with its special exhibit "life in the dark"

Monday**September 07****Downhole logging, site survey, seabed drilling**

09:00 - 09:15	Review of previous week's contents by participants
09:15 - 10:45	Lecture: Wireline borehole logging, <i>Sarah Davies and Annick Fehr</i>
10:45 - 11:15	Coffee break
11:15 - 12:45	Practical: Wireline borehole logging, <i>Sarah Davies and Annick Fehr</i>
12:45 - 14:15	Lunch
14:15 - 15:15	Presentations by participants
15:15 - 15:45	Tea break
15:45 - 16:45	Virtual ship: Introduction to site survey work; <i>Colin Devey</i>
16:45 - 18:00	Virtual ship: Introduction to seafloor surveying by remotely operated vehicles (Volker Ratmeyer) and seabed drilling (Tim Freudenthal)

Tuesday**September 08****Structural geology and rock magnetism**

09:00 - 09:15	Review of previous week's contents by participants
09:15 - 10:45	Lectures: Structural evolution of slow spread crust from textures and magnetism, <i>Benoit Ildefonse and Antony Morris</i>
10:45 - 11:15	Coffee break
11:15 - 12:45	Practicals: Structural evolution of slow spread crust from textures and magnetism, <i>Benoit Ildefonse and Antony Morris</i>
12:45 - 14:15	Lunch
14:15 - 15:15	Presentations by participants
15:15 - 15:45	Tea break
15:45 - 18:00	Virtual ship Laboratory #4: Structural geology – visual core description (Ildefonse) Laboratory #5: Magnetism (<i>Morris</i>) Laboratory #6: Magma-hydrothermal processes – thin sections (Koepke)

Wednesday September 09**Seafloor hydrothermal systems**

09:00 - 09:15	Review of previous day's contents by participants
09:15 - 10:45	Lecture: Hydrothermal vents and massive sulfide deposits (<i>Sven Petersen, John Jamieson</i>)
10:45 - 11:15	Coffee break
11:15 - 12:45	Practical: The anatomy of the TAG seafloor massive sulfide deposits (<i>Sven Petersen, John Jamieson</i>)
12:45 - 14:15	Lunch
14:15 - 15:15	Presentations by participants
15:15 - 15:45	Tea break
15:45 - 18:00	Virtual ship Laboratory #4: Structural geology – visual core description (Ildefonse) Laboratory #5: Magnetism (<i>Morris</i>) Laboratory #6: Magma-hydrothermal processes – thin sections (Koepke)

Thursday

09:00 - 09:15

09:15 - 10:45

10:45 - 11:15

11:15 - 12:45

12:45 - 14:15

14:15 - 15:15

15:15 - 15:45

15:45 - 18:00

September 10**Life in the ocean crust**

Review of previous day's contents by participants

Lecture: Life detection using spectroscopy and microscopy (*Benedicte Menez, Magnus Ivarsson*)

Coffee break

Practical: Modelling hydrothermal reactions and bioenergetics (Wolfgang Bach)

Lunch

Presentations by participants

Tea break

Virtual ship

Laboratory #4: Structural geology – visual core description (Ildefonse)

Laboratory #5: Magnetism (*Morris*)

Laboratory #6: Magma-hydrothermal processes – thin sections (Koepeke)

Friday

09:00 - 10:30

10:30 - 11:00

11:00 - 12:00

12:00 - 12:30

September 11**How to write an IODP proposal, Ulla Röhl, Rüdiger Stein, Wolfgang Bach**

Coffee break

How to write an IODP proposal - continued**Summer School debriefing, award for the best student presentation, and farewell**