

2018-10-08

## Paleoceanography & Paleoclimatology I (GG5113) 2018-2019

Kursansvarig: Dr Helen Coxall helen.coxall@geo.su.se, IGV Rm R233 (Yr 3, periods 3 & 4)

Week	Date	Time	Subject	Type	Teacher	Room		
45	<b>V. 45</b>							
	<b>Paleoceanography Paleoclimatology basics (Ruddiman Chapt. 1, Chapt. 5 p. 98-107)</b>							
	Ruddiman: 3rd ed. Chapters: 1, 5 also useful: 6, 7  App. 1 App. 2	mon 5.11	Self study	<b>Exercise 1</b> Introduction to palaeoclimate archives (based on St John book Ch.-1) Read: <b>Zachos et al., 2001; ODP Greatest Hits (1&amp;2)</b> , Find another interesting article				
		tue 6.11	10:00 10:45	Course introduction & assessment	F	HKC	U13	
			11:00 11:45	Development of the field. Basics of marine geol., ocean circulation & marine sedimen	F	HKC	U13	
			13:00 15:45	<b>Exercise 1</b> Introduction to palaeoclimate archives. Discussion	Ö	HKC	Y12-Y13	
		wed 7.11	10:00 10:45	Scientific deep sea drilling: a time machine at the sea floor	F	HKC	U13	
			11:00 11:45	Introduction to the IODP core assignment	F	HKC	U13	
			Self study	<b>Core assignment prep exercise 1. Upload your 3 initial ideas to MONDO same day deadline</b>				
		thur 8.11	10:00 10:45	The rock cycle and delivery of sediments to the ocean margins	F	HKC	U10	
11:00 11:45			Introduction stable isotopes in palaeoceanography and 'the Zachos Curve'	F	HKC	U10		
Self study			Ocean basins <b>self test</b> & Read the Drilling ideas of 3 of your peers. <b>Submit peer comments to MONDO. Same day deadline.</b>					
fri 9.11	10:00 10:45	Seminar: based on readings and MONDO submissions: open feedback	S	HKC	U10			
	11:00 11:45	Seminar: Google Earth Exploration of your drilling targets: <b>bring lap tops</b> :	S	HKC	U10			
	Self study	Self study: Revise your drilling targets, select <u>one</u> and link to an existing DSDP/ODP or IODP core that you can examine in Bremen. <b>Submit Prep-2 Final targets to MONDO. Same day deadline.</b>						
46	<b>V. 46</b>							
	<b>The system I: Atmosphere/Ocean Circulation and climate</b>							
	Ruddiman: 3rd ed. Chapters: 2, 8	mo 12.11	10:00 10:45	Climate variability and forcing	F	ADB	U13	
			11:00 11:45	Climate variability and forcing	F	ADB	U13	
			Self study	<b>Read Ruddiman Chapter 2</b>				
		tue 13.11	10:00 10:45	Fluid dynamics: Pressure, hydrostatic balance	F	ADB	U13	
			11:00 11:45	Fluid dynamics: Equations of motion, Coriolis force	F	ADB	U13	
			13:00 15:15	<b>Problem set-1</b>	S	ADB	U13	
		wed 14.11	Self study	Excercise 5: Self-guided exercise on the computer (evaluation ocean properties).	S/Ö			
		thu 15.11	10:00 10:45	Fluid dynamics: the role of wind	F	ADB	Y10	
11:00 11:45			Atmospheric circulation	F	ADB	Y10		
13:00 15:00			<b>Problem set-2</b>	Ö	ADB	U26		
fri 16.11	10:00 10:45	Description of the ocean	F	ADB	U11			
	11:00 11:45	The thermohaline circulation	F	ADB	U11			
	Self study	Revision						
47	<b>V. 47</b>							
	<b>The system II: Atmosphere/Ocean Circulation and climate (Ruddiman Chapt. 2, Chapt. 4)</b>							
	Ruddiman: 3rd ed. Chapters: 2, 4	mo 19.11	10:00 10:45	Climate modes and application to palaeoclimate	F	ADB	U13	
			11:00 11:45	Climate models	F	ADB	U13	
			13:00 15:45	Rotating table experiments	Ö	ADB	U13	
		tue 20.11	10:00 11:45	Biogeochemical cycling and climate	F	CMM	U13	
		wed 21.11	Self study	Revision day				
		thu 22.11	Self study	Revision day				
		fri 23.11	10:00 14:45	Exam (6 hp) (PP-1 weeks 1-3)		ADB/HKC	U29	
		48	<b>V. 48</b>					
<b>The archives: marine sediments, stratigraphy and correlation</b>								
Ruddiman: 3rd ed. Chapters: 2,3,10			mo 26.11	10:00 10:45	Deep sea sediments I	F	EA	U13
	11:00 11:45			Turbidites	F	EA	U13	
	Self study			<b>Complete St John book Exc-2.1-2.4</b>				
	tue 27.11		10:00 10:45	Deep sea sediments 2, drift deposits	F	EA	U13	
			11:00 11:45	Sedimentation/accumulation rates	F	EA	U13	
			13:00 17:00:00	<b>Core description lab</b>	Ö	EA	SLAM Lab: R117	
	wed 28.11		10:00 10:45	Glaciated ocean margins and glacial marine sediments	F	SG	U13	
			11:00 11:45	Glaciated ocean margins	F	SG	U13	
		13:00 16:45	<b>Complete St John book Exc-12.1</b>	Ö	SG	U13		
	thu 29.11	10:00 10:45	Introduction to pelagic microfossils: distribution, classification	F	HKC	U37		
11:00 11:45		<b>Exercise 2</b> Microfossils Lab. Stratigraphy	Ö	HKC	U37			
Self study		<b>Complete St John book Exc-3.1 (p. 81-87)</b>						
fri 30.11	10:00 11:45	Stratigraphy and dating tools: Quaternary	S	HKC	U37			
	13:00 15:45	Biostratigraphy exercise. Briefing on Bremen trip,	F	HKC	U37			

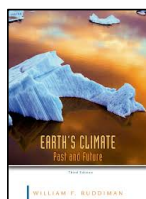
Week	Date	Time	Subject	Type	Teacher
49	V. 49		<b>Bremen IODP core repository visit</b>		
	su 2.12		Depart for Bremen	EXK	EA/HKC
	mo 3.12		Core Description/Tour IODP Core Repository: 4 x smear slides,	EXK	EA/HKC
	tue 4.12		Core Description/Tour IODP Core Repository: 4 x smear slides,	EXK	EA/HKC
	wed 5.12		Return from Bremen	EXK	EA/HKC
	Thur 6.12	09:30 12:00 13:00 16:45	Lab: Prepare Bremen coarse fraction samples: 4 per group/ smear slide analysis Lab: Prepare Bremen coarse fraction samples: 4 per group/ smear slide analysis Parallell sessions, teams split. <b>Information on the report</b>	HKC EA	EA/HKC/JB EA/HKC/JB
					U27/R117/R228 U27/R117/R228
	Fri 7.12	09:30 12:00 Self study	Lab:sand fraction/micropalaeo lithological analysis: results to go into report <b>Write up results and ocean-climate interpretation of lithological data. Submit to MONDO by Mon 4th Dec</b>	S	EA/HKC
					U13
50	V. 50		<b>Extracting signals: Tools and Proxies II (geochemical &amp; biological proxies)</b>		
Ruddiman: 3rd ed. Chapters: 3, 8, 10 App. 1	mo 10.12	10:00 10:45 11:00 11:45 Self study	Proxies-1: Introduction to proxies; biological/micropaleontological proxies Geochemical proxies for ocean temperature Introduction to climate proxies: Read Wefer, 1999 AND/OR Vaughn, 2007 <b>PROXY DEFINITIONS. In MONDO: describe what is meant by a 1. micropaleontological, 2. lithological 3. geochemical proxy. Give 2-3 examples of each. Deadline: same day</b> <b>FIND PUBLISHED PAPERS WITH DATING AND OCEAN-CLIMATE PROXY DATA FROM YOUR AND/OR RELATED CORES</b>	F F	HKC HKC
					U13 U13
App. 2	tue 11.12	10:00 10:45 11:00 11:45 13:00 15:45	Proxies-2: Carbon isotopes and deep water ocean circulation, Nd Proxies-3 Productivity, CO2, pH. Ruddiman questions <b>Exc: the Glaciation of Antarctica (based on St. John Book Chapt. 10)</b>	F F Ö	HKC HKC HKC
					U13 U13 U26
	wed 12.12	10:00 11:45 Self study	High resolution proxies in deep sea sediments & cyclostratigraphy <b>ASSESSED!</b> Reading preparation for exercise	F	MO
					U13
	thu 13.12	10:00 11:45 Self study	Spectral analysis in the time and depth domains - Introduction to 'Analyseries softwar Assessed exercise and report	S	MO
					U27
	fri 14.12	10:00 11:45 Self study	Spectral analysis in the time and depth domains <b>SUBMIT EXERCISE AND REPORT FOR ASSESSMENT</b>	S	MO
					U27
51	V. 51		<b>Extracting signals: Tools and Proxies I (Climate cycles: high resolution proxies &amp; time series analysis)</b>		
Ruddiman: 3rd ed. Chapters: 3, 6, 7	mo 17.12	10:00 11:45 13:00 15:45	Greenhouse to icehouse Cenozoic climate history: K/Pg recovery, hyperthermals & α <b>Paper -based exercise</b>	F Ö	HKC HKC
					U12 U12
	tue 18.12	Self study Self study	<b>FIND PUBLISHED PAPERS WITH DATING AND OCEAN-CLIMATE PROXY DATA FROM YOUR AND/OR RELATED CORES</b> <b>Prepare for the presentation</b>		
	wed 19.12	10:00 10:45 11:00 11:45	<b>IODP-core Assignment: Presentation of your site (background) dating and proxies</b> Minimum 1 proxy for each team member. Feed back opportunity	F F	HKC HKC
					U13 U13
	thu 20.12		God Jul!		
2	V. 2		<b>Complete IODP Core Assignment: Self study</b>		
	mo 7.01	Self study	IODP Core Assignment report: <b>Submit draft of report to MONDO by this date to get teacher feed back</b>		
	tue 8.01	Self study	Self study: Report		
	wed 9.01	Self study	Self study: Report		
	thu 10.01	Self study	Self study: Report		
	fri 11.01	Self study	<b>Deadline for final report submission to MONDO (by close of day) (changed to Saturday 6th)</b>		
3	V.3		<b>IODP Core Assignment presentations and Cenozoic climate history case studies</b>		
Ruddiman: Chapters: 13, 14	mo 14.01	09:00 12:00 Self study	IODP-core Assignment: Final presentations <b>Assess the reports of two peers (will be designated by course leader). Complete review forms and submit to MONDO</b>	S	HKC
					U10
	tue 15.01	10:00 11:45 13:00 15:45	<b>Case-study: Northern Hemisphere glaciation</b> Exercise	F Ö	RG RG
					U28 U28
6, 19, 20	wed 16.01	Self study	<b>DEADLINE for submission of Peer Review and Self Assessment to MONDO</b> Read PETM in Ruddiman Ch. 6. p. 134-135.		
6, 19, 20	thu 17.01	09:00 11:45 13:00 15:45	Self study: complete PETM exercise The PETM and hyperthermals of the early Cenozoic: lecture and discussion of exercise	S/Ö	HKC
					U12
			<b>END OF COURSE</b>		

**Teachers:**

HC = Helen Coxall  
 ADB = Agatha de Boer  
 EA = Eve Amold  
 CM= Carl-Magnus Mörh  
 MO = Matt O'Regan  
 RG = Richard Gyllencreutz  
 SG = Sarah Greenwood

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The required course text book is:

W.F. Ruddiman, 2014  
 Earth's Climate: Past and Future  
 W.H. Freeman, 3rd ed  
 ISBN: 9781429252527

F = Lecture (Föreläsning)  
 Ö = Exercise (Övning)  
 S = Seminarium  
 EXK = Exkursion