

A high-resolution image of Earth from space, showing the Western Hemisphere. The Americas are visible, surrounded by the Atlantic and Pacific Oceans. The image is set against a deep blue background filled with numerous stars. A solid red horizontal bar spans the bottom of the frame.

# **Welcome to Marine Geology**



# Who am I?

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- **Office time: 9:00-12:00 on every Thursday**
- Associate Professor in Ocean College, Zhejiang University.
- **Research Interests:** Hydrothermal geochemistry – trace metals, noble metals, gas geochemistry, methane, ...



- What is Marine Geology?
- Why Study Marine Geology?
- What can you do after learning Marine Geology?
- What do you expect to learn from Marine Geology?

# What is Marine Geology?

- Geo: Earth; logy: study
- Geology: Study of the Earth
- Marine Geology:
- Study **materials, processes, structure, and history** of the Earth's Marine Environment

- Why Study Marine Geology?
- What can you do after learning Marine Geology?
- What do you expect to learn from Marine Geology?



Take go to the “learning in ZJU”  
platform and take a survey.



It’s just a survey. So, take it  
easy!

# Five minutes to answer these questions

课程信息

章节

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课件

作业

+ 章节

+ 学习单元

+ 学习活动

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类型: 全部

test before class

 before class test

查看文件

 test video on Feb19

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+ 新增学习活动

1-1. Course overview and pre-test

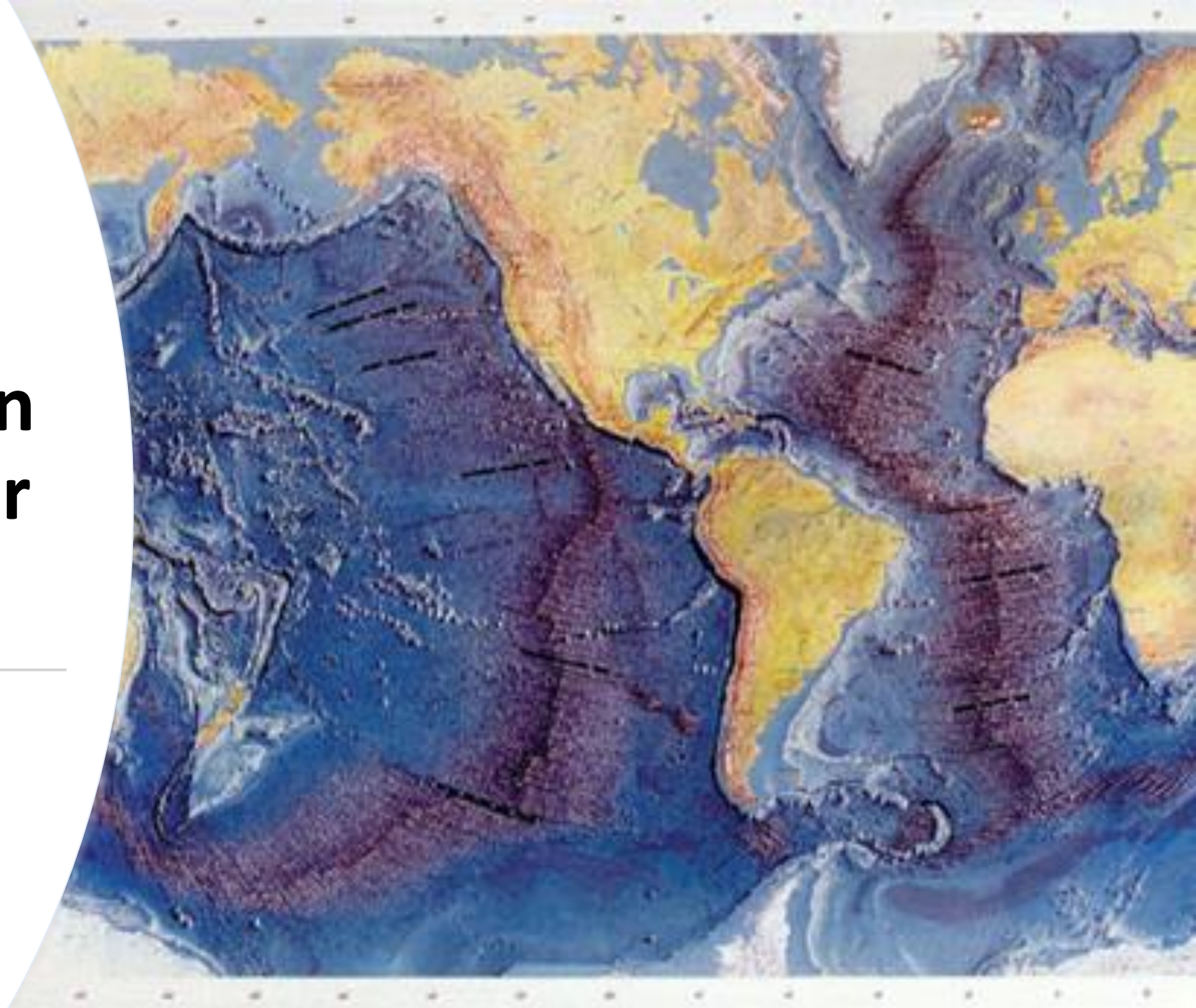
 online survey

+ 新增学习活动



# **Week 1: Earth's Oceans and Features on the Ocean Floor**

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# **Week 1: Methods to study the Ocean**

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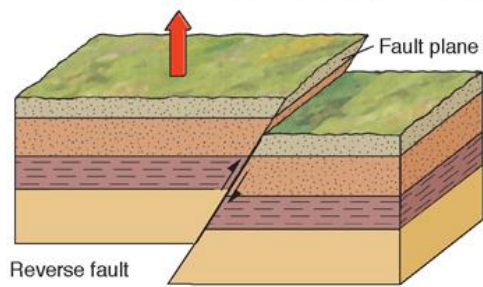
# Week 2: Origin of the Earth, Ocean, and Atmosphere

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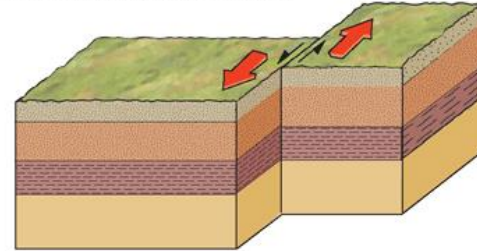




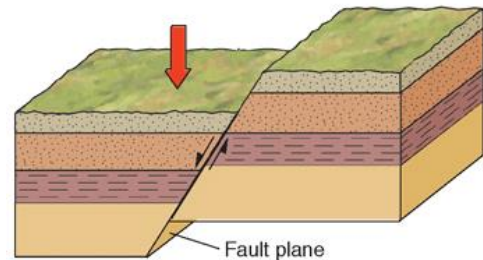
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Reverse fault

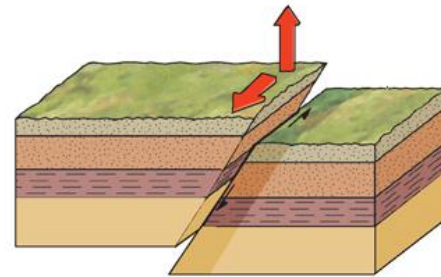


B Strike-slip fault

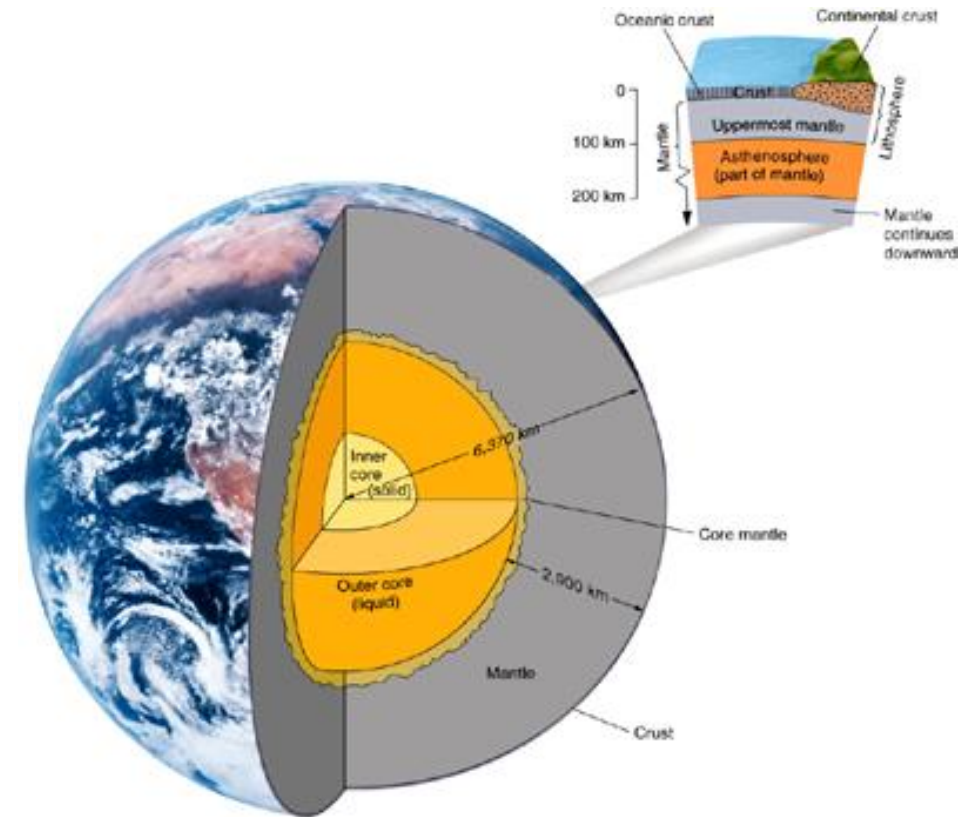


Normal fault

A Dip-slip faults



C Oblique-slip fault



## Week 2: Geological Structures

# **Week 3: Geologic Time & Age of the Earth**

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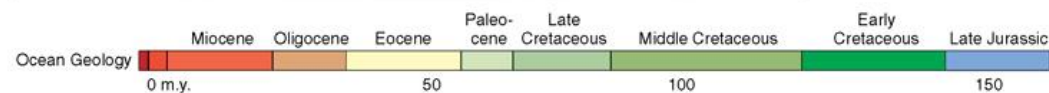
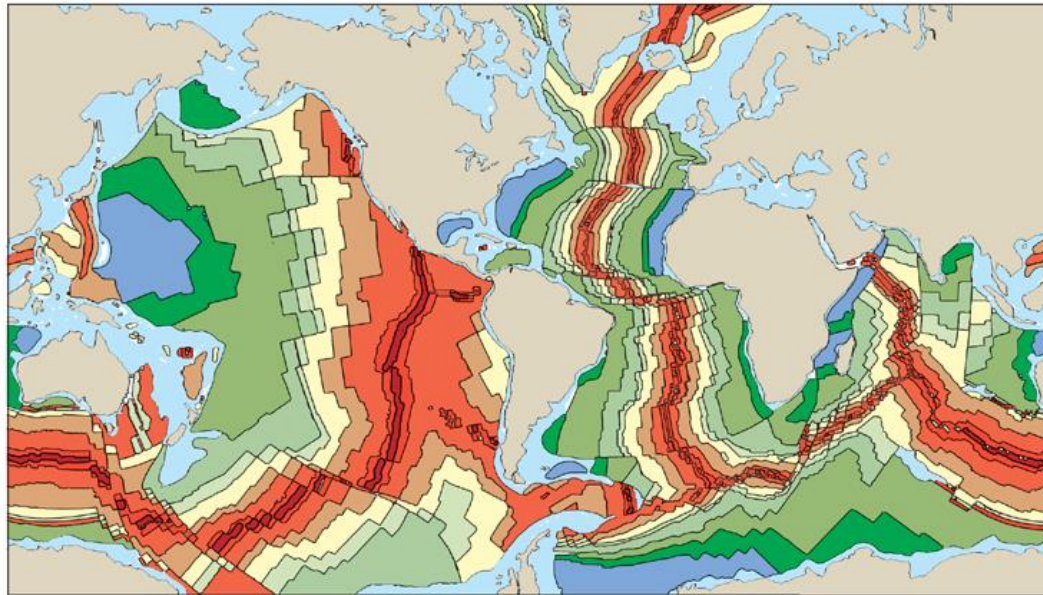
# Week 3: Geologic Cycles and Sources of Energy

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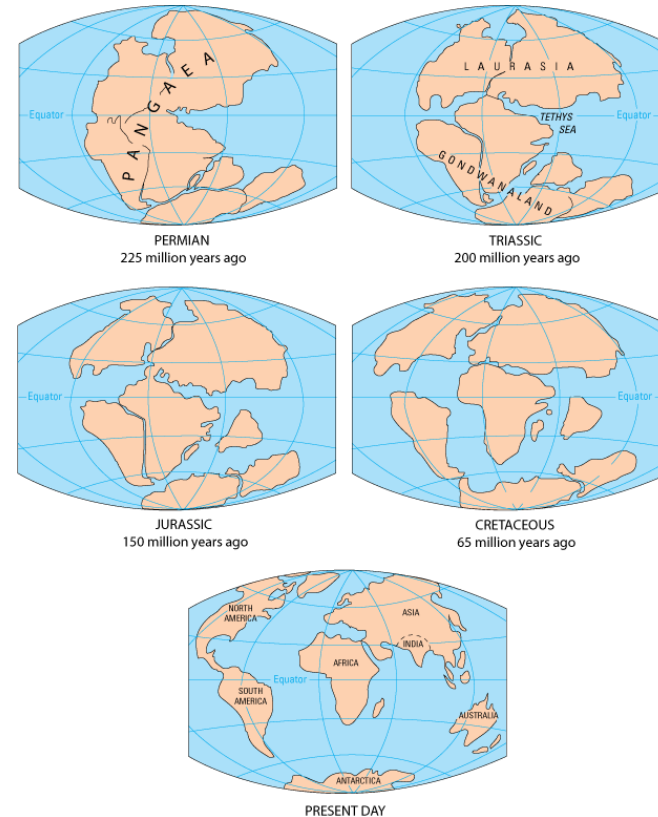


# Week 4: Continental Drift & Sea-Floor Spreading

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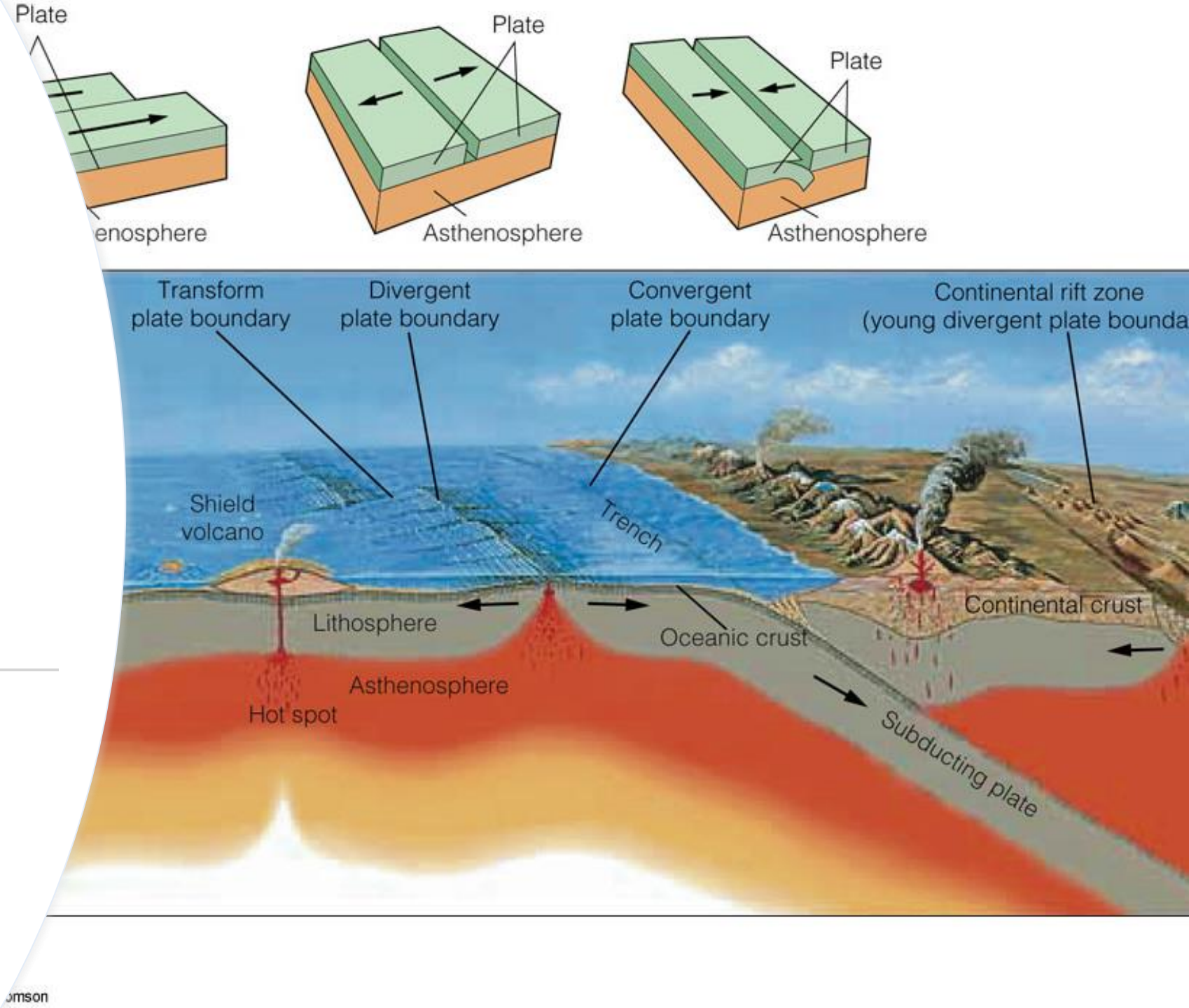


After The Bedrock Geology of the World by R. L. Larson, W. C. Pitman, III, et al., W. H. Freeman





# Week 4: Plate Tectonics



# Week 5: Volcanic Eruptions

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**Volcanic ash**

**Pyroclastic  
flow**

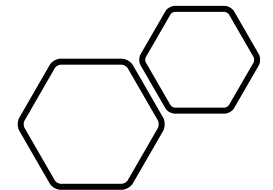
**Lava flows**







# Week 5- Earthquakes





# Week 5- Tsunami

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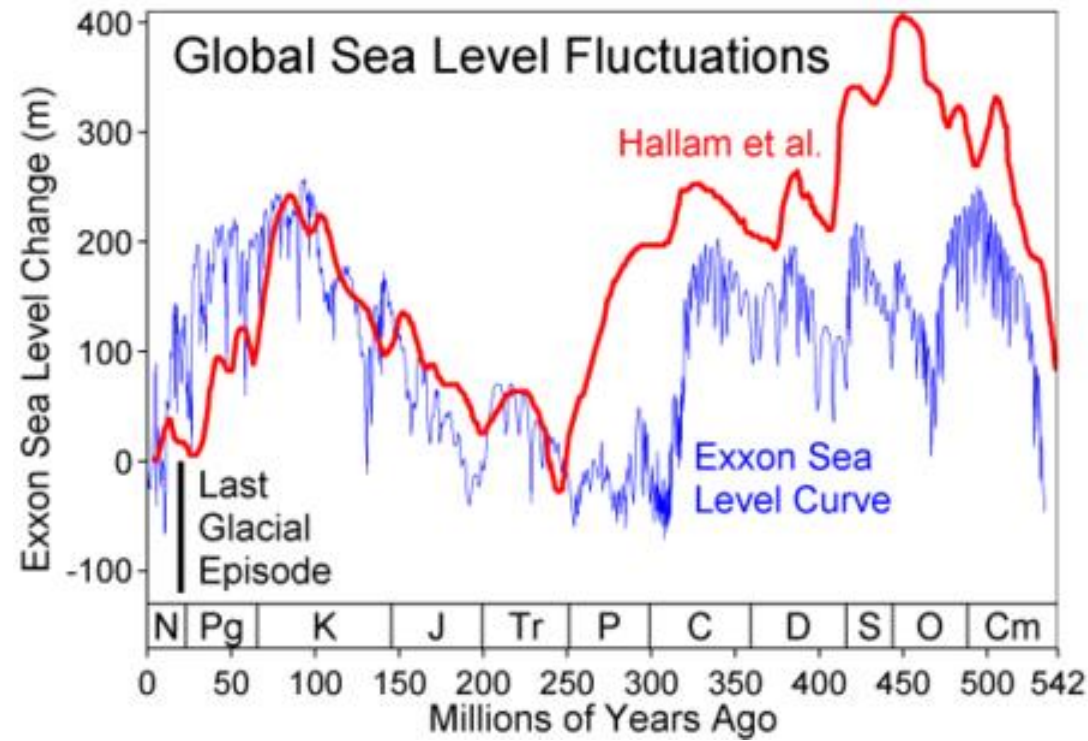
Tsunami, Japan, 2011

# **Week 6: Coastal Processes, Hazards, and Mitigation**

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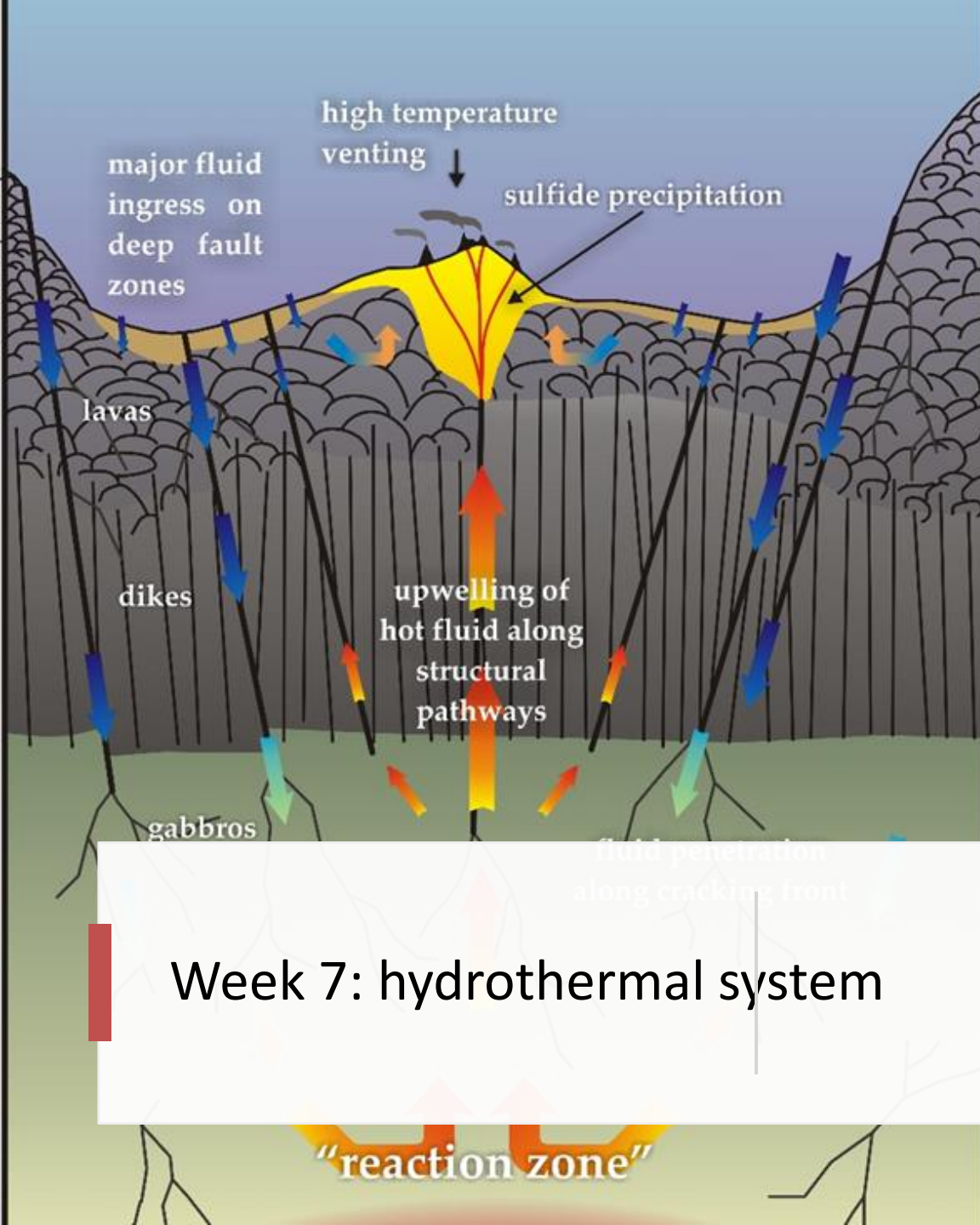




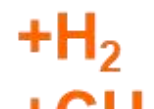
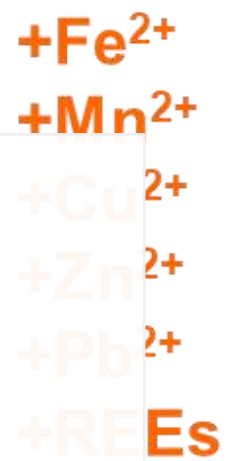
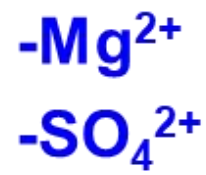


# Week 6: Global Sea Level Changes





Recharge Zone



Reaction Zone

with seawater  
T 2 ° C  
High pH

„Black Smoker“ vents  
T >250 ° C

water-rock interaction

Hydrothermal convection  
T >400-800° C  
Low pH

Week 7: hydrothermal system



A photograph of a hydrothermal vent chimney, likely a carbonate structure, showing a dark, porous interior and a rough, crystalline exterior. The chimney is illuminated by a bright light source, creating a strong contrast with the dark background. The labels  $\text{FeS}_2$  and  $\text{CuFeS}_2$  are overlaid on the image, indicating the presence of these minerals in the vent environment.

$\text{FeS}_2$

$\text{CuFeS}_2$

Week 8. Marine  
resources



# Scores

- **Attendance:** if you were absent for  $>1/3$  courses, your final score will be 0.
- **Homework:** 40 marks. We will have 3-4 HomeWorks, each homework accounts for 5-15 marks.
- **Performance:** 20 marks. We will have several in-class tests. These tests will be accounted for your final score.
- **Final examination:** 40 marks. You could check any materials during the final examination.

# About the homework

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- I will inform you when there is a homework.
- Check the homework at the “学在浙大”platform.
- Using a format like Scientific papers
- You have **two times** to revise your homework
- Be careful of the **deadline**. You can't submit your homework after the deadline.
- **I have zero tolerance for plagiarism**. Do not "copy and paste" when you doing your homework.





## About the homework

- **Criteria:**
- No abstract: -10
- No references: -20
- Improper referencing: -10
- Bad layout: -5
- Recommended layout: 1.5 spacing, 12pt Times New Roman or Arial
- Irrelevance: -40
- Plagiarism: -100, zero tolerance.



## The first in-class test

- Now, take a 30-min test to let me your current level on marine geology.
- Be assured that the score of this test will **NOT** be accounted for your final score.

# Find this pre-test

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test before class



before class test

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online survey



pre-test

未开始