



Geology Major
Geology (Intensive) Major
Earth System Science Major

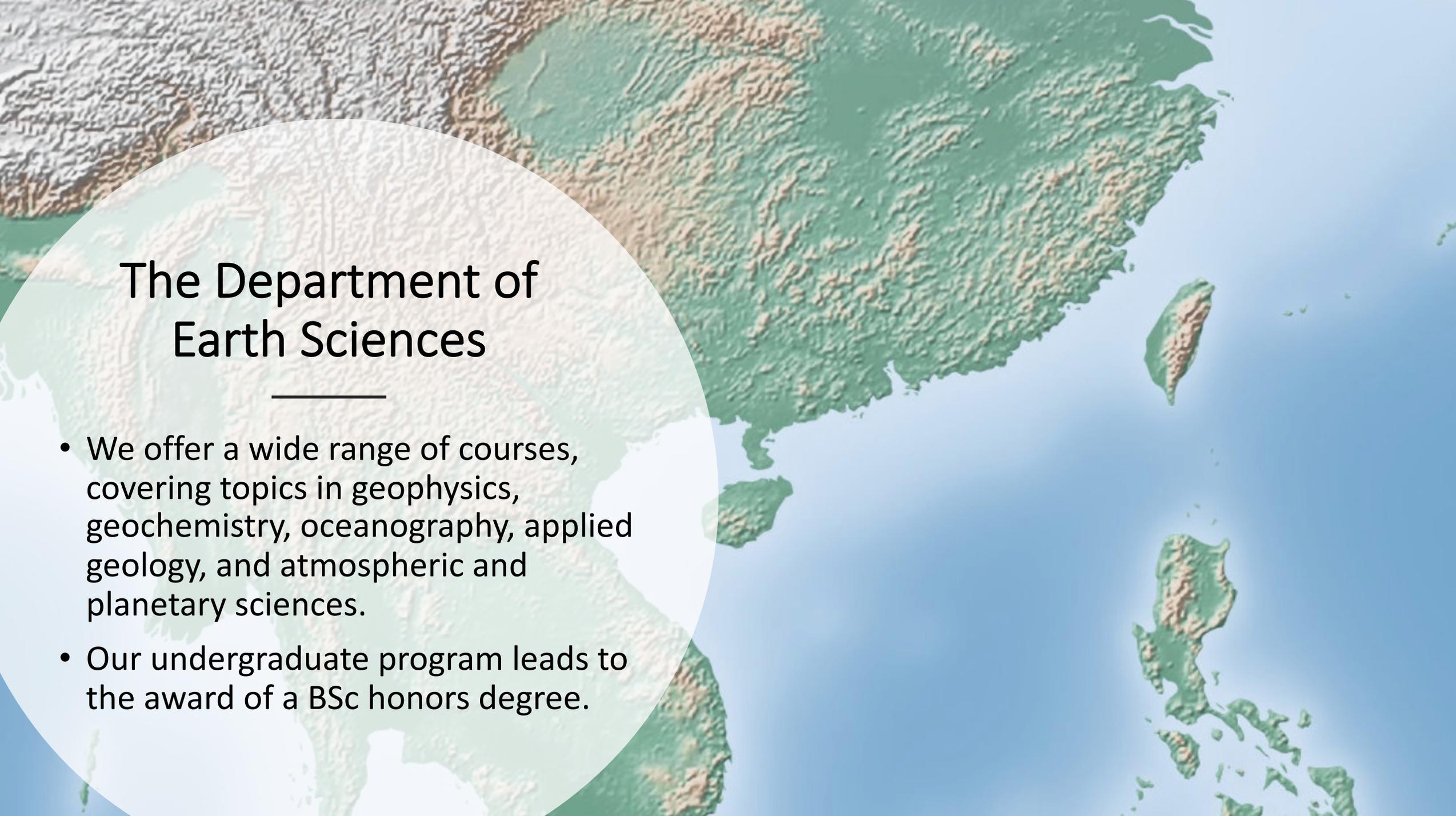
Su-Chin Chang
Department of Earth Sciences
The University of Hong Kong



The Department of Earth Sciences

- Our department was established in 1995 to meet local demand for Earth science expertise.
- We have international and world-class academic staff.
- We operate four research groups: (1) Solid Earth & Earth History, (2) Planetary Sciences, (3) Global Change & Environmental Science, and (4) Applied/Urban Geosciences.



A topographic map of East Asia and Southeast Asia, showing landmasses in shades of green and brown, and the surrounding ocean in light blue. A large, semi-transparent white circle is overlaid on the left side of the map, containing the text.

The Department of Earth Sciences

- We offer a wide range of courses, covering topics in geophysics, geochemistry, oceanography, applied geology, and atmospheric and planetary sciences.
- Our undergraduate program leads to the award of a BSc honors degree.

What are Earth sciences?

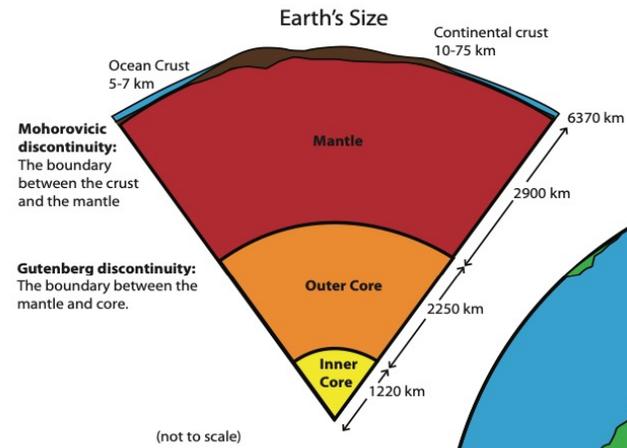


The Earth System

M. Ruzek, 1999

Earth sciences involve the study of the nature and evolution of our planet.

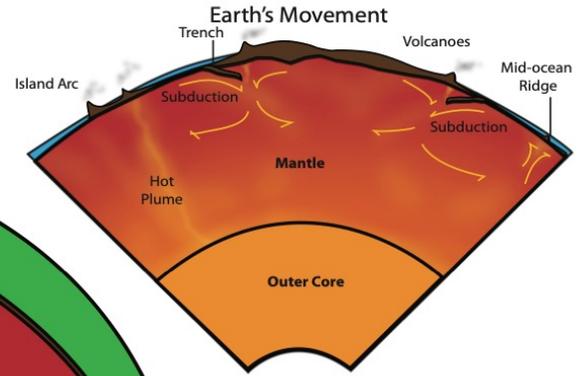
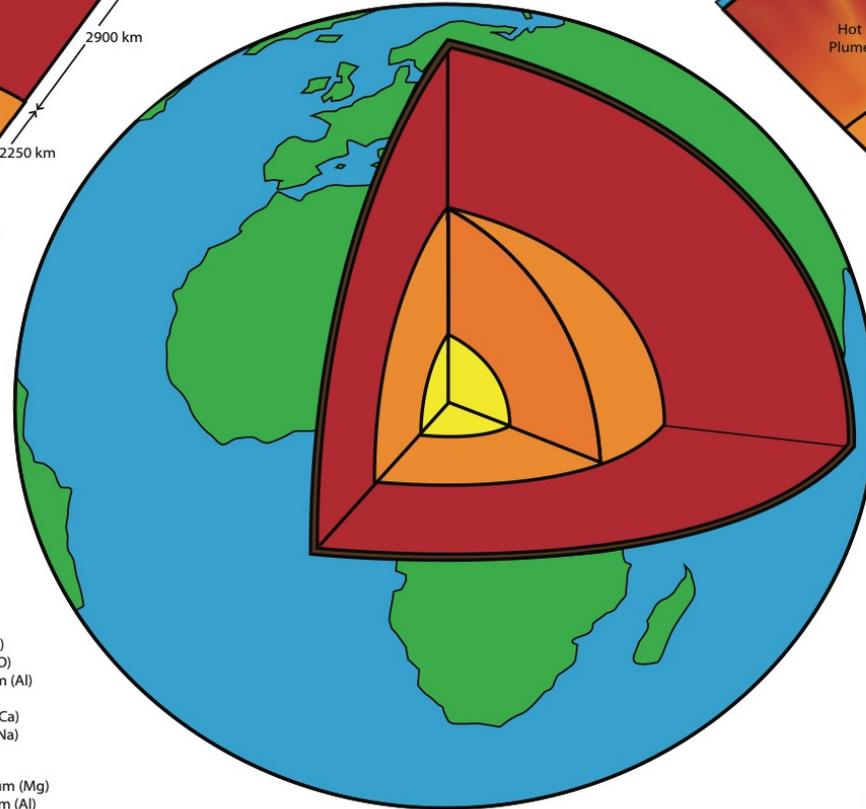
Earth's Interior



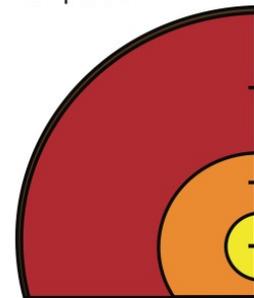
Mohorovicic discontinuity:
The boundary between the crust and the mantle

Gutenberg discontinuity:
The boundary between the mantle and core.

Earth's Interior



Earth's Main Chemical Composition



Silicon (Si)
Oxygen (O)
Aluminum (Al)
Iron (Fe)
Calcium (Ca)
Sodium (Na)

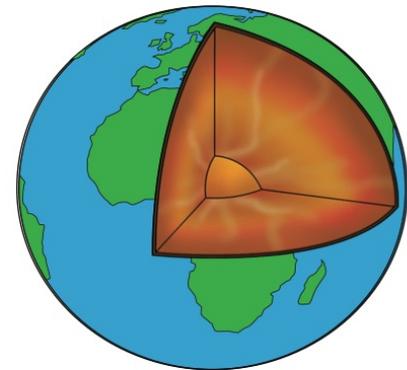
Iron (Fe)
Magnesium (Mg)
Aluminum (Al)
Silicon (Si)
Oxygen (O)

Iron (Fe)
Nickel (Ni)
Sulfur (S)
Iron (Fe)

A More Complicated Look

Despite the popular Jules Verne novel, no one has journeyed to the center of Earth. As a result, we cannot say for sure how it looks, or exactly what it is composed of.

It is important to remember that the straight lines in these illustrations are simplifications. The interior of the Earth is more likely to look closer to the image on the right.



The Dynamic Earth Plate Tectonics

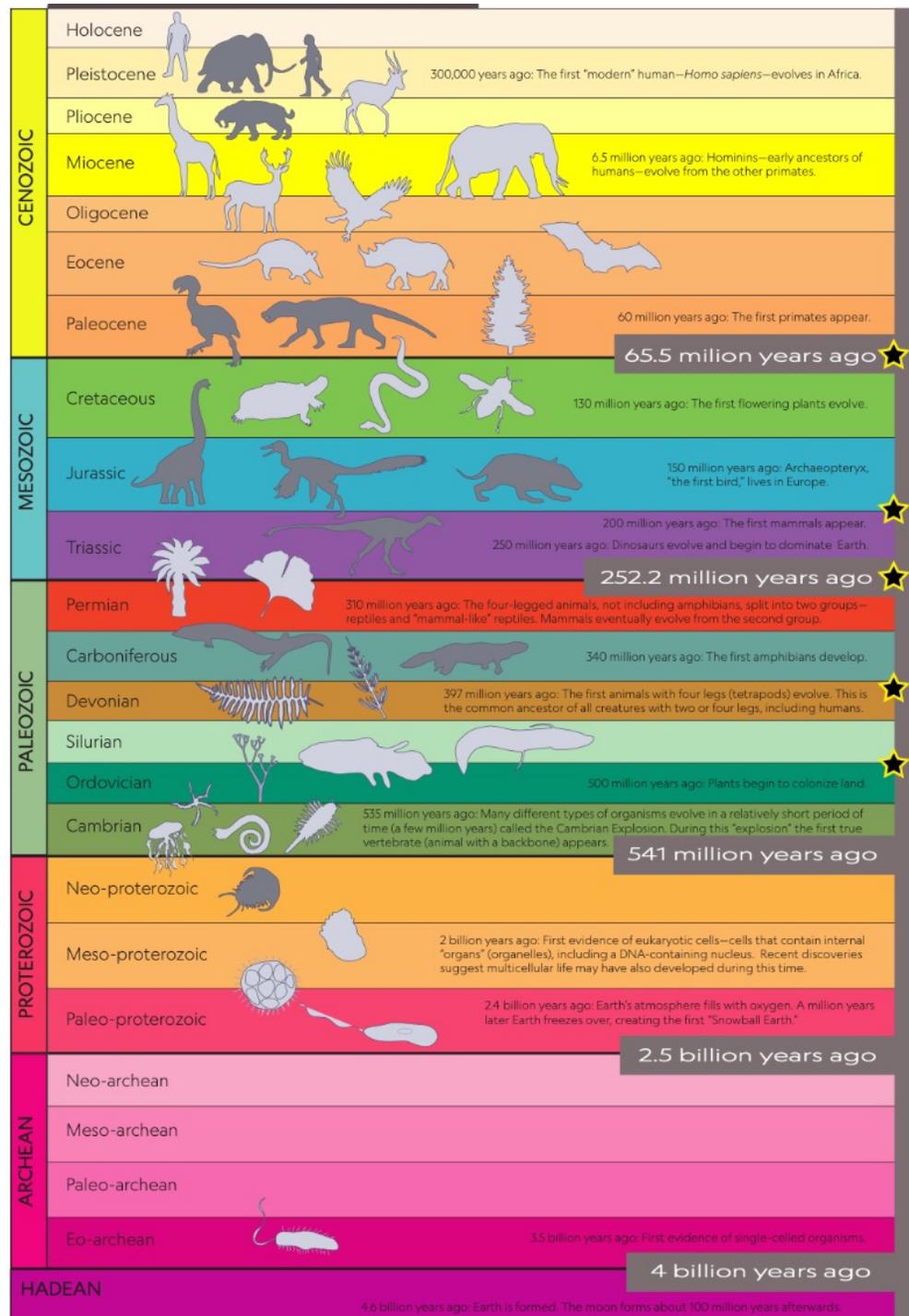
NATIONAL GEOGRAPHIC



Plate tectonics is a theory of geology. It explains the movement of the Earth's outer shell, including the continents and oceans.

The Dynamic Earth

Extinctions & Evolution



2011 Japan Tsunami



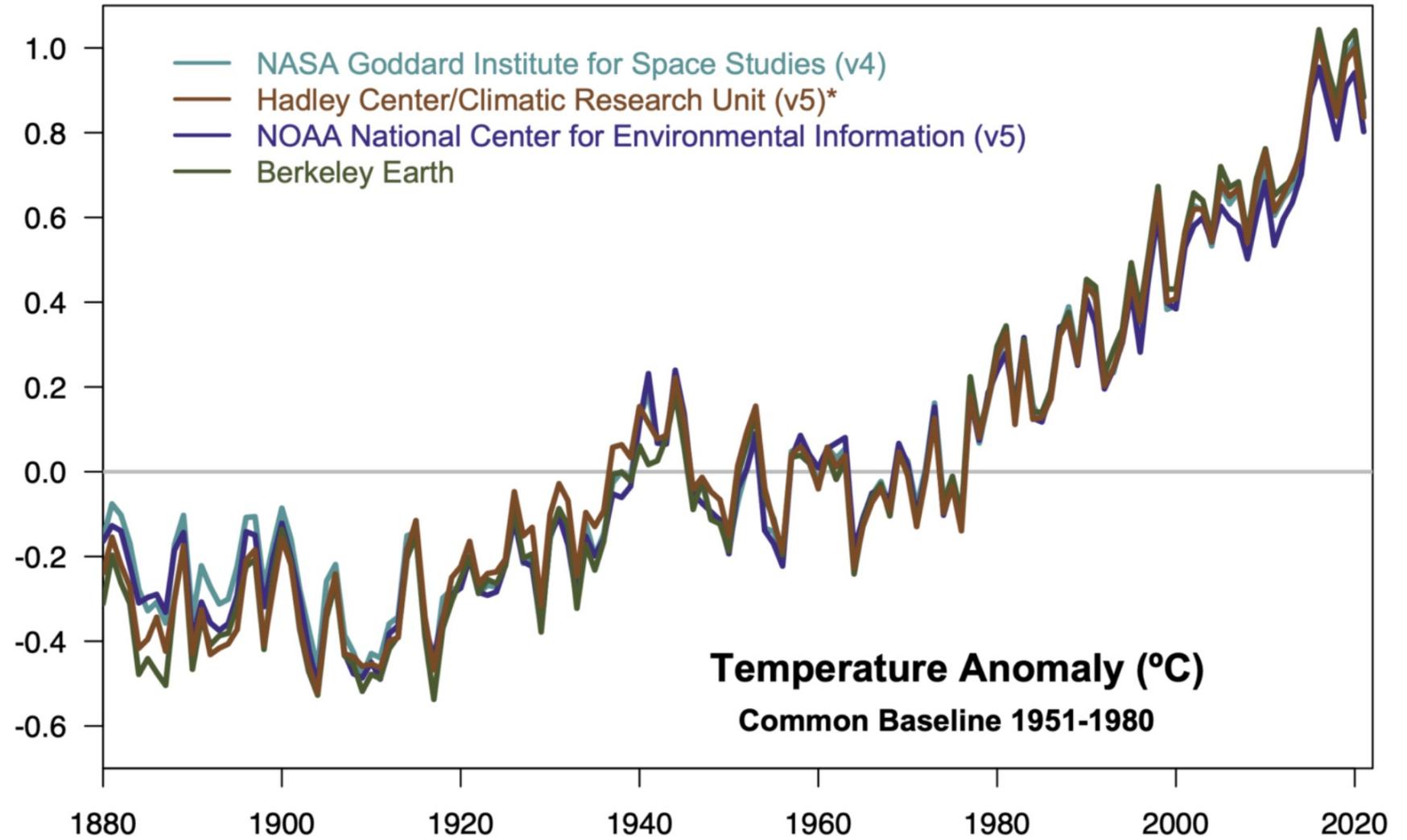
1972 Hong Kong Landslides



Natural Hazards

All photos are credited to the original authors.

Earth's Crisis



Geology Major

Required courses (96 credits)

1. Introductory level courses (42 credits)

Disciplinary Core Courses: Science Foundation Courses (12 credits)

SCNC1111	Scientific method and reasoning (6)
SCNC1112	Fundamentals of modern science (6)

Disciplinary Core Courses (30 credits)

EASC1402	Principles of geology (6)
EASC2401	Fluid/solid interactions in earth processes (6)
EASC2402	Field and laboratory methods (6)
EASC2406	Geochemistry (6)
EASC2407	Mineralogy (6)

2. Advanced level courses (48 credits)

Disciplinary Core Courses (36 credits)

EASC3402	Petrology (6)
EASC3403	Sedimentary environments (6)
EASC3404	Structural geology (6)
EASC3408	Geophysics (6)
EASC3409	Igneous and metamorphic petrogenesis (6)
EASC4406	Earth dynamics & global tectonics (6)

Disciplinary Electives (12 credits)

At least 12 credits selected from the following courses:

EASC3406	Reconstruction of past climate (6)
EASC3410	Hydrogeology (6)
EASC3412	Earth resources (6)
EASC3413	Engineering geology (6)
EASC3414	Soil and rock mechanics (6)
EASC3416	Advanced geochemistry and geochronology (6)
EASC3417	Earth through time (6)
EASC3999	Directed studies in earth sciences (6)
ENVS3007	Natural hazards and mitigation (6)
EASC4403	Biogeochemical cycles (6)
EASC4407	Regional geology (6)
EASC4408	Special topics in earth sciences (6)
EASC4999	Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4955	Integrated field studies (6)
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Geology (Intensive) Major

Required courses (150 credits)

1. Introductory level courses (54 to 66 credits) (Note 1)

Disciplinary Core Courses: Science Foundation Courses (12 credits)

SCNC1111	Scientific method and reasoning (6)
SCNC1112	Fundamentals of modern science (6)

Disciplinary Core Courses (42 credits)

EASC1401	Blue Planet (6)
EASC1402	Principles of geology (6)
EASC2401	Fluid/solid interactions in earth processes (6)
EASC2402	Field and laboratory methods (6)
EASC2406	Geochemistry (6)
EASC2407	Mineralogy (6)
EASC2409	Regional field studies (6)

2. Advanced level courses (78 to 90 credits) (Note 1)

Disciplinary Core Courses (60 credits)

EASC3402	Petrology (6)
EASC3403	Sedimentary environments (6)
EASC3404	Structural geology (6)
EASC3408	Geophysics (6)
EASC3409	Igneous and metamorphic petrogenesis (6)
EASC3417	Earth through time (6)
EASC4406	Earth dynamics & global tectonics (6)
EASC4407	Regional geology (6)
EASC4999	Earth sciences project (12)

Disciplinary Electives (30 credits)

At least 30 credits selected from the following introductory and advanced level courses in List A and List B, among which at least 6 credits from List A:

List A

EASC3405	Environmental remote sensing (6)
EASC3413	Engineering geology (6)

List B

EASC2404	Introduction to atmosphere and hydrosphere (6)
EASC2408	Planetary geology (6)
EASC3020	Global change: anthropogenic impacts (6)
EASC3406	Reconstruction of past climate (6)
EASC3410	Hydrogeology (6)
EASC3412	Earth resources (6)
EASC3414	Soil and rock mechanics (6)
EASC3416	Advanced geochemistry and geochronology (6)
EASC3999	Directed studies in earth sciences (6)
ENVS3007	Natural hazards and mitigation (6)
ENVS3313	Environmental oceanography (6)
EASC4403	Biogeochemical cycles (6)
EASC4408	Special topics in earth sciences (6)
EASC4911	Earth system: contemporary issues (6)
EASC4966	Earth sciences internship (6)

3. Capstone requirement (6 credits)

EASC4955	Integrated field studies (6)
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Earth System Science Major

Required courses (96 credits)

1. Introductory level courses (48 credits)

Disciplinary Core Courses: Science Foundation Courses (12 credits)

SCNC1111	Scientific method and reasoning (6)
SCNC1112	Fundamentals of modern science (6)

Disciplinary Core Courses (36 credits)

EASC1401	Blue Planet (6)
EASC2401	Fluid/solid interactions in earth processes (6)
EASC2402	Field and laboratory methods (6)
EASC2404	Introduction to atmosphere and hydrosphere (6)
EASC2410	Data analysis and modeling in earth sciences (6)
EASC2411	Introduction to the Earth-Life system (6)

2. Advanced level courses (42 credits)

Disciplinary Core Courses (6 credits)

EASC4403	Biogeochemical cycles (6)
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Disciplinary Electives (36 credits)

At least 36 credits selected from Lists A and B, among which at least 18 credits from List A:

List A

EASC3410	Hydrogeology (6)
EASC3415	Meteorology (6)
EASC3418	Coasts and coastal change (6)
ENVS3313	Environmental oceanography (6)

List B

EASC3020	Global change: anthropogenic impacts (6)
EASC3403	Sedimentary environments (6)
EASC3405	Environmental remote sensing (6)
EASC3406	Reconstruction of past climate (6)
EASC3412	Earth resources (6)
EASC3417	Earth through time (6)
EASC3419	Earth System Science Field Studies (6)
EASC3999	Directed studies in earth sciences (6)
ENVS3007	Natural hazards and mitigation (6)
EASC4408	Special topics in earth sciences (6)
EASC4999	Earth sciences project (12)

3. Capstone requirement (6 credits)

EASC4911	Earth system: contemporary issues (6)
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Local field trips



Overseas field trips

Since 1996, ~500 graduates...

- Engineering Firms
- Survey Companies
- Mining Companies
- Government
- Secondary Schools
- Universities
- Disaster Management
- Geotourism

Employers of HKU Earth Sciences: a few examples

Public bodies



Commercial Earth Sciences

ARUP



FUGRO

AECOM



aurecon

CMA C M WONG & ASSOCIATES LTD
黃志明建築工程師有限公司

Commercial outside the Earth Sciences



CATHAY PACIFIC

HSBC 滙豐



The average salary of recent DES fresh graduates working as contractors and consultants is \$18,000-20,000.

Please find more information on our website.
<https://www.earthsciences.hku.hk>



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The University of Hong Kong

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HKU Earth Sciences

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October 7, 2022
- HKU Stephen Hui Geological Museum Curating an Exhibition on Poland's D ...
October 7, 2022
- Final Year Student received first runner-up prize in the AGS (HK) Fina ...
August 2, 2022
- Dr. Joseph Michalski Elected Fellow of the Geological Society of ...
July 26, 2022

Seminars

24
10

The Habitability and Climate History of Mars from Remote Sensing and Analog Studies
Mr. YE Binlong (Supervisor: Dr. J. Michalski)

[See all seminars](#)