大学英语拓展课程系列

拓展课程 ESP

Advanced Geography through Diagrams

牛津地理学英语图示教程

Garrett Nagle Kris Spencer

上海外语教育出版社
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依据《大学英语课程教学要求》，上海外语教育出版社邀请国内外英语教学专家开发编写了选修教材，通过教材的出版引领、促进了大学英语选修课程设置的发展，丰富了我国大学英语教学。这些教材品种丰富，涵盖面广，包括以下多个系列：大学英语应用提高阶段专业英语系列教材、大学英语综合应用能力选修课系列教材、职场英语选修教程系列、大学目标英语、牛津专业英语基础丛书等。这些年来，全国数百所高校使用了这些教材，部分老师对教材的内容和编写形式提出了宝贵的建议，为我们进一步完善教材提供了实践依据。

虽然很多高校多年来一直尝试开设选修课，专家学者也进行了理论研究，但目前此类课程在大学英语教学中所占比重并不大，仍处于探索阶段。多数教学专家对大学英语选修课程的具体教学目标和教学内容范围未形成统一认识，教育主管部门亦未出台具体的选修课教学要求。为了进一步推动大学英语选修课教学的发展，外教社在多年选修课教材使用情况调研的基础上，结合专家学者的最新研究成果和建议，充分考虑我国目前的大学英语教学现状、师资条件、实际需求等因素，重新策划编写了“大学英语拓展课程系列”，该系列教材包括EAP、ESP和EOP三个子系列。

- EAP（English for Academic Purposes）
  学术英语类，侧重高级水平英语听、说、读、写、译等技能的培养，为大学生出国留学、攻读研究生、进行科研等学术活动打下更扎实的英语基础。此类课程包括：演讲听说、跨文化交际、文学赏析、学术英语写作等。适合需要继续在学术上深造的大学生使用。

- ESP（English for Specific Purposes）
  专业英语类，侧重提升专业英语能力，在培养学生听、说、读、写、译等基本语言技能的基础上，教授与该专业相关的英语词汇和表达，并尽可能传授专业知识，以使大学生轻松通过英语媒介获取本专业知识和信息。此类课程适合相关专业学生学习，针对性强。

- EOP（English for Occupational Purposes）
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除了重新修订已出版的教材外，我们还通过邀请更多海内外英语教学专家参与编写、和国外出版社合作出版等方式，扩大本系列教材的选题规模，以满足各专业大学生的学习需求。本系列教材具有时代感强、实用性强、课堂可操作性强等特点，相信会给我国大学英语教学带来新风向。

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The structure of the Earth

WORKING FROM THE CENTRE OUTWARDS

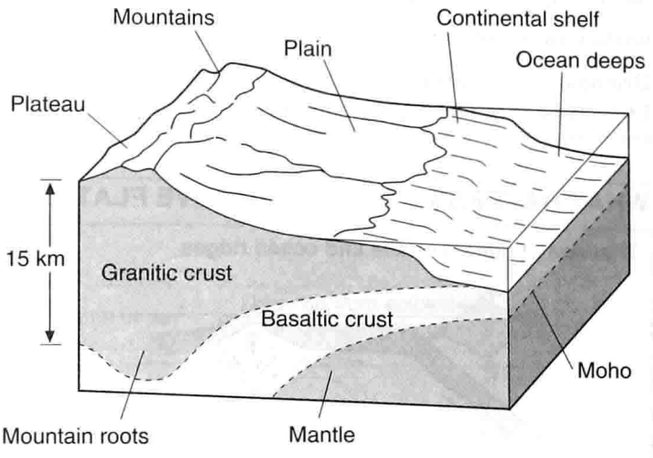
1 **Core:** Solid, consists of iron and nickel. Density about 13.6 g cm^{-3}, approximately five times more dense than surface rocks.

2 **Outer core:** Liquid, consists largely of iron. Density about 10–12 g cm^{-3}. It is believed that the earth's magnetic field is generated by movements in the liquid outer core.

3 **Mantle:** Solid, consists of lower density material (4–5 g cm^{-3}) known as peridotite, a material composed of silicate minerals. Approximately 2900 km thick, may be divided into two subdivisions, the upper and lower mantle.

4 **Crust:** Solid, divided into two different types, continental and oceanic crust. Depth varies from 10 to 35 km, density about 3 g cm^{-3}.

Continental crust is largely composed of granite and is sometimes referred to as *sial* due to the volume of *si*lica and *al*uminium in its make up. Continental crust is less dense than the basaltic oceanic crust (also known as *sima*, because of the *si*lica and *ma*gnesium in its make up) and also considerably thicker. It appears that the oceanic crust plunges down beneath the continental crust; the division between the two layers is known as the Conrad Discontinuity.

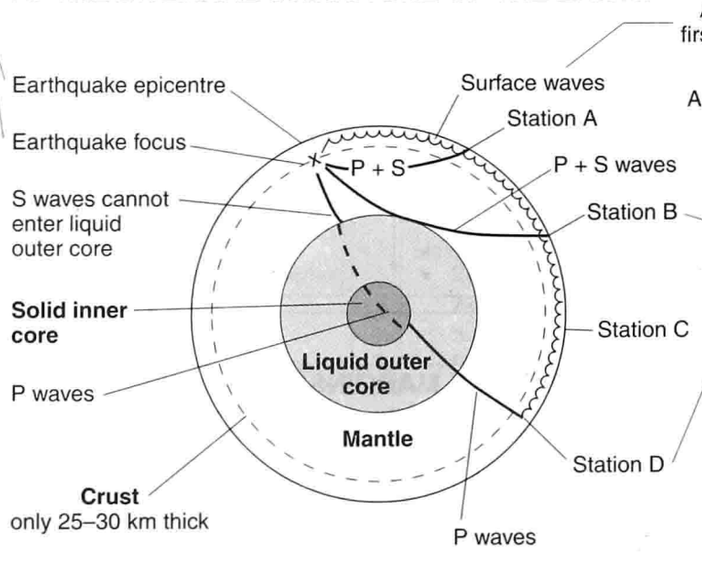


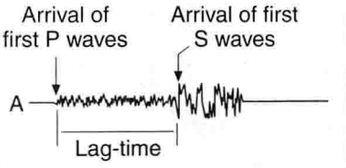
EVIDENCE RELATING TO THE INTERNAL STRUCTURE OF THE EARTH

Two types of waves produced:

- surface waves from epicentre
- body waves from focus - body waves can be divided into primary (P) waves and secondary (S) waves

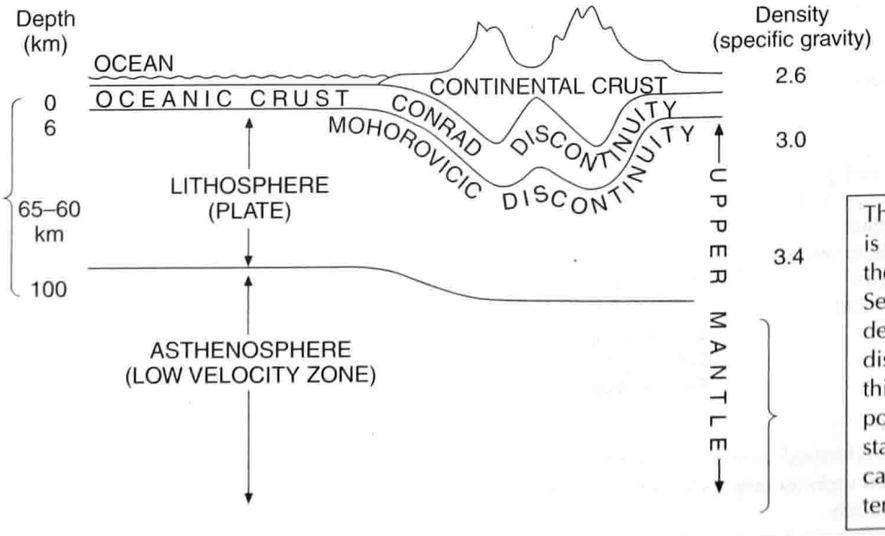
P waves travel in the Earth's crust at an average speed of 6.1 km/s. S waves travel at 4.1 km/s. S waves cannot travel through liquids.





P waves take 14 minutes to reach here, S waves take 25 minutes. At D there are no S waves, and the P waves arrive much more slowly than would be suggested by their normal speed through the mantle. The lack of S waves and the slowness of P waves suggests that the outer core is liquid.

The **lithosphere** is a relatively inflexible and bouyant layer. It is this layer which floats on the material underneath and as it moves carries the continents - the tectonic plates - that produce *continental drift*.



The **asthenosphere** is the layer below the lithosphere. Seismic waves decrease with distance through this region. This is possibly due to a state of flux caused by the high temperature.

Processes at plate margins

LANDFORMS AND PLATE TECTONICS

The lithosphere is divided into a number of large and small rigid plates. There are three types of boundary:
(i) divergent - where plates are moving apart at ocean ridges or continental rifts

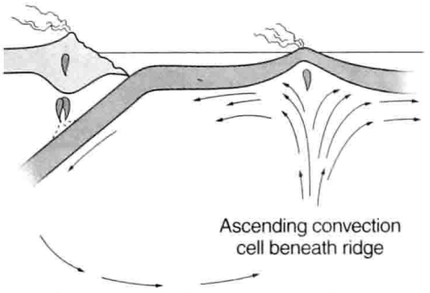
(ii) convergent - where plates are moving together and one plate is forced beneath another forming ocean trenches

(iii) transform or transcurrent - where plates are moving past each other and are neither constructive nor destructive

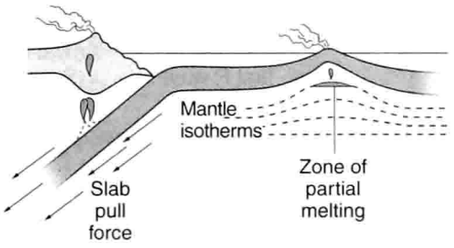
Diverging plates spread apart, splitting the crust. This is followed by the formation of new crust. They are therefore CONSTRUCTIVE.
Converging plates involve major mountain building and subduction of the crust. They are known as DESTRUCTIVE.

WHAT HAPPENS AT CONSTRUCTIVE PLATE MARGINS?

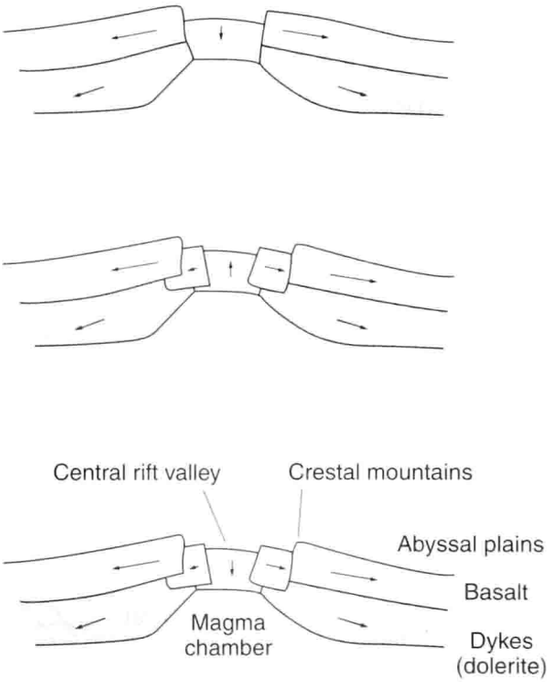
Theories of plate motions and ocean ridges



Theory 1 – 'ridge-push', whereby ascending convection cells push ridge upwards



Theory 2 – 'thinning', whereby a descending slab pulls the ocean lithosphere and stretches it. This extension causes mantle isotherms to rise so that melting and volcanism can occur.



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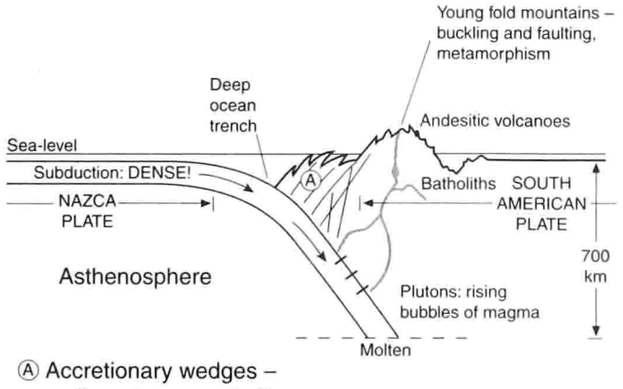


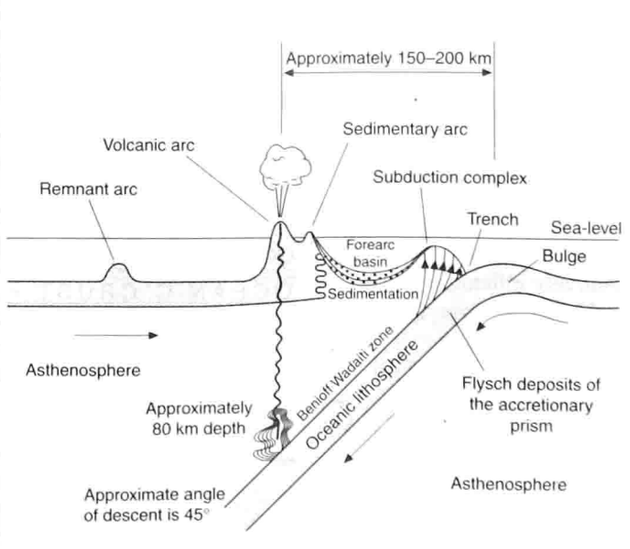
Ⓐ Accretionary wedges – sediments scraped off descending plate incorporated into new continental crust → sedimentary rocks

✕ Benioff zone – frictional contact between descending plate and overlying material

→ Earthquake focus

Fold mountains

Fold mountains are formed by extreme pressure which has folded and uplifted sedimentary rocks, often changing them metamorphically.



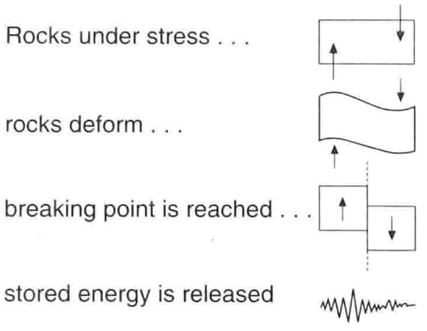
Island arcs

Arcs of islands form on the landward side of oceanic trenches, e.g. the Aleutian Islands.

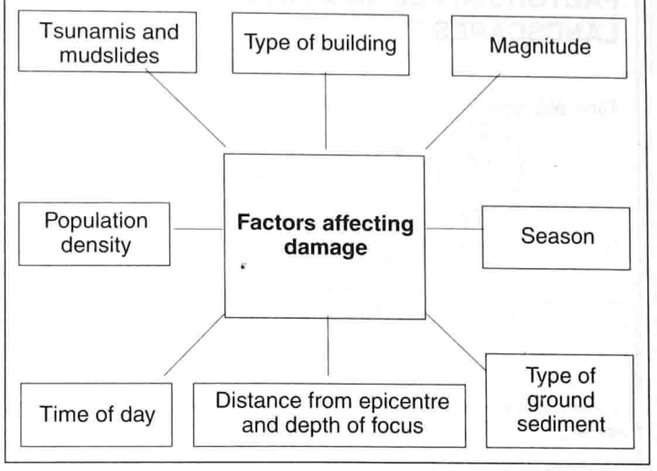
Earthquakes

CAUSES

Earthquakes occur when normal movements of the crust are concentrated into a single shock or a series of sudden shocks. Aftershocks occur later as stresses are redistributed. The sequence is as follows:



EARTHQUAKE DAMAGE



SHOCKWAVES

Waves associated with the focus

P waves: fast/compression
S waves: slower/distortion
} travel through the interior

Waves associated with the epicentre

Love and Rayleigh waves which travel on the surface and cause the damage.

PREDICTION

- Crustal movement.
- Historical evidence.
- Seismic activity.
- Minor quakes before 'The Big One'.
- Change in properties of ocean crust.
- Gas omissions from ground.
- Changes in electrical conductivity.

CASE STUDY: THE KOBE EARTHQUAKE

Details: 17th January 1995, killed over 5000 people, injured over 30,000, and made almost 750,000 homeless.

Causes: Philippine plate is being subducted beneath the Eurasian plate. Kobe is situated in a geographically complex area near the northern tip of the Philippine plate.

Secondary factors: Rain and strong winds increased landslide risk; damp, unhygienic conditions encouraged disease; fires, broken glass, broken water pipes, and lack of insurance meant that many lost their livelihood.

HUMAN IMPACT

- Mining - gold-mining in the Witwatersand area of South Africa has been blamed for frequent seismic activity because of changed rock stress.
- Reservoirs - previously an area free from tectonic tremors, the states of Nevada and Arizona in the USA experienced over 100 tremors in 1937 following the construction of the Hoover Dam and the creation of Lake Mead due to seepage.