PowerPoint Series on Geography of China (2) – The relief of China

Personal, Social and Humanities Education Section, Curriculum Development Institute, Education Bureau
The Geography Curriculum Guide (Secondary 1 - 3) and the Geography Curriculum and Assessment Guide (Secondary 4 - 6) have about 1/3 of their contents and examples on the physical and human geography of China.
Before studying individual topics or examples related to geography of China, teachers should first teach this PowerPoint so that students can have a basic understanding of China’s overall relief. This helps students to understand the contents of other topics, such as “River" in the senior secondary geography curriculum and “Population" in the junior secondary geography curriculum.
The Topographical Setting of China – The three-tier (three-step) pattern

- China has a large land mass and a wide variety of landforms – mountain ranges, plateaus, basins, hilly areas and plains.

- The topography of China is high in the west and low in the east, showing a general trend of three steps down (Figure 1). This is the so-called "three-tier (three-step) pattern of relief".
Figure 1  A map showing the three-tier pattern of relief & major rivers of China (& related information)

<table>
<thead>
<tr>
<th>River</th>
<th>Length of the river (Source of data: 《China Statistical Yearbook 2019》)</th>
<th>Annual runoff (Source of data: 《China Statistical Yearbook 2019》)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huang He</td>
<td>5,464 km</td>
<td>59.2 billion cubic meters</td>
</tr>
<tr>
<td>Chang Jiang</td>
<td>6,300 km</td>
<td>985.7 billion cubic meters</td>
</tr>
</tbody>
</table>
As seen from Figure 1 above, China's three-tier pattern of relief is high in the west and low in the east. The characteristics and examples of the tiers are as follows:

<table>
<thead>
<tr>
<th>China’s three-tier pattern of relief</th>
<th>Characteristics &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; tier/step</td>
<td>• The 1&lt;sup&gt;st&lt;/sup&gt; tier includes high mountains such as the Tibetan Plateau with an average altitude of over 4,000m in southwestern China.</td>
</tr>
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<td>China’s three-tier pattern of relief</td>
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</tr>
</tbody>
</table>
| 2\(^{nd}\) tier/step              | • The height of the 2\(^{nd}\) tier is **about 1,000-2,000m above sea level**, and some areas can be below 500m.  
• This region spanning central, northern and northwestern China has a series of highland above 1,500m above sea level, such as Altai Shan, Tianshan, Inner Mongolia Plateau, Loess Plateau, Yungui Plateau, Zunggar Basin, Tarim Basin, Qaidam Basin and Sichuan Basin. |
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| 3<sup>rd</sup> tier/step            | • Crossing Daxinganling (Greater Khingan Range) to Xuefeng Shan, all the way to the coast of eastern China, it is the 3<sup>rd</sup> tier of China’s topography. There are **plains and hills below 500m in altitude**.  
• Examples of the 3<sup>rd</sup> tier include the Northeast China Plain, North China Plain, the middle and lower courses of Chang Jiang Plain, and the southeast hills (southeast hilly areas), etc. |
Taking Chang Jiang in Figure 1 as an example to draw a profile, we can see that the flow direction of China's major rivers (such as Chang Jiang and Huang He) also roughly reflects the topography of China's high west and low east (see Figure 2 below).
Characteristics of China’s topography - more mountains and less flat lands

- Mountainous topography is a major relief characteristic of China. In terms of height, the lowlands below 500m only account for 25% of the country’s total land area, while the highlands above 500m account for about three-quarters.

- Uplands (including mountain ranges, plateaus and hills) account for about 69% of the total land area in China.

- On the contrary, China's flat lands / lowlands (including basins and plains with flat terrain) only accounts for about 31% of the total area.
Mountain Ranges of China

- A “mountain range” refers to a series of connected mountains. Mountain ranges form the topographic framework of China.

- Although China’s mountain ranges seem to be intertwined with each other, certain patterns can be identified. It can be roughly divided into four groups of mountain ranges in Figure 3:

  1) East-West Mountain Ranges
  2) Northeast-Southwest Mountain Ranges
  3) North-South Mountain Ranges
  4) Northwest-Southeast Mountain Ranges
Figure 3  The 4 major groups of mountain ranges in China
(Source: P.70 of the book “Learning the Geography of China through Reading (Part 1): The physical environment” published by the Education Bureau (Hong Kong) in 2013.)
<table>
<thead>
<tr>
<th>Mountain Ranges in China</th>
<th>Distribution &amp; Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) East-West Mountain Ranges</strong></td>
<td>• Including the northern range of Tianshan – Yinshan, the middle range of Kunlun Mountain – Qinling, and the southern range of Nanling</td>
</tr>
<tr>
<td><strong>2) Northeast-Southwest Mountain Ranges</strong></td>
<td>• Mainly located at East China and can be divided into 3 mountain ranges: The western mountain range comprises Daxinganling, Taihang Shan, Wushan and Xuefeng Shan; the middle range comprises Changbai Shan and Wuyi Shan; and the east range is the mountain ranges in Taiwan.</td>
</tr>
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<tr>
<td>3) North-South Mountain Ranges</td>
<td>• There are two mountain ranges in this group: 1) Helan Shan and Liupan Shan in central China; and 2) Hengduan Shan in southwest China.</td>
</tr>
<tr>
<td>4) Northwest-Southeast Mountain Ranges</td>
<td>• Also known as the Tibetan Plateau, including the Altai Shan, Qilian Shan and the Himalayas</td>
</tr>
</tbody>
</table>
Plateaus of China

There are **four major plateaus** in China: Tibetan Plateau, Inner Mongolian Plateau, Loess Plateau and Yunnan-Guizhou Plateau (Figure 4).

Except that the Tibetan Plateau is located on the 1\textsuperscript{st} tier of the relief of China, the other three plateaus are located on the 2\textsuperscript{nd} tier.

1) **Tibetan Plateau:** It is located in southwestern China and mainly includes Xizang, Qinghai and western Sichuan. It is the largest and highest plateau in China, with an average elevation over 4,000m.
Figure 4  The 4 major plateaus in China
(Source: P.72 of the book “Learning the Geography of China through Reading (Part 1): The physical environment” published by the Education Bureau (Hong Kong) in 2013.)
2) **Inner Mongolian Plateau**: It is located in northern China and mainly includes most parts of Nei Mongol and parts of Gansu, Ningxia and Hebei.

3) **Loess Plateau**: The Loess Plateau is the thickest and largest loess in the world. Its location is just south of the Inner Mongolia Plateau, including Shanxi, and parts of Shaanxi, Gansu, and Ningxia.

4) **Yunnan-Guizhou Plateau**: It is located in southwestern China and occupies much of Yunnan and Guizhou.
Basins of China

There are 4 major basins in China. They are Tarim Basin, Zungar Basin, Qaidam Basin, and Sichuan Basin (Figure 5), and all of them are located on the 2nd tier of the relief of China

1) **Tarim Basin**: The Tarim Basin is located in southern Xinjiang and is the largest basin in China, with an elevation of about 800-1,300m. The terrain of the Tarim Basin is high in the west and low in the east. Its center is the largest desert in China - the Taklamakan Desert, and its edge is an oasis belt.
Figure 5  The 4 major basins in China
(Source: P.74 of the book “Learning the Geography of China through Reading (Part 1): The physical environment” published by the Education Bureau (Hong Kong) in 2013.)
2) **Zungar Basin** is located in northern Xinjiang at an altitude of about 500-1,000m. It is the second largest basin in China. Its terrain is also high in the west and low in the east. Its central part is the second largest desert in China - Gurbantunggut Desert.

3) **Qaidam Basin** is located in the northwest of Qinghai Province. It is the highest basin in China, with an elevation of about 2,500-3,000m. There are many salt lakes and swamps in its southeast.
4) **Sichuan Basin** is located in the east of Sichuan Province at an altitude of about 250-700m. Its terrain is high in the northwest and low in the southeast, with plains, hills, low mountains and rivers. Because of the warm climate and fertile land, the Basin is rich in natural resources and has the reputation of "the kingdom of heaven".
Plains of China

There are three major plains in China, from north to south, followed by the Northeast Plain, North China Plain, and the middle and lower Chang Jiang (Yangtze) Plain, all distributed on the 3rd tier with the lowest topography in eastern China (Figure 6).

1) Northeast Plain: It is located in northeastern China, surrounded by Daxinganling, Xiao-xing'anling and Changbai Shan. It includes parts of Heilongjiang, Jilin, Liaoning and Nei Mongol, and is the largest plain in China.
Its area is about 350,000 km\(^2\), and its altitude is mostly below 200m. Except for the slightly higher terrain in the middle, the terrain of most places is gentle. Widespread fertile black soils and fresh water marshes are prominent features of the Plain.

2) **North China Plain**: It is located at the northern part of East China and is demarcated by Yan Shan, Taihang Shan and Huaihe. It occupies parts of Hebei, Henan, Shandong, Beijing, Tianjin, Jiangsu and Anhui.
Figure 6 The 3 major plains in China
(Source: P.77 of the book “Learning the Geography of China through Reading (Part 1): The physical environment” published by the Education Bureau (Hong Kong) in 2013.)
The North China Plain is the second largest plain in China. It is formed by alluvial deposits from the Huang He, Huaihe and Haihe, and has an area of 310,000km². The land there is flat and is less than 50m above sea level in most cases.

3) **The middle and lower Chang Jiang (Yangtze) Plain**: It includes many plains from the east of Wushan to the mouth of Chang Jiang, such as Dongting Lake Plain, Jiang Han Plain, Boyang Lake Plain, Jiangsu-Anhui River Plain and Chang Jiang Delta. With a total area of about 200,000 km², it is the third largest plain in China.
Hills of China

- China's hilly land is mainly distributed in the eastern coastal areas. The three major hilly areas (Figure 7) include:

1) **Southeast Hills**: It is the largest hilly area in China, including a large area of land east of Xuefeng Shan and a large area of land south of Chang Jiang

2) **Liaodong Hills**

3) **Shandong Hills**
Figure 7  The 3 major clusters of hills in China
(Source: P.79 of the book “Learning the Geography of China through Reading (Part 1): The physical environment” published by the Education Bureau (Hong Kong) in 2013.)
Reference:

❖ ‘Chapter 2 Relief (NG Sai-leung)’ in the educational package “Learning the Geography of China through Reading (Part 1): The physical environment” published by the Education Bureau (Hong Kong) in 2013.

Further reading:

After teaching this PowerPoint, teachers may encourage their students to read the above reference materials. Teachers and students can use their Hong Kong Education City (HKEdCity) accounts to download the e-book version of the above materials for free from the “Hong Kong Reading City" of the HKEdCity website.