19. Asia – hydrology and climate

Hydrology

The spokes of Asian highland core are great rivers that flow out in all directions. Seven of these are among the dozen longest rivers in the world.

Flowing north from the N margin and NE extensions of the highland core to the icebound Arctic Ocean are the Ob, Yenisey and Lena rivers (Figure 1,2,3) = flow across vast alluvial plains underlain by permafrost.

West = flowing from the slopes of the Tian Shan Mts. and the Pamirs themselves, are rivers such as the Ili, the Syr Darya (Figure 4), and the Amu Darya (Figure 5), which drain into interior seas – Lake Balqash (Figure 6) in the case of the Ili; the Aral Sea (Figure 7) for the other two.

These rivers constitute the great interior drainage basin of Asia with an area of about 10 million km^2.
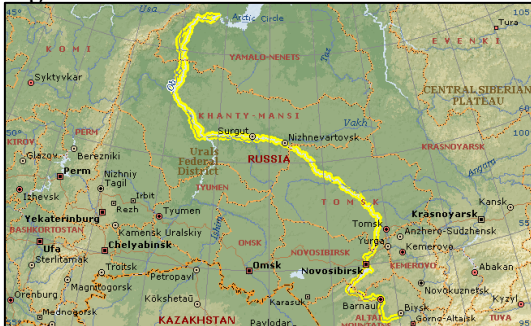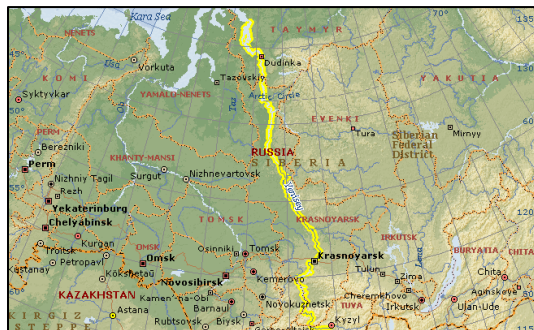
Figure 1: Ob river

Figure 2: Yenisey river

Figure 3: Lena river

Figure 4: Syr Darya river

Figure 5: Amu Darya river

Figure 6: Lake Balqash

Figure 7: Aral sea

S + SE + E Asia = great rivers flow through vast lowlands. Clockwise from south-west to north-east these rivers are the Indus, Ganges, Brahmaputra (Figure 8), Irrawadi, Mekong (Figure 9), Yangzi, Huang He (Yellow River), and Amur (in far east Siberia), all of which are snow- and glacier-fed and rise either well within, or along the margins of, the highland core.

Figure 8: Brahmaputra river

Figure 9: Mekong river

Lake Baikal
Lake Baikal = the deepest freshwater lake in the world and the third-largest lake in Asia. A large variety of plant and animal life is found in its clear waters. Many rivers (also >300 mountain streams) flow into the lake.

Hydrology features of Asia
Largest lakes: Caspian Sea, Aral Sea, Lake Baical, Lake Balqash
Largest rivers: Yangtze, Huang He, Lena, Mekong

Climate

The climate of the continent = as varied as its surface – ranging from equatorial rainforest to Arctic tundra.

N Asia = dominated by the movement of polar continental air masses, travelling from western Siberia to the northern Pacific. *Winters* = long and harsh. *Summers* = short and cool. Light annual precipitation. A similar climate is characteristic of the Tibetan Plateau and other uplands (highlands). The interior (inland) regions have middle-latitude desert or semi-arid climates, with harsh winters and warm to hot summers, average annual precipitation is less than 230 mm ⇔ great influence of continentality.

S + E Asia = characterized by *monsoonal air movements*
- *Winter* = from the cold interior to east and south margins, cold, dry winters
- *Summer* = from the oceans north towards the warmer land in summer, hot, humid summers, with a strong concentration of precipitation in the summer months

Although the term monsoonal is applied to all the climates of eastern and southern Asia, the true monsoon is characteristic only of part of the Indian subcontinent and Myanmar (Burma), in these areas average annual rainfall exceeds 2,000 mm. In other parts of southern and eastern Asia, rainfall is either less heavily concentrated in the summer or evenly distributed throughout the year.

Most of eastern Asia experiences flows of maritime air from the western Pacific in the form of a monsoon effect. In places where orographic (mountain) factors intervene, the winter is likely to be wet, as is the case along the eastern coastal areas of the Philippines, Vietnam, and Malaysia, and in parts of southern India.

Coastal areas of eastern Asia are also subject to destructive typhoons, which originate in the western Pacific and the northern part of the South China Sea.

SW Asia = different climatic regime, characteristic of much of the *Mediterranean area*. It is dominated by a high pressure belt of dry, relatively stable air masses that move slowly from west to east, bringing winter rainfall and then passing into northern India. The average annual rainfall is light, and semi-arid steppe and desert climates prevail. This climate regime extends into the north-western Indian Peninsula.