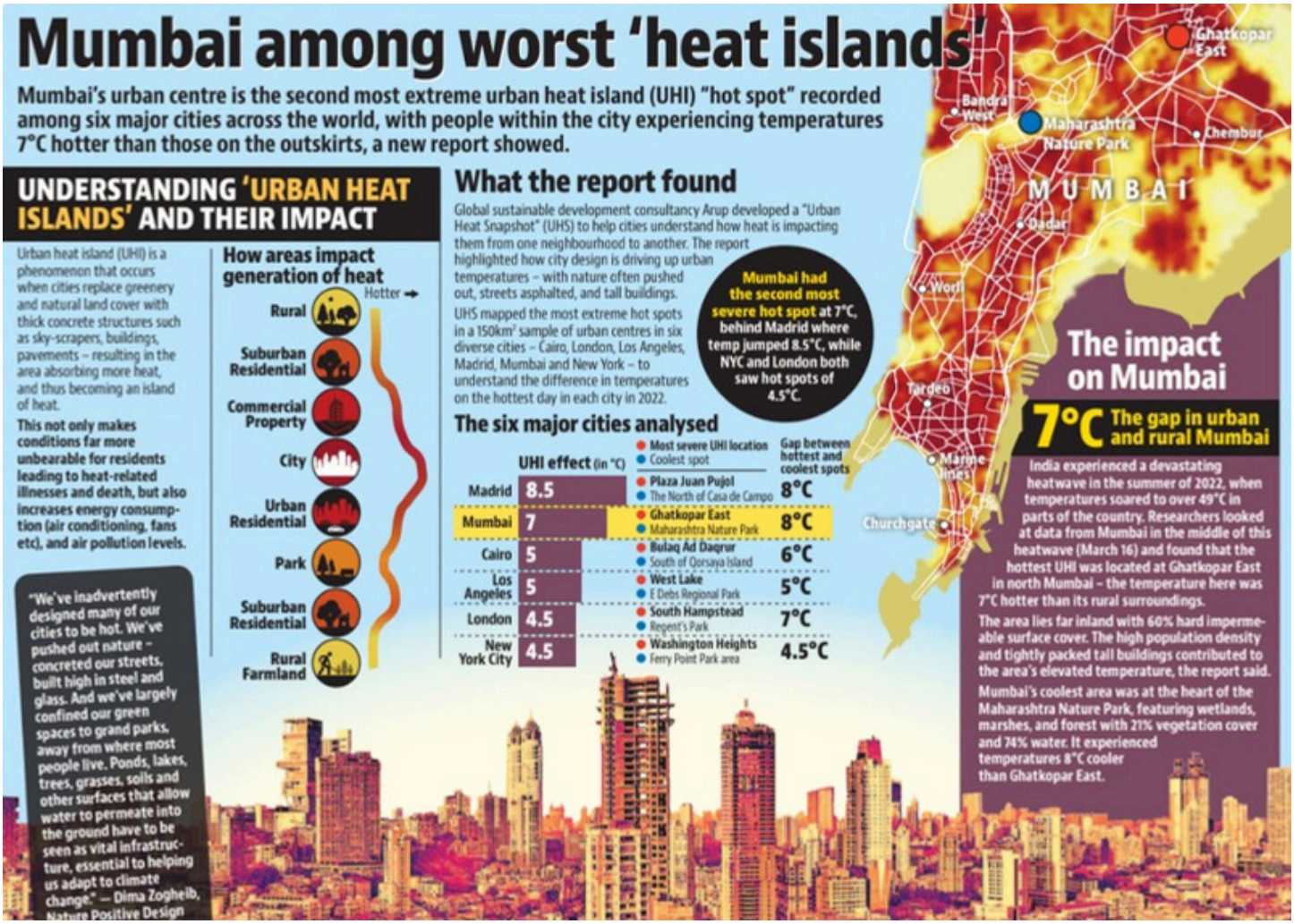
What are the controls of Indian Climate?

Ans. India's climate is controlled by a number of factors which can be broadly divided into two groups — factors related to location and relief, and factors related to air pressure and winds.

Latitude: Northern part of the India lies in sub-tropical and temperate zone and the part lying south of the Tropic of Cancer falls in the tropical zone. The tropical zone, being nearer to the equator, experiences high temperatures throughout the year with small daily and annual range of temperature. The area north of the Tropic of Cancer which is away from the equator, experiences extreme climate with high daily and annual range of temperature.

The Himalayan Mountains: The lofty Himalayas in the north along with its extensions act as an effective climatic divide. The towering mountain chain provides an invincible shield to protect the subcontinent from the cold northern winds. These cold and chilly winds originate near the Arctic circle and blow across central and eastern Asia. The Himalayas also trap the monsoon winds, forcing them to shed their moisture within the subcontinent.

Distribution of Land and Water: India is flanked by the Indian Ocean on three sides in the south and girdled by a high and continuous mountain-wall in the north. As compared to the landmass, water heats up or cools down slowly creating different air pressure zones in different seasons in and around the Indian subcontinent. Difference in air pressure causes reversal in the direction of monsoon winds.



Distance from the Sea: With a long coastline, large coastal areas have an equable climate. Areas in the interior of India are far away from the moderating influence of the sea. The seasonal contrasts in weather at places in the interior of the country such as Delhi, Kanpur and Amritsar affect the entire sphere of life.

Altitude: Temperature decreases with height. Due to thin air, places in the mountains are cooler than places on the plains. For example, Agra and Darjeeling are located on the same latitude, but temperature of January in Agra is 16°C whereas it is only 4°C in Darjeeling.

Relief: The physiographic or relief of India also affects the temperature, air pressure, direction and speed of wind and the amount and distribution of rainfall. The windward sides of Western Ghats and Assam receive high rainfall during June-September whereas the southern plateau remains dry due to its leeward situation along the Western Ghats.

The differences in local climates of India, is caused by the mechanism of the following three factors:

- Distribution of air pressure and winds on the surface of the earth.
- Upper air circulation caused by factors controlling global weather and the inflow of different air masses and jet streams.
- Inflow of western cyclones generally known as disturbances during the winter season and tropical depressions during the south-west monsoon period into India, creating weather conditions favorable to rainfall.