The uplift of the Qinghai-Tibet Plateau: The driver behind the scene

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Abstract:

During the summer months, the northern hemisphere is tilted to the sun, and the Tibetan plateau and the Indian subcontinent are subjected to the solar pull. It is apparent that the upward component where the Tibetan plateau is subjected to is larger than that of the Indian subcontinent. In contrast, the horizontal component of the solar pull to the Indian subcontinent is larger than that of the Tibetan plateau. Additionally, large masses decelerate more slowly than smaller masses. Collectively these forces propel the Qinghai-Tibet Plateau upward and northeastward.

The Qinghai-Tibet Plateau is rising, albeit at minute rate. It is also moving northeastwardly at a tiny speed.¹ What is behind such geophysical phenomena which shape the natural wonders of the planet? The sun, the earth and the moon are involved in an intricate trio dance², and gravitational pulls hold these heavenly bodies together. Our earth, is rotating on a daily basis, in the solar and lunar gravitational fields.³ During the summer months, the northern hemisphere is tilted to the sun, and the Tibetan plateau and the Indian subcontinent are subjected to the solar pull if we put lunar pull aside to make things simpler. When we divide the solar pull into horizontal and vertical components, it is evident that the upward (vertical component) where the Tibetan plateau is subjected to is larger than that of the Indian subcontinent given equal amount of mass. In contrast, the horizontal component of the solar pull onto the Indian subcontinent is larger than that of the Tibetan plateau. Furthermore, according to Newton's Law of Inertia, large mass decelerates more slowly than smaller mass.⁴⁻⁵ Acting together, these forces push the Qinghai-Tibet Plateau upward and northward. During the winter months, the southern hemisphere is tilted to the sun. However the Indian Ocean to the south of India is moderate in depth, which do not drive a substantial southward drifting. Given the self-rotation of the earth, the Qinghai-Tibet Plateau is also drifting eastwardly. Taken together, the Qinghai-Tibet Plateau is rising slowly and moving northeastwardly.⁶

The Ocean depth to the north of Australia is about 5000 to 6000 meters, the fast northward acceleration of the pacific plate underneath⁵⁻¹⁰ during the summer months of the northern hemisphere drives Australia northward. Therefore, the gravitational pulls from the sun and the moon shape the landscape in a grand fashion.

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