Visualization of Global Magnetic Variations in terms of Two-Dimensional Equivalent Current System

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In order to understand the geo-space electromagnetic environment for space weather studies, we developed a new visualization method of equivalent current system for global magnetic variations. The equivalent current system is obtained by using magnetic data from the ground magnetometer array of the 210-degree magnetic meridian. On geomagnetically quiet days, clear Sq current and equatorial electrojet pattern can be seen. On the other hand, on disturbed days, in addition to the major current system, at middle, low and equatorial latitudes, an enhanced auroral electrojet, a developing ring current after sc, and a new current crossing the magnetic equator between northern and southern hemisphere can be identified. Our visualization method is found to be useful for identifying such a lot of phenomena.