

The Epithermal Neutrons Uneven Distribution and Lunar Tectonics

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The highest losses of lunar epithermal neutrons are at the polar areas and the strongest anomalies are somewhat shifted from the poles. Moreover, the weaker negative anomalies surround the stronger ones and are not randomly placed. At the northern polar area (above 70 grad. latitude) a clear sector opening to -150 - +110 grad. longitude is visible. At the southern polar area a wide strip striking between (-30 -60 grad.) and (+110 - +150 grad.) longitudes and dividing the area in two is obvious. Both negative areas are joined by the large meridional segment covering the western part of the far-side. An origin of negative epithermal neutrons anomalies is explained by hydrogen enhancement (W.C.Feldman et al., 1998). This can be in the form of hydrogen or water ice having external sources and in the form of volatiles (H₂, H₂O, OH, CH₄) of internal origin. The last case must occur as a clear structural tectonic motive is present.

It is important to mention that the SPA basin from the east and west is bordered by narrow meridional strips of enhanced epithermal neutrons marking two sector boundaries of the lunar sectoral structure. On the whole, the meridional theme is more pronounced in the epithermal distribution because probably of the LP lines of flight. Latitudinal boundaries of sectoring are less pronounced. Narrow zones of cracking affecting uplifted and hence extended sectors of the Orientale sectoral structure (with Mare Orientale as a centre) -crater chains, Inghirami, Baade, Bouvar grabens - are not developed in the epithermal distribution. Reasons could be in their directions, narrowness, weak degassing. Nevertheless, degassing has to accompany these planetary cracks (chains of craters prove it) and some useful for future lunar exploration products can be formed there (Kochemasov, 1993).

The contact between the lowest lunar sector (SPA basin) and the highest one immediately to the north ("Africanda", Kochemasov, 1995) is comparable with the terrestrial analogue: Africa-Indian ocean depression. At Earth this sharp transition is marked by the unique East-African rift zone with famous mineralizations. There are many signs of constantly uplifting African continent. On the Moon the SPA basin -"Africanda" sharp contact is also anomalous having signatures of displacement (recent?), breaking ring structures.