

K/T-ENVIRONMENTAL CHANGES: LATTENGEIRGE/SE-GERMANY

P.J. Burek and J.D. Arneht, Max-Planck-Institut für Chemie, 6500 Mainz, F.R. Germany

Omitting (for the moment) the details of the K/T-impact-horizons in the Wasserfallgraben-section, Lattengebirge near Bad Reichenhall/SE-Germany several longlasting trends and shifts across the Cretaceous to Tertiary-boundary can be noticed: limestones disappear makroskopically, i.e. the carbonate-content decreases from 70% to 20% (local? climatical change), the $\delta^{13}\text{C}$ carb content by 2‰ (reduced photosynthesis/plantgrowth-global climatic exacerbation). These and other geo-palaeontological, geochemical etc. longterm-changes (as well as those (Sr/Ca) from other sections) can be explained by an impactinduced icecap-formation at the poles and temporary drift-ice (NO-layer, O₂-depletion, Turco et al., 1981), which also would explain the global, eustatic sea-level change between the Maastrichtian and Danian (Vail et al., 1977). The magnetic reversal T 29 N is considered as the K/T-impact reversal and would be the fourth known coincidence between impact and reversal of the earth magnetic field, supporting the hypothesis of Glass and Heezen (1967). The elsewhere described (Alvarez et al., 1980) coincidence between impact and mass-extinctions is also recognizable in the Lattengebirge (Herm et al., 1981), subsequently altered environmental changes would contribute to the faunal changes (robust and adaptable species survive and develop).

Above environmental changes (climatic-, sea-level-, photosynthesis-, faunal- and polarity changes) can be combined to an impact-related working hypothesis. Above changes then would not be gradual, but abrupt. Under these (s. sect.: Lattengebirge) assumptions (as well as coarsely correlated, but repeated trends and cuts in Vail et al., 1977 and Shackleton and Kennett, 1975) larger impacts should have occurred approximately around m.a.: 1. 66.7 ± ?, 2. 60.1 ± ?, 3. 49.6 ± ?, 4. 40.0 ± ?, 5. 37 ± ?, 6. 30 ± ?, 7. 22 ± ?, 8. 15.5 ± ? (14.7 ?, 16.5 ?), 9. 11.0 ± ?, 10. 6.8 ± ?, 11. 5 ± ?, 12. 2.9 ± ? (2.3 ?), 13. 0.97 ± ?, 14. 0.7 ± ?, and probably eleven more. Roughly at 1, 5, 6 perhaps 8, 11, 12 (?) and 13, 14, impact-traces (Ir etc., Tektites, craters, shattercones etc.) already have been found (Glass et al., 1979; Grieve and Robertson, 1979; Kyte and Wasson, 1982; Brownlee et al., 1982). This supports above concept in probability and thus it should facilitate the further search for impact-traces; however, exact correlation or verification of above is presently impossible. Still, the main problem seems to be to examine, whether above changes and many more were gradual or catastrophic (Neo-Catastrophism = Donarism).

Besides, Stille's tectonic phases during Cenozoic times (laramic: ± 65, pyrenean: ± 37, savian: ± 22.5, styrian: ± 15, attican: ± 5, rhodanian: ± 3, walachian: ± 1.8, pasadenian: ± 0.6 m.a.) again show extremely similar ages (s. van Eysinga, 1975) and these in turn correlate according to Burek (1973) and Schwan (1980) with periods of newly initiated mantlediapirism. i.e. spreading.

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