

**KAUFUNGER WALD UND TEUTOBURGER WALD.
GEOHYDROCHEMISCHER VERGLEICH EINER BUNTSANDSTEIN-
UND EINER OSNINGSANDSTEIN-LANDSCHAFT**

**KAUFUNG FOREST AND TEUTOBURG FOREST.
GEOHYDRO-CHEMICAL COMPARISON OF A BUNTER SANDSTONE-
AND AN OSNING-SANDSTONE LANDSCAPE**

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SUMMARY

Kaufung Forest and Teutoburg Forest rank among the North German low mountain region; they have been exposed to air pollution for decades. Nevertheless, just the Kaufung Forest has been mentioned as an extreme acidification landscape since the first review on water acidification in Germany. In the meantime, research on acidic depositions, on soil and water acidification has been conducted in the Teutoburg Forest, too. However, the results have not been considered in comparative reviews, on the contrary: The Teutoburg Forest appears as “white spot” in all maps on landscapes sensitive to acidification. To test the postulated rank position of the Kaufung Forest as the mountain most vulnerable to acidification its geochemical results have been compared to those of the Teutoburg Forest. For this purpose, investigations have been realized on water characteristics such as pH, concentration of sulphate and nitrate, of aluminium and heavy metals as well as more complex acidification models like charge balance alkalinity, loss of alkalinity (ΔAlk), acidification quotient $[\text{Ca}^{2+} + \text{Mg}^{2+}] / [\text{SO}_4^{2-} + \text{NO}_3^-]$, the sums $[\text{SO}_4^{2-} + \text{NO}_3^-]$, the nitrogen-sulphur-coefficient $\text{KNS} = \text{NO}_3^- / [\text{SO}_4^{2-} + \text{NO}_3^-]$ and the typification of spring waters on the basis of the equivalent ion sequence. According to the statistically proved comparative results both landscapes are strongly acidified, certain acidification indicators have turned out to be proven stronger in the Teutoburg Forest, which is not surprising in light of its geographical position northwest of the Kaufung Forest. Unlike the Kaufung Forest the Teutoburg Forest is exposed to two emission areas: the Rhine-Ruhr-region and the Westphalian Lower Saxony region of intensive livestock farming. The latter, with its high emissions of ammonia and as a consequence of the “hidden acid” ammonium, results in a persistently high source of acidification in the ecosystem. The result has been evaluated against the geographical problem of spatiotemporal hypothesis generalization.

Keywords: Kaufung Forest, Teutoburg Forest, acidification landscapes, water acidification, acidification models, acidification trends, “hidden acid”, emission areas