

# Magma water content of the Cenozoic basalts in the North China Craton

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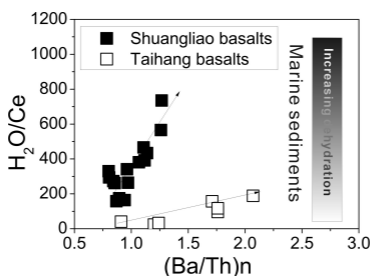
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The origin of the enriched signature of the Cenozoic basalts in east China are hotly debated. We implore the water contents of the Cenozoic alkali basalts from the Taihang Mountains (Central Zone of the North China Craton (NCC)), Shandong province (in eastern part of the NCC), and the Shuangliao Basin (north margin of the NCC), by a reverse calculation based on water contents (by FTIR) in clinopyroxene (cpx) phenocrysts with  $Mg\# > 75$  and  $^{IV}Al$ -dependent water partitioning coefficient[1]. The recovered magma water contents are various from 0.20 to 3.89 wt.%, and the large heterogeneity are not caused by degassing and fractional crystallization. Most of them are beyond the normal water contents of OIBs[2].  $H_2O/Ce$  ratios of the Shandong basalts varies from 150 to 696, and are positively correlated with bulk rock  $^{87}Sr/^{86}Sr$ . The Taihang and Shuangliao basalts have very different range of  $H_2O/Ce$  (24 to 189 and 157 to 735, respectively), but they are all positively correlated with bulk  $Ba/Th$  ratios (Fig. 1), the former ones also negatively correlates with  $\epsilon Nd$ . The high magma water contents and their correlation with  $Ba/Th$  and radiogenic isotopes suggest that their mantle source contain hydrous components, which are most likely derived from the subducted Pacific slab.



**Figure 1.**  $H_2O/Ce$  vs.  $(Ba/Th)_n$  (Primitive mantle normalized)

[1] O'Leary et al. (2010) *Earth. Planet. Sci. Lette* **297**, 111-220.

[2] Dixon et al. (2004) *Earth. Planet. Sci. Lette* **222**, 451-467.