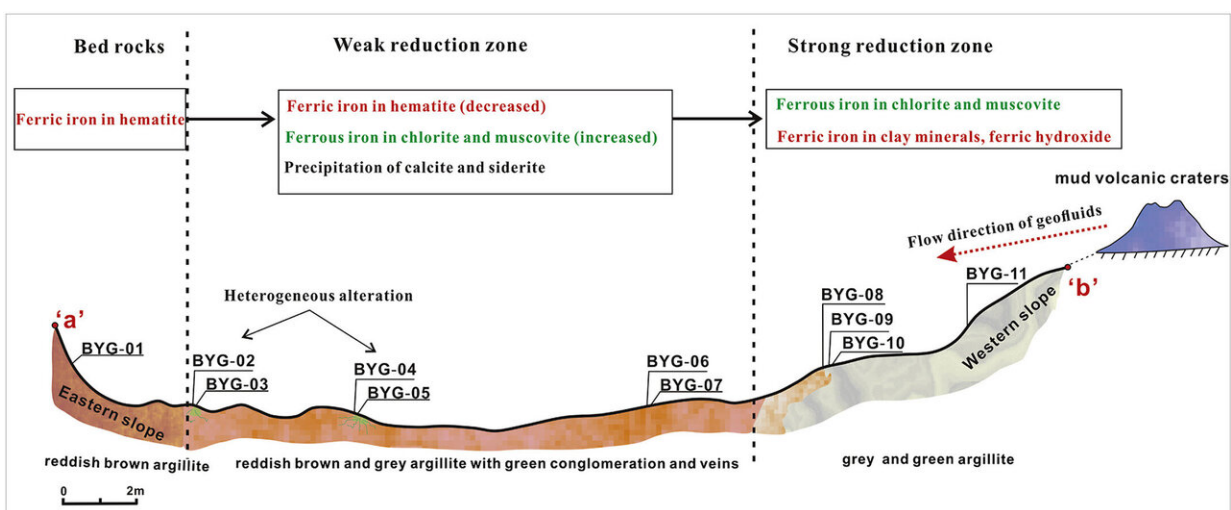


Scientists reveal mineralogical and geochemical characteristics of hydrocarbon-bleached rocks in mud volcanoes

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Mud volcanoes are geological structures formed by the eruption of semi-liquid and gas-enriched mud breccia on the Earth's surface or on the sea floor. The migration processes of geofluids around mud volcanoes could provide useful information about the mineralogical and geochemical characteristics of hydrocarbon-bleaching process and hydrocarbon migration pathways.

However, it remains unclear how organic-inorganic interactions take

place in mud [volcanic systems](#), particularly the alteration of surface processes induced by reducing geofluids in mud volcanic systems and the spatial variations in geochemical conditions along the main flowing route of erupting fluids.

Recently, scientists from the Northwest Institute of Eco-Environment and Resources of the Chinese Academy of Sciences performed a detailed field investigation and [laboratory study](#) to determine the mineral and chemical compositions as well as iron speciation of near surface rocks in the Baiyanggou mud volcano area.

They systematically collected a total of 11 rock samples along the main flow of geofluids running on the slope of the Baiyanggou mud volcanic system and analyzed for their mineralogical and [chemical compositions](#) as well as for iron species using X-ray diffraction, X-ray fluorescence spectrometry and Mossbauer spectroscopy, respectively.

Besides, they also used iron speciation in response to redox conditions for the first time as a tracer of geofluid processes in order to better understand the migration processes of geofluids.

The analytical results clearly indicated spatial variations for most geochemical parameters caused by redox fluctuation processes around the Baiyanggou mud volcanic system.

All these processes may provide useful information for a better understanding of hydrocarbon-rock interactions in the mud volcanic systems.

Moreover, the study results also indicated that the Iron speciation of the solid rocks in the seepage areas could be considered as a potential indicator for the migration of reducing geofluids including hydrocarbons located underground.

This study has been published in *Applied Geochemistry* in an article entitled "Mineralogical and geochemical characteristics of hydrocarbon-bleached rocks in Baiyanggou [mud volcanoes](#), Xinjiang, NW China."

More information: Wang Xu et al. Mineralogical and geochemical characteristics of hydrocarbon-bleached rocks in Baiyanggou mud volcanoes, Xinjiang, NW China, *Applied Geochemistry* (2020). [DOI: 10.1016/j.apgeochem.2020.104572](#)

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