Research on mud volcano in northern tianshan based on geochemistry causes

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Mud volcano is a kind of structural geology phenomena under certain hydrogeology environment. Appearance of mud volcano related to oil-gas belt. Gas and groundwater close to surface in some region, under pressure from underground, bring sediment to surface alone crack. This is the forming process of mud volcano. According to mud volcano brought plenty of valuable information to the ground, therefore, many researchers called it "Heaven granted well".

The consistency of mud is related to distribution of underground water. There are different kinds of mud volcano such as: mud cone,mud shield,mud basin,mud pool and mud hole according to different mud consistency.

Mud volcano in China mainly located in Xianjiang and Taiwan. Moreover, there are some small mud volcanoes in Tata River near Chaidamu basin margin in Qinghai province,Qu river in Sichuan basin and southern region of Jiangsu province. Most diameter of these mud volcano pretty small.

Mud volcano in Xinjiang located in the Midwest region of Northern Tianshan,five of them were representative such as: Horgus,Dushanzi,Wenquan,Poplar vally and Sailetike. Poplar vally and Sailetike mud volcano are the largest mud volcanic clusterin Asia. These mud volcanoes located in axis of Northern Tianshan piedmont depression anticline structure and exposure strata is mainly sandstone which full of underground water. The features of these underground water are as follow:high depression, high salinity and rich in petroleum and gas.

Mud volcanoes in Taiwan are more than twenty and mainly located in Gaoxiong and Hengchun, what's more, seventeen of these are in activating stage. The geological feature of these mud volcanoes are very typical and show brilliant scenery such as flaming.

The author tested gas,fluid and solid components of mud volcanoes in the Midwest region of Northern Tianshan from 2006 to 2012, and found geochemistry features of these mud volcanoes:

1.Mud volcanoes in Horgus,Dushanzi,Poplar vally and Sailetike have similar geochemistry features while in Dushanzi showed some significant differences in Dushanzi.

2.The gas component of mud volcano mainly is alkane gas with about 35.6%-72.0% except mud volcano in Wenquan.

3.The gas of mud volcanoes showed typical crust-derived helium with low 3He/4He and R/Ra value about 0.09-0.049.