Geochemical characteristics of soil gas Rn and CO_2 in the south-west and north-east segments of the Tangshan fault zone, Northern China

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The geochemical characteristics of soil gases and correlation between soil gas concentrations and tectonic activities were discussed based on measurements of Rn and CO_2 concentrations in the South-west (Wanglanzhuang) and north-east (Weifengshan) segments of the Tangshan fault zone. The results suggest that concentrations of Rn and CO_2 in these two profiles are higher than the background value in the Tangshan area and the average level in the seismically active tectonic zones in the Chinese mainland. The spatial distribution of soil gas concentration attained in the two profiles is different that in the Wanglanzhuang Profile, was characterized by multi-peaks in the profile, while in the Weifengshan Profile, appeared to be double-peaked. The soil gas geochemical results attained as well as seismic, geological and geophysical data in the study area indicated that the variations of soil gas spatial distribution can be attributed to the degree of fault fragmentation in the profiles. The higher regional stress and seismic activity in the north-east segment of the Tangshan fault is the primary reason for the higher concentrations of Rn in the Weifengshan Profile.

Key words: soil gas geochemistry, Rn and CO_2, Tangshan fault, fault activity

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