Accepted Manuscript

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PII: S1367-9120(17)30610-7
DOI: https://doi.org/10.1016/j.jseaes.2017.10.037
Reference: JAES 3287

To appear in: *Journal of Asian Earth Sciences*

Received Date: 27 July 2017
Revised Date: 28 October 2017
Accepted Date: 29 October 2017

Please cite this article as: Zheng, G., Xu, W., Etiope, G., Ma, X., Liang, S., Fan, Q., Sajjad, W., Li, Y., Hydrocarbon seeps in petroliferous basins in China: a first inventory, *Journal of Asian Earth Sciences* (2017), doi: https://doi.org/10.1016/j.jseaes.2017.10.037

Hydrocarbon seeps in petroliferous basins in China: a first inventory

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Abstract: Natural hydrocarbon seepage is a widespread phenomenon in sedimentary basins, with important implications in petroleum exploration and emission of greenhouse gases to the atmosphere. China has vast petroleum (oil and gas) bearing sedimentary basins, but hydrocarbon seepage has rarely been the object of systematic studies and measurements. Based on the available Chinese literature, we report a first inventory of 932 hydrocarbon seeps or seepage zones (710 onshore seeps and 222 offshore seeps), including 81 mud volcanoes, 449 oil seeps, 215 gas seeps, and 187 solid seeps (bitumen outcrops). The seeps are located within the main 20 Mesozoic-Cenozoic petroliferous sedimentary basins, especially along the marginal, regional and local faults. The type of manifestations (oil, gas or mud volcano) reflects the type and maturity of the subsurface petroleum system and the sedimentary conditions of the basin. Oil seeps are particularly abundant in the Junggar Basin. Gas seeps mostly developed in the Lunpola Basin, in smaller basins of the eastern