**Table S1:** Studied sections and paleosol samples per section with samples representing individual paleosol profiles

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Section** | **Stage** | **Latitude/**  **Longitude** | **Pedogenic samples** | **References** |
| **Ural foreland basin** | Boyevaya Gora (BG) | Changhsingian | 51.29805°N 54.90949° E | 17 | Kearsey et al. 2012 |
|  | Sambullak (SMB) | Changhsingian | 51.87993°N 56.21167° E | 7 |
|  | Mescheryakovka (CH) | Olenekian | 51.37916°N 56.28166°E | 8 |
| **North China** | Dayulin (Henan, DYL)) | Changhsingian-Anisian | 34.50167°N 112.15556°E | 10 | Chu et al. 2017 |
|  | Liulin (Shanxi, LL) | Olenekian-Anisian | 37.44360° N 110.72712°E | 9 |
|  | Jiyuan (Henan, JY) | Changhsingian | 34.98885° N 112.34541°E | 2 |
|  | Wupu (Shaanxi, WP) | Changhsingian | 37.53786°N  110.76708°E | 6 |
| **Northwest China (Xinjiang )** | Taodonggou W (TD) | Olenekian | 43.24511°N  88.97694°E | 17 | Yang et al. 2010 |
|  | Taodonggou E (TD) | Induan | 43.24829°N  88.97101°E | 5 | Thomas et al. 2011 |
| **Karoo** | Wapadsberg pass (NWP1) | Changhs.- Induan | 31.93271°S  24.87959°E | 2 | Gastaldo et al. 2014 |
|  | Old Lootsberg Pass (OLP4) | Changhs. - Induan | 31.78442°S  24.82881°E | 2 | Neveling et al. 2016 |
| **UK** | Budleigh Salterton (BS) | Anisian | 50.62962°N  3.30600°W | 20 | Purvis & Wright 1991 |