**Supplementary Information**

**Table S1.** Major landforms of the study site. The landform codes correspond to Fig. 1. Terms with numerical superscripts in the Name column are defined in the Description column.

|  |  |  |  |
| --- | --- | --- | --- |
| Code | Name |  | Description |
| A | Hills1 and mountains2 (igneous and sedimentary rock) |  | 1Surface rising as much as 300 m above the surrounding.2Rising > 300 m. |
| B | Basin floor (alluvium, middle [25K-300K/400K] to early [300K/400K - 1M/2M] Pleistocene age)\* |  | Nearly level, lower-most part of intermontane basins including all the alluvial, eolian, and erosional landforms below the piedmont slope. |
| C | Inset fans3, stream terraces4, flood plains/drainages5 (alluvium of Holocene [10K-12K] age) |  | 3An ephemeral stream flood plain rather broad in area incised in alluvial fans or fan terraces; a barren channel with extensive breadth covering a minor portion of its surface.4One of a series of levels in a stream valley mostly paralleling the stream without flooding.5The nearly level plain bordering a stream and subject to inundation under flood-stage conditions. |
| D | Fan terraces6 or alluvial fans7 (alluvium from limestone sedimentary rock of Holocene or late Pleistocene [10K/12K - 25K] age) |  | 6General term for landforms that are remaining parts of older fan landforms, such as alluvial fan.7Low, outspreading mass of loose soil and rock material, commonly with gentle slopes that are shaped like an open fan or a segment of a cone, deposited by water at the place where it issues from mountains. |
| E | Fan terraces or alluvial fans (alluvium from limestone sedimentary rock of middle Pleistocene age) |  | General definitions of E, F and G see D. |
| F | Fan terraces or alluvial fans (alluvium from mixed igneous rock of Holocene or late Pleistocene age) |  |
| G | Fan terraces or alluvial fans (alluvium from mixed igneous rock of middle to early Pleistocene age) |  |

\*K = 103 and M = 106 years before present.

**Table S2.** Statistics of time-series woody cover field measures.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Mean (%) | Standard error | n | Mean elevation (m) |
| 1957 | 17.4  | 2.1  | 37  | 1063  |
| 1958 | 19.7  | 2.4  | 37  | 1063  |
| 1959 | 12.9  | 1.5  | 62  | 1111  |
| 1960 | 12.7  | 1.5  | 52  | 1088  |
| 1961 | 12.3  | 1.2  | 62  | 1111  |
| 1962 | 14.3  | 1.4  | 61  | 1111  |
| 1963 | 15.5  | 1.4  | 62  | 1111 |
| 1964 | 18.7  | 1.5  | 62  | 1111 |
| 1965 | 16.9  | 1.5  | 62  | 1111 |
| 1966 | 23.4  | 1.7  | 62  | 1111 |
| 1967 | 20.0  | 2.2  | 37  | 1063 |
| 1968 | 16.3  | 1.5  | 81  | 1130 |
| 1969 | 22.4  | 1.4  | 79  | 1128  |
| 1981 | 26.0  | 1.7  | 80  | 1129  |
| 1984 | 33.9  | 1.9  | 81  | 1130  |
| 1991 | 36.9  | 2.2  | 81  | 1130  |
| 1994 | 27.7  | 1.8  | 78  | 1129 |
| 1997 | 22.8  | 1.5  | 81  | 1130  |
| 2000 | 24.7  | 1.5  | 81  | 1130 |
| 2003 | 21.8  | 1.4  | 81  | 1130 |
| 2006 | 23.5  | 1.4  | 81  | 1130 |
| 2009 | 24.2  | 1.4  | 81  | 1130 |
| 2012 | 23.7  | 1.4  | 81  | 1130 |