In valleys of the River Seim and its tributaries in the middle Dnieper basin (west-central Russian Plain), two low terraces (T1, 10-16 m, and T0, 5-7 m above the river) and a floodplain (2-4 m) with characteristic large and small palaeochannels exist. A range of field and laboratory techniques was applied and 30 new numerical ages (OSL and 14C dates) were obtained to establish a chronology of incision and aggradation events that resulted in the current valley morphology. Two full incision/aggradation rhythms and one additional aggradation phase from the previous rhythm were recognized in the Late Pleistocene - Holocene climate cycle. The following events were detected. (1) Late MIS 5 - early MIS 4: aggradation of Terrace T1 following the deep incision at the end of MIS 6. (2) Late MIS 4 (40-30 ka): incision into Terrace T1 below the present-day river, formation of the main scarp in the bottom of the valley between Terrace T1 and Terrace T0/Floodplain levels. (3) MIS 2: aggradation of Terrace T0, lateral migrations of a shallow braided channel located few meters above the present-day river since \( \sim 25 \) ka through the LGM. (4) 18-13 ka: incision into Terrace T0 below the modern river. Multiple-thread channels concentrated in a single flow that at some places formed large meanders. In the period 15-13 ka, high floods that rose above the present-day floods left large levees and overbank loams on Terrace T0. (5) Younger Dryas - Holocene transition: aggradation up to the modern channel level, transformation of large Late Glacial to small Holocene meanders. The established incision/aggradation rhythms are believed to be manifested over the Central Russian Plain outside the influence of ice sheets in the north and base level changes in the south. The two-phase deepening of the valley occurred in the last quarter of the last glacial epoch but can not be attributed directly to the glacial-interglacial transition. Both the detected incision events correspond to relatively warm climate phases - late MIS 3, post-LGM warming including the Bølling-Allerød interstadial. Anomalously large size of the preserved river palaeochannels prove that the post-LGM incision phase was induced by a climatically forced large increase of water runoff. Considerable increase of water discharge is considered the most probably cause for the late MIS 4 incision phase also. Therefore river incision seems to have been governed rather by changing water runoff that oscillated in phase shift with the thermal regime.
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 4.29 SJR 3.251 SNIP 1.661
Web of Science (2012): Impact factor 4.076
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 4.44 SJR 3.216 SNIP 1.774
Web of Science (2011): Impact factor 3.973
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 3.03 SNIP 2.112
Web of Science (2010): Impact factor 4.657
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 3.259 SNIP 2.039
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.871 SNIP 1.757
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 3.449 SNIP 1.972
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 3.021 SNIP 1.918
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 3.047 SNIP 1.883
Scopus rating (2004): SJR 2.623 SNIP 1.629
Scopus rating (2003): SJR 3.117 SNIP 2.03
Scopus rating (2002): SJR 3.181 SNIP 1.595
Scopus rating (2001): SJR 2.846 SNIP 1.909
Scopus rating (2000): SJR 2.582 SNIP 1.575
Scopus rating (1999): SJR 2.866 SNIP 1.775

Original language: English
Keywords: Aeolian processes, Fluvial geomorphology, Large meanders, OSL dating, Palaeochannels, River palaeohydrology, River terraces, SEM study of quartz grains
DOIs:
Source: FindIt
Source-ID: 2350257360
Research output: Research - peer-review › Journal article – Annual report year: 2017