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1 **Sedimentation rate and lateral migration of tidal channels in the Lagoon of** 2 **Venice (Northern Italy)**

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9 **Keywords:** Palaeochannels; Tidal meander; Sedimentation rate; Lateral migration; Venice Lagoon

10 **Abstract**

11 Tidal channels are crucial for the functioning of highly valuable coastal environments, such as
12 estuaries and lagoons. Their properties, however, are currently less understood than those of river
13 systems. To elucidate their past behaviour, an extensive geophysical investigation was performed to
14 reconstruct the evolution of channels and tidal surfaces in the central part of the Lagoon of Venice,
15 Italy over the past 5,000 years. Comparing high-spatial-resolution acoustic data and sedimentary
16 facies analyses of 41 cores, 29 of which were radiocarbon dated, revealed the sedimentation rates in
17 different lagoonal environments and allowed the migration of two large meanders to be
18 reconstructed. The average sedimentation rate of the study succession in the different sedimentary
19 environments was 1.27 mm yr⁻¹. The lateral migration rates were 13-23 m/century. This estimate is
20 consistent with the lateral migration rates determined by comparing aerial photographs of recent
21 channels.

22 Comparing the buried channels with historical and current maps showed that, in general, the
23 number of active channels is now reduced. Their morphology was sometimes simplified by artificial

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