

## SUPPLEMENTARY MATERIAL

### Experimental investigation of local scour under two oblong piers of bridge crossing a sharp bend river

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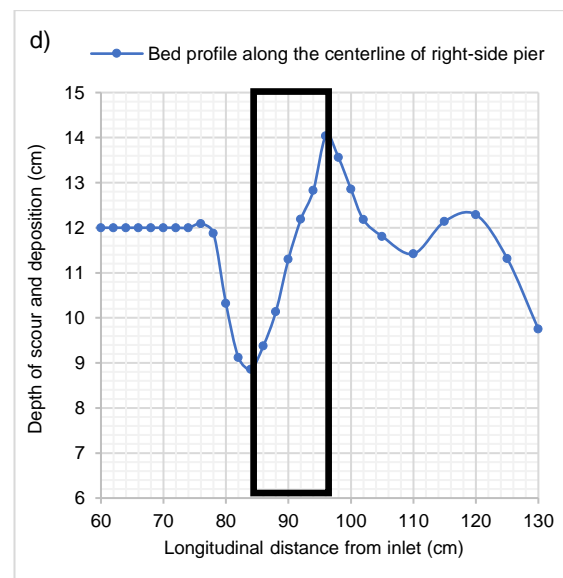
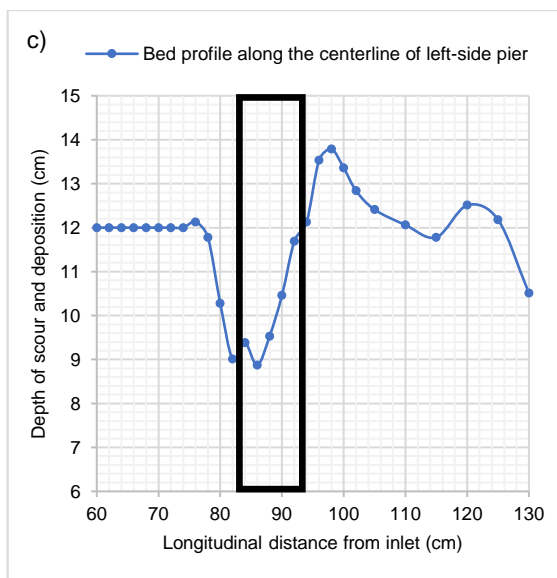
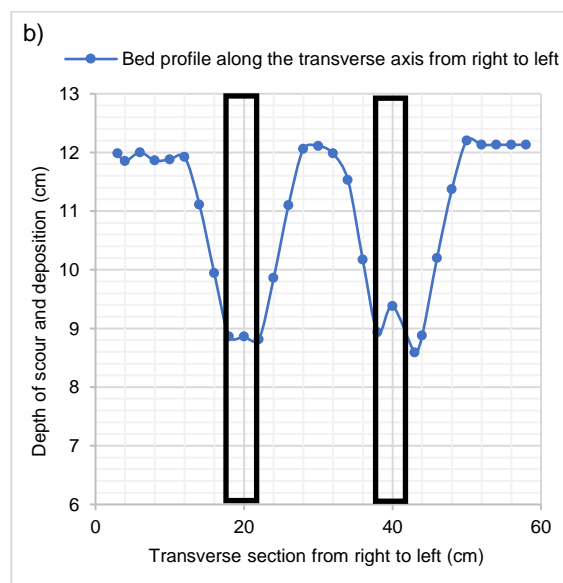
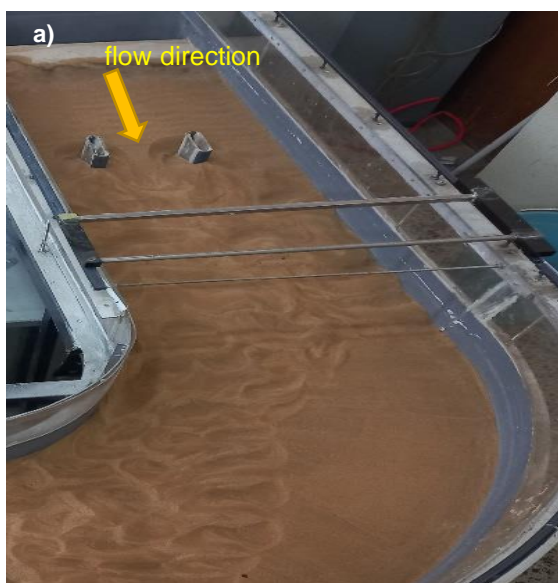
**Table S1.** The comparison between the depth of the bed surface of the flume using a laser device and a point gauge<sup>1)</sup>

Point number	Depth (cm) measured using	
	point gauge	laser device
1	12.00	11.84
2	12.00	11.85
3	12.00	11.98
4	12.50	12.46
5	12.30	11.88
6	11.90	11.98
7	12.50	11.81
8	12.20	12.35
9	12.00	11.91
10	12.50	12.44
11	12.70	12.34
12	12.10	11.87
13	12.10	11.70
14	11.70	11.32
15	11.40	11.38
16	11.90	12.15
17	12.70	12.69
18	13.00	12.65
19	13.30	13.17
20	12.70	12.38
21	12.00	11.60
22	11.40	11.22
23	11.10	10.50
24	10.20	9.80
25	9.50	9.36
26	9.30	9.12
27	9.10	9.32
28	14.40	14.34

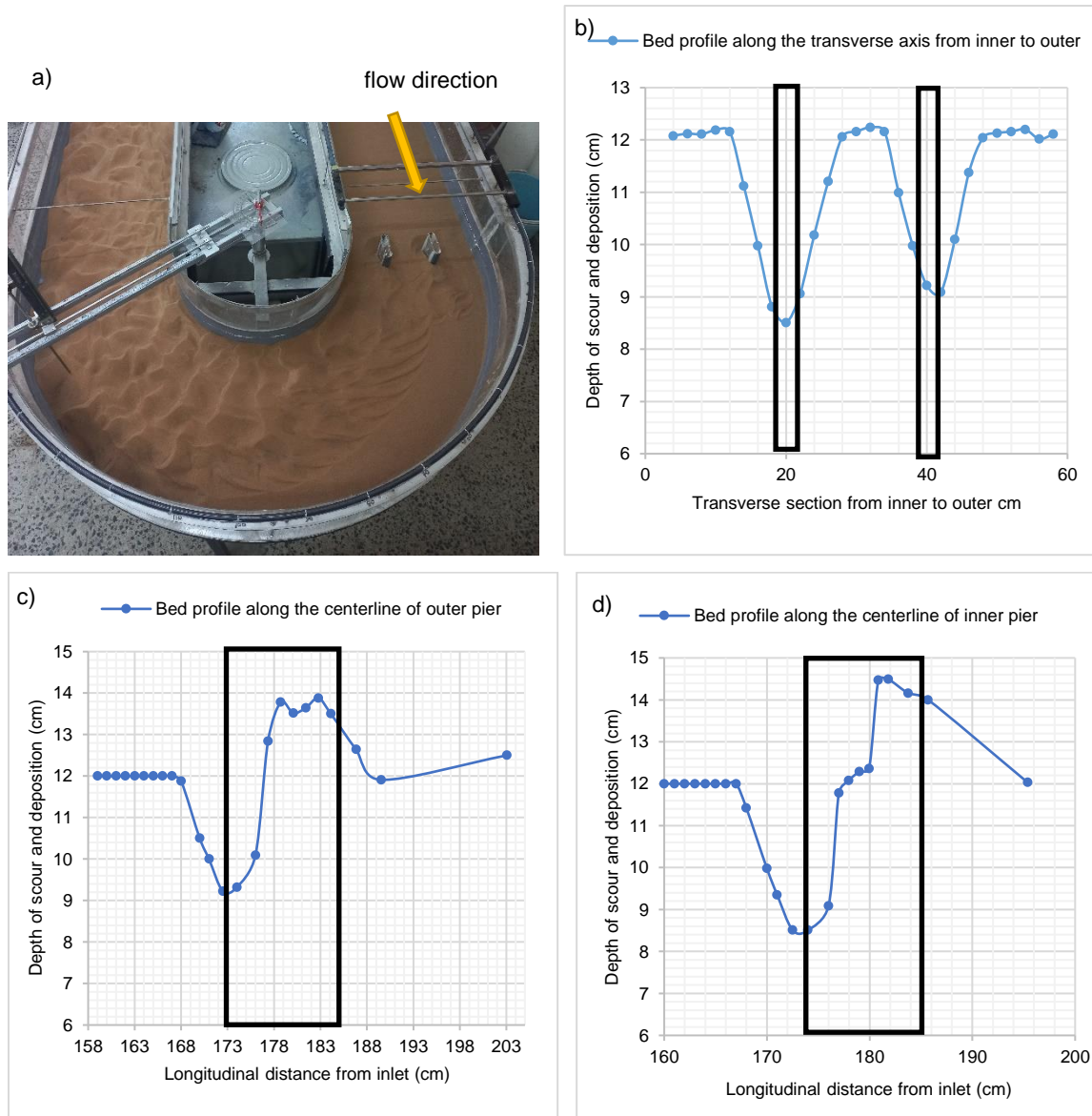
Point number	Depth (cm) measured using	
	point gauge	laser device
29	10.30	10.25
30	14.10	13.94
31	13.30	13.30
32	11.10	11.04
33	12.70	12.58
34	11.50	11.50
35	14.00	13.86
36	13.40	13.32

1) The correlation coefficient between the point gauge and laser device is equal 0.98.

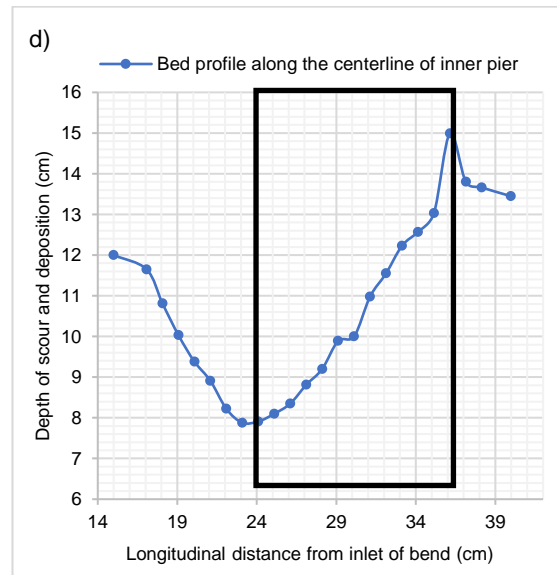
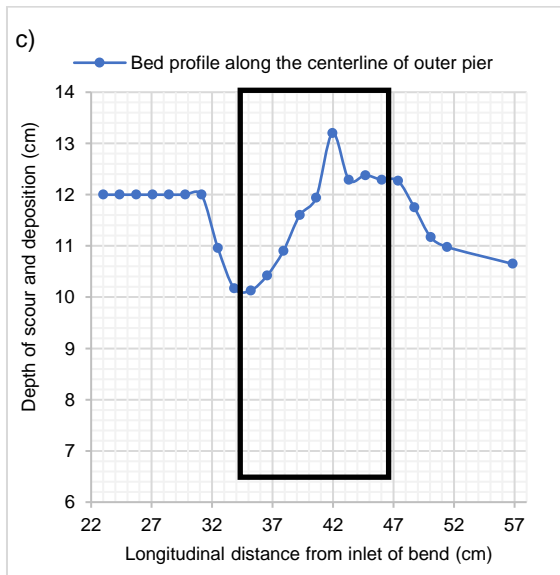
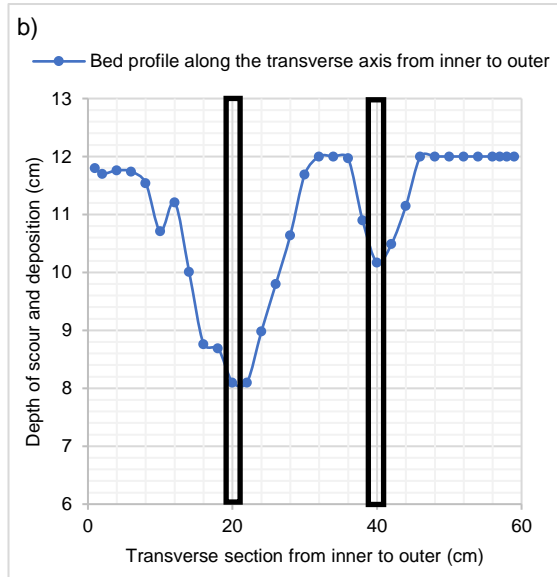
Source: own elaboration.



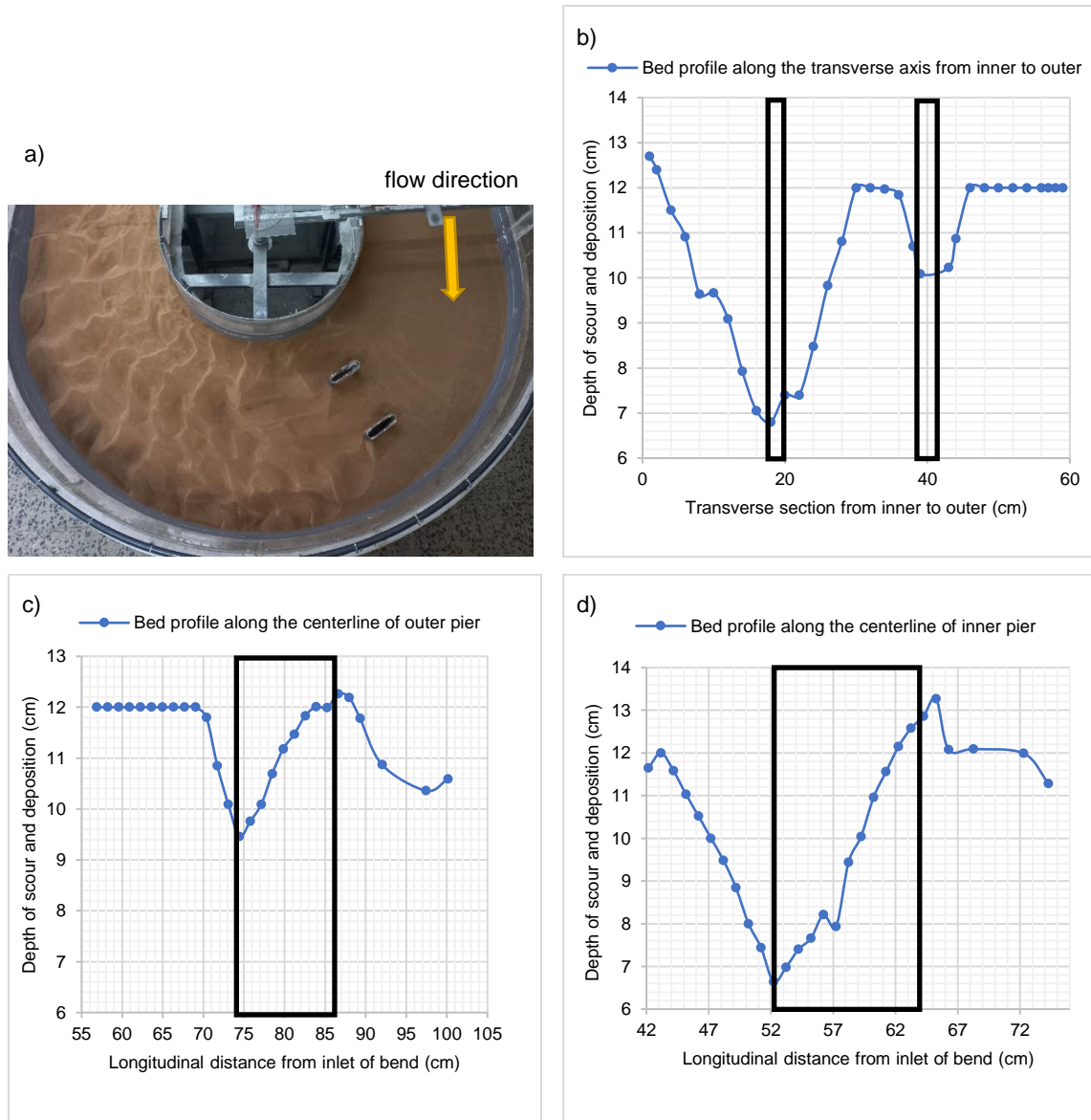
**Fig. S1.** Bridge located at mid-section of upstream reach: a) bed topography around piers, b) transverse profile of bed from right to left at mid-section, c) longitudinal profile of bed along the left-side pier at mid-section, d) longitudinal profile of bed along the right-side pier at mid-section; source: own study



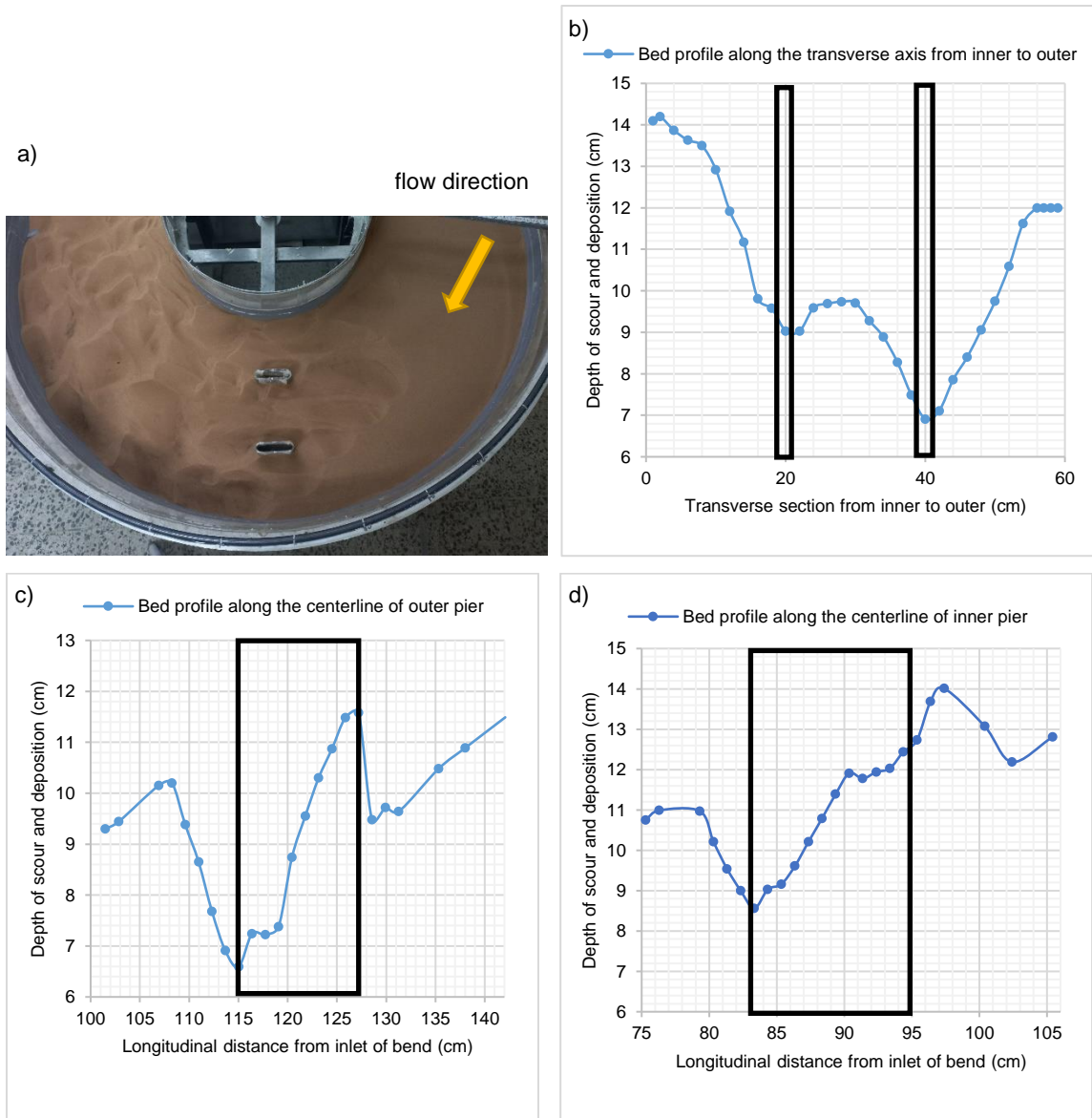
**Fig. 2S.** bridge located at a  $0^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $0^\circ$  angle, c) Longitudinal profile of bed along the outer bank at a  $0^\circ$  angle, d) Longitudinal profile of bed along the inner bank at a  $0^\circ$  angle



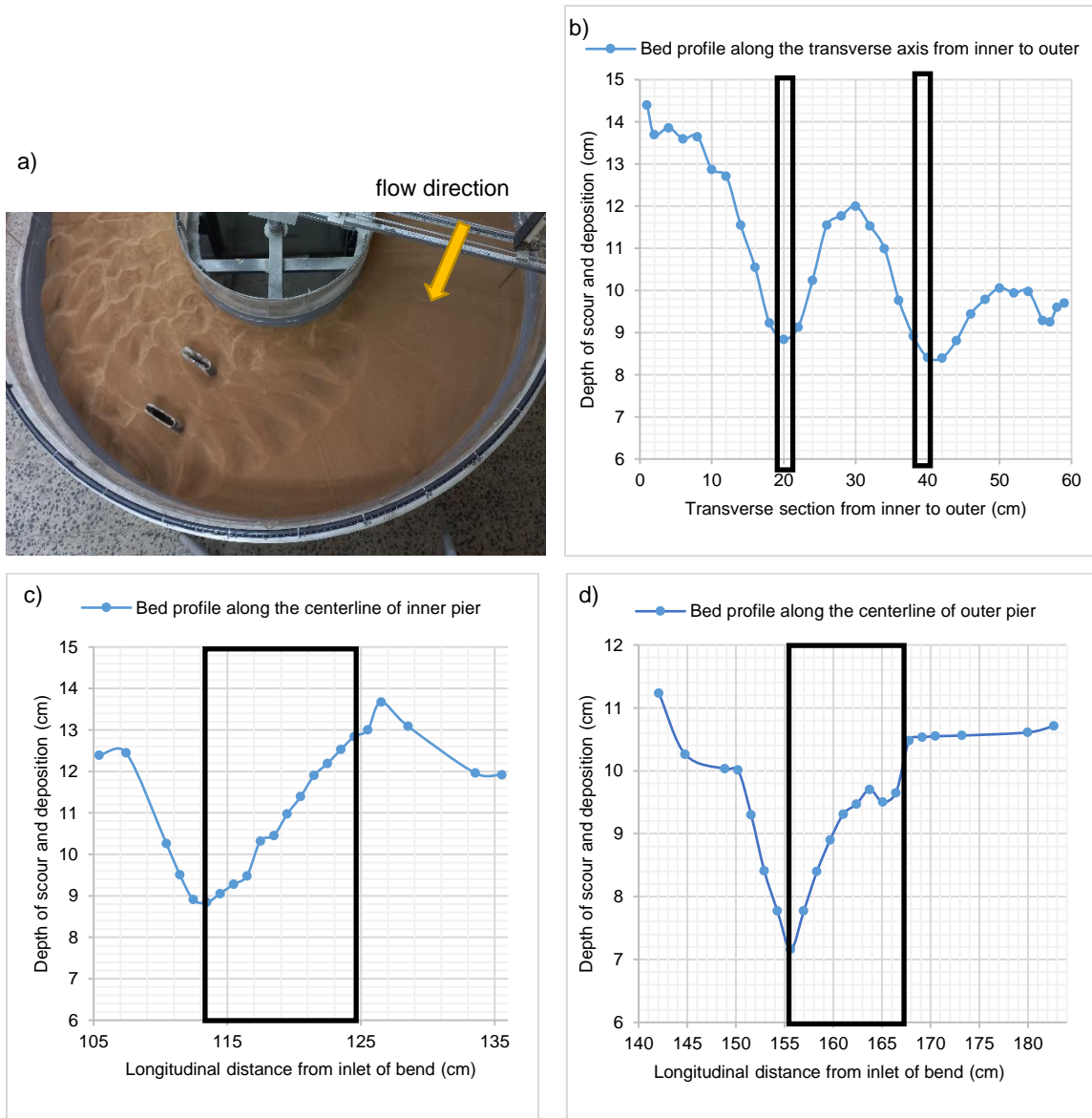
**Fig. S3.** Bridge located at a  $30^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $30^\circ$  angle, c) longitudinal profile of bed along the outer bank at a  $30^\circ$  angle, d) longitudinal profile of bed along the inner bank at a  $30^\circ$  angle; source: own study



**Fig. S4.** Bridge located at a  $60^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $60^\circ$  angle, c) longitudinal profile of bed along the outer bank at a  $60^\circ$  angle, d) longitudinal profile of bed along the inner bank at a  $60^\circ$  angle; source: own study

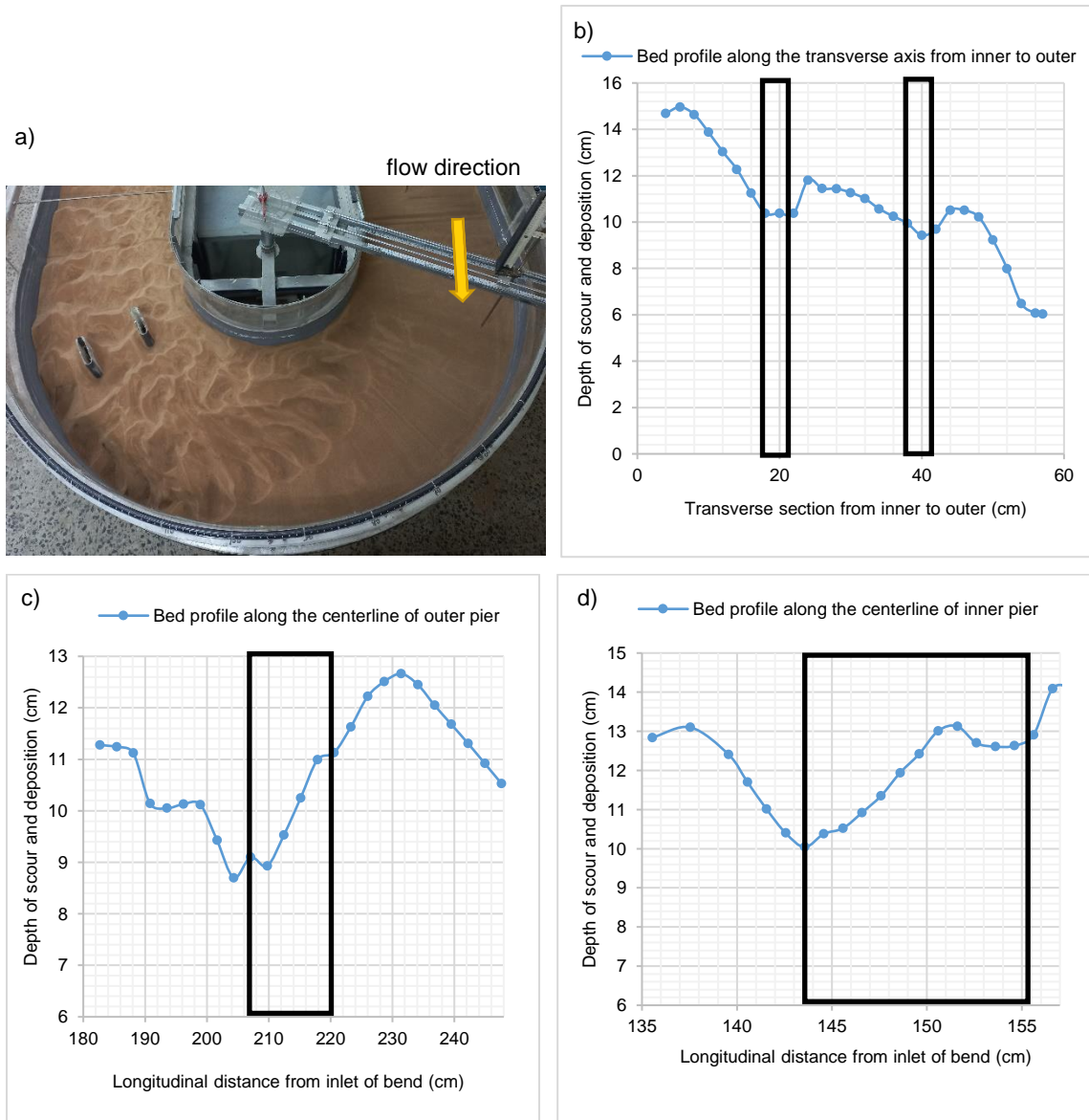


**Fig. S5.** Bridge located at a  $90^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $90^\circ$  angle, c) longitudinal profile of bed along the outer bank at a  $90^\circ$  angle, d) longitudinal profile of bed along the inner bank at a  $90^\circ$  angle; source: own study



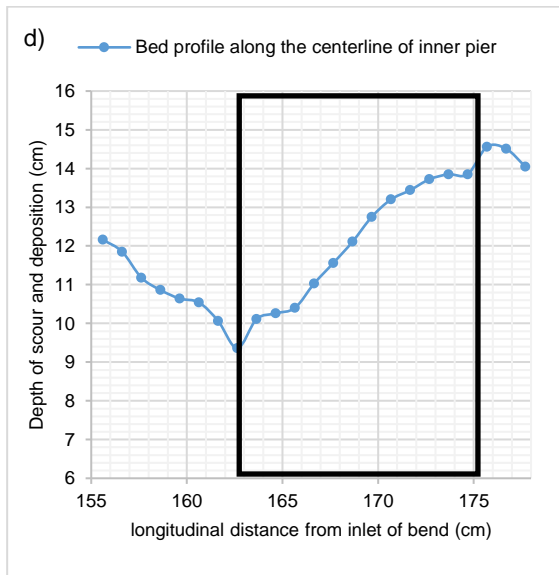
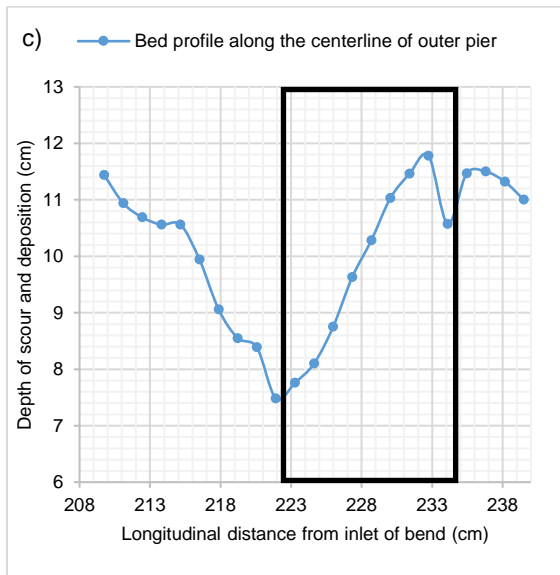
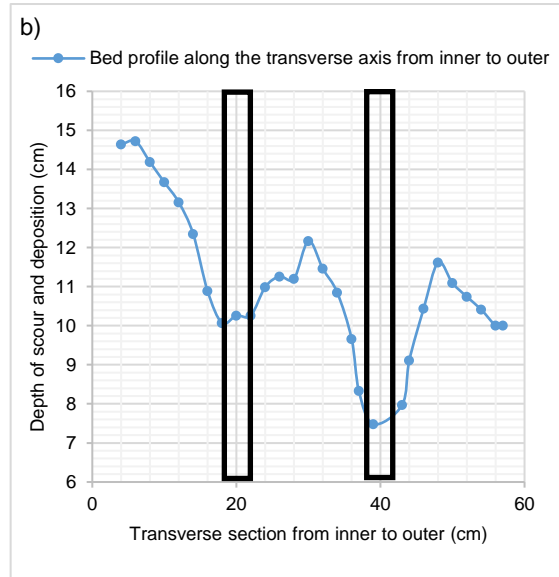
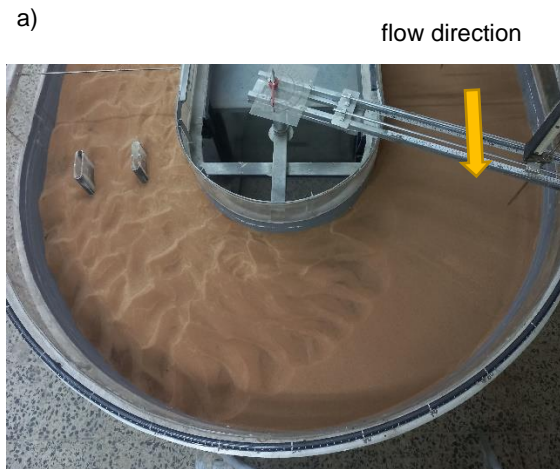
**Fig. S6.** Bridge located at a  $120^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $120^\circ$  angle, c) longitudinal profile of bed along the inner bank at a  $120^\circ$  angle, d) longitudinal profile of bed along the outer bank at a  $120^\circ$  angle; source: own study



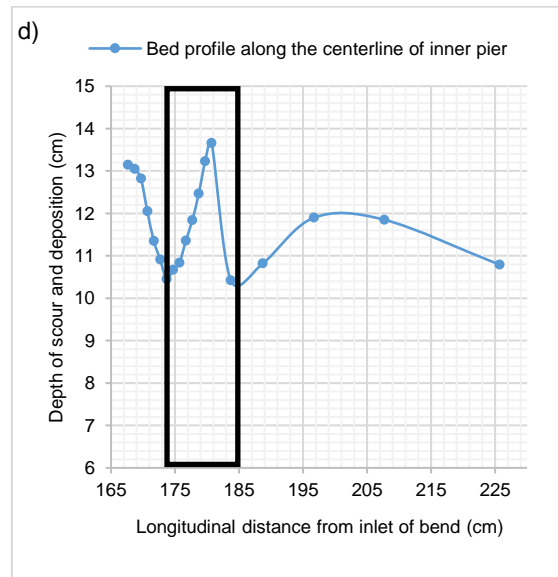
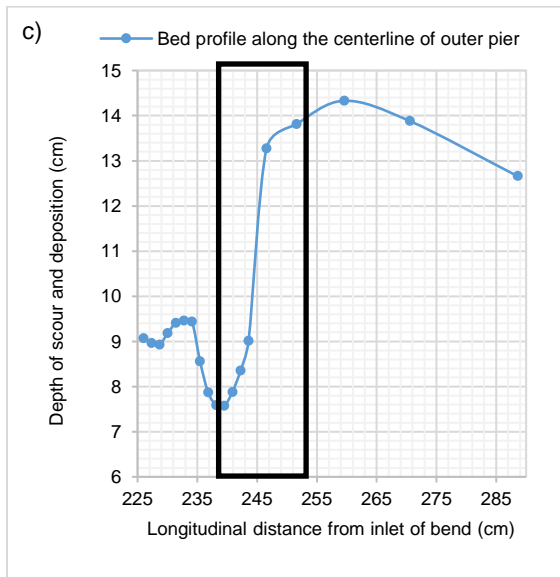
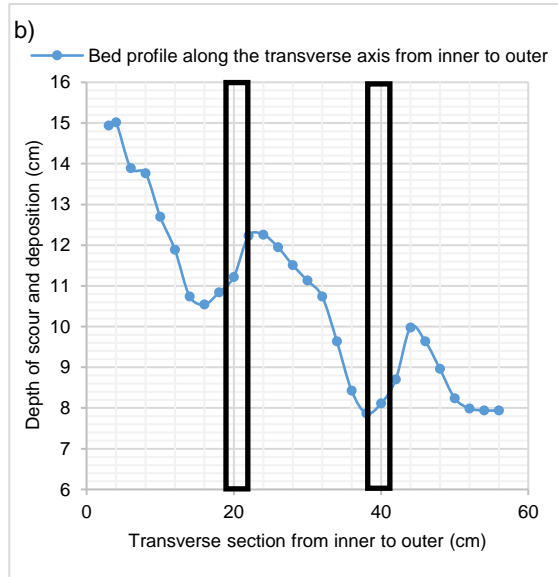


**Fig. S7.** Bridge located at a  $150^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $150^\circ$  angle, c) longitudinal profile of bed along the outer bank at a  $150^\circ$  angle, d) longitudinal profile of bed along the inner bank at a  $150^\circ$  angle; source: own study





**Fig. S8.** Bridge located at a  $170^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $170^\circ$  angle, c) longitudinal profile of bed along the outer bank at a  $170^\circ$  angle, d) longitudinal profile of bed along the inner bank at a  $170^\circ$  angle; source: own study



**Fig. S9.** Bridge located at a  $180^\circ$  angle: a) bed topography around piers, b) transverse profile of bed from the inner to outer bank at  $180^\circ$  angle, c) longitudinal profile of bed along the outer bank at a  $180^\circ$  angle, d) longitudinal profile of bed along the inner bank at a  $180^\circ$  angle; source: own study