Data Repository Item for: *Dimensions of fluvial-tidal meanders: are they disproportionally large?*

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Additional Data (Files in .zip)

1. KML: A kml-file with the meander polygons used in this study (see Table DR2).

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1. References

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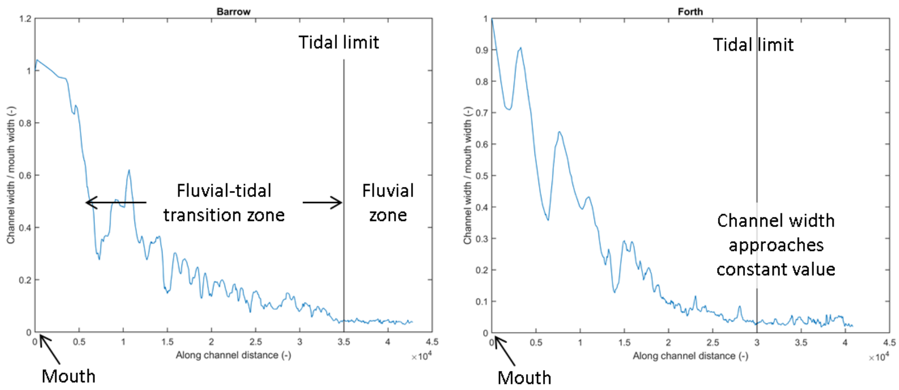

Figure 1: Along-channel width profiles. The tidal limit was manually selected as the point where the channel width approaches a constant value. The zone seaward of this point is defined as the fluvial-tidal transition zone and the landward zone as the fluvial zone. The distance to the tidal limit is used to normalise along-channel distance.

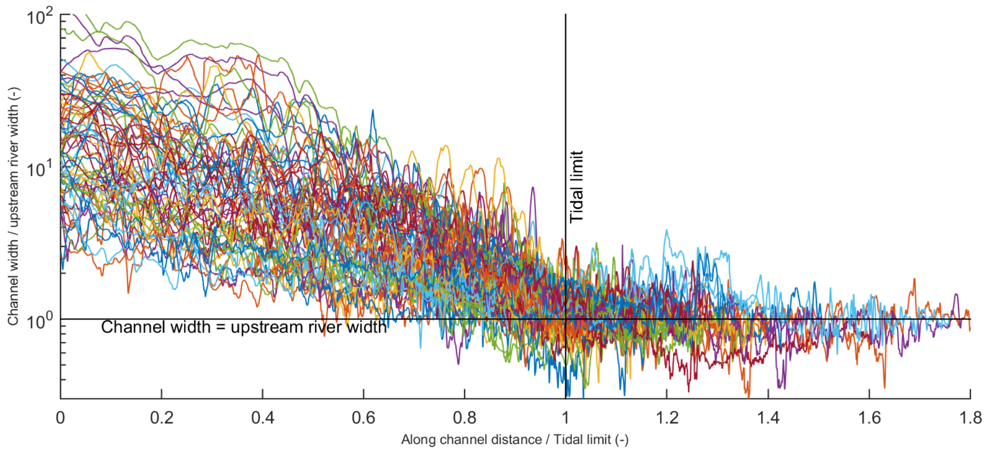

Figure 2: Normalized along-channel width profiles of all systems used. Channel width normalised by the width of the upstream river (y-axis) as a function of along-channel distance normalised by along-channel distance to the tidal limit as defined in Suppl. Fig. 1.

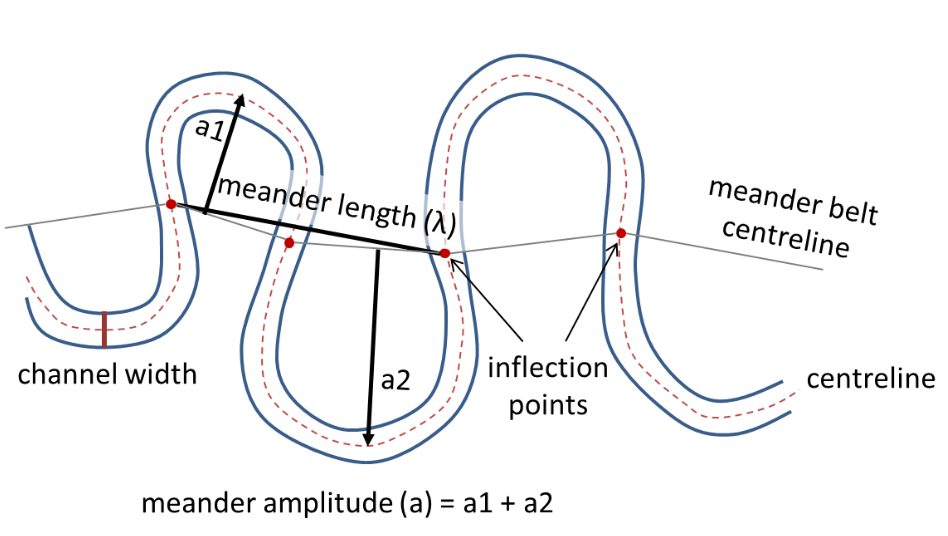

Figure 3: Schematic figure of meander definitions in this study.

Table 1: Empirical and theoretical relations for meander dimensions. All constants have been recalculated, such that all equations are in meters.

Property	Relation	Author	Environment
Meander length	$\lambda = 11.0 \cdot b^{1.01}$	Leopold and Wolman (1960)	Rivers
	$\lambda = 6.52 \cdot b^{0.99}$	Inglis (1949)	Rivers
	$\lambda = 7.50 \cdot b^{1.12}$	Williams (1986)	Rivers
	$\lambda = 20.0 \cdot b^{1.04}$	Ferguson (1975)	Rivers
	$\lambda = 6.28 \cdot b$	Hey (1982)	Rivers
	$\lambda = 6.31 \cdot b$	Hey and Thorne (1986)	Rivers
	$\lambda = 13.0 \cdot b$	Marani et al. (2002)	Tidal creeks
	$\lambda = 10.5 - 31.4 \cdot b$	Seminara (2006)	Theory for forced bars
Meander amplitude	$A = 3.04 \cdot b^{1.10}$	Leopold and Wolman (1960)	Rivers
	$A = 18.4 \cdot b^{0.99}$	Inglis (1949)	Rivers
Meander radius	$r = 3.04 \cdot b^{1.10}$	Leopold and Wolman (1960)	Rivers
	$r = 1.50 \cdot b^{1.12}$	Williams (1986)	Rivers

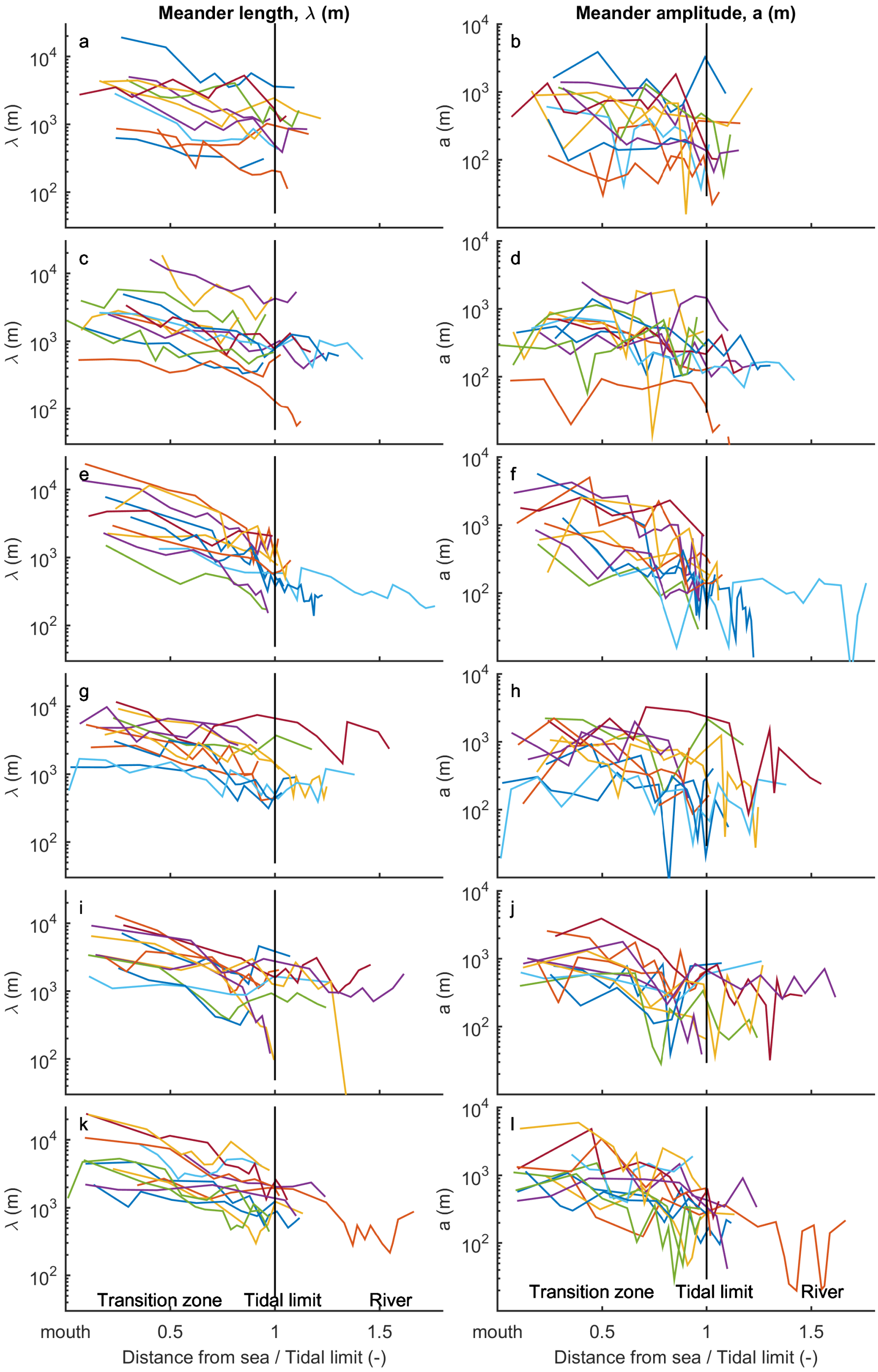

Figure 4: (left panels) Meander length and (right panels) amplitude as a function of dimensionless intrinsic coordinate, which was calculated as the along-channel distance from the sea measured along the channel centreline divided by the distance to the tidal limit. The tidal limit was determined as the location where channel width approaches a constant value. For visibility systems were separated over subplots: (a,b) system number 1-11; (c,d) 12-23; (e,f) 24-34; (g,h) 35-45; (i,j) 46-56; (k,l) 57-68. Numbers correspond to systems in Supplementary Table S2.

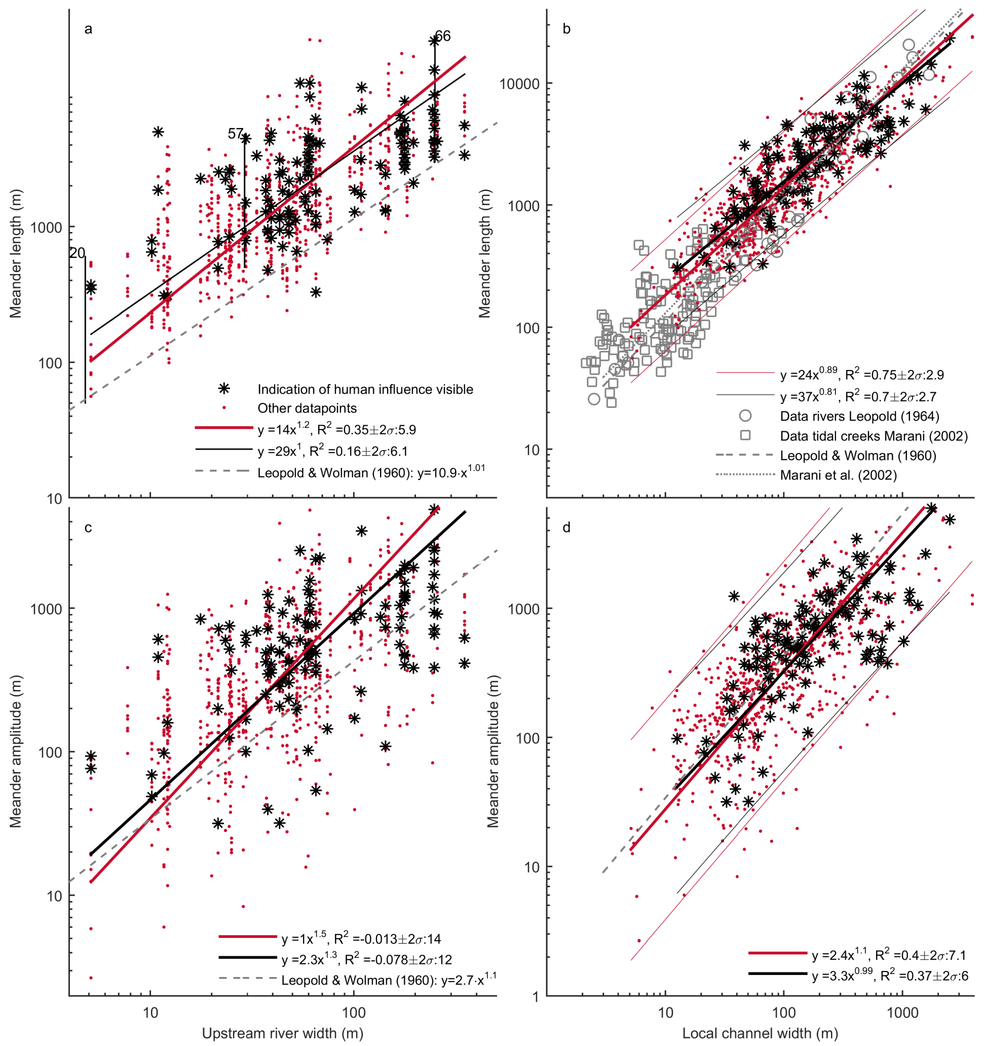

Figure 5: In the dataset, it was recorded at which locations human influence from aerial photographs may have influenced river pattern (similarly as in Kleinhans and van den Berg (2011) and Leuven et al. (2016)), such as the presence of harbours or sudden straight sections in a densely populated area. These locations are indicated as asterisks on top of the data in Fig. 2 of the article. The locations with possible human influence do not significantly deviate from the trends found and neither do they systematically increase scatter or cause outliers, as indicated by the largely overlapping confidence intervals.

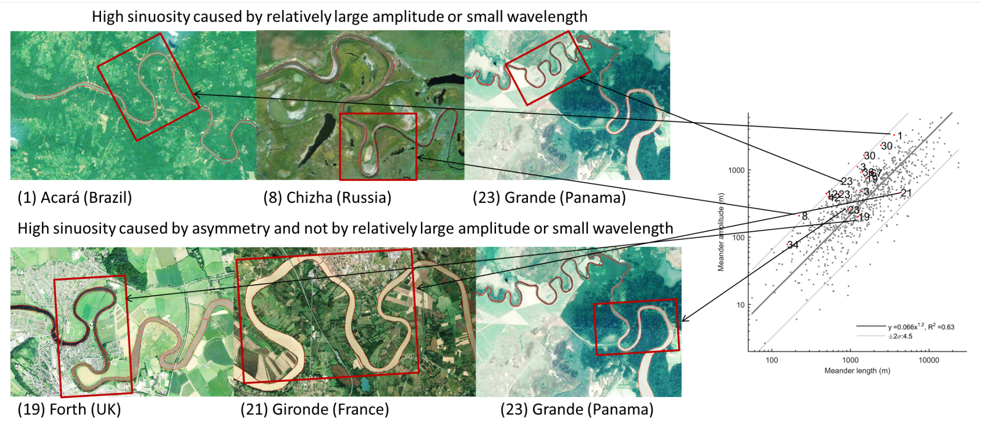

Figure 6: Examples of meanders with high sinuosity in Fig. 3. The plot on the right corresponds with Fig. 3b in the main article and indicates the numbers of the systems that have a meander with a sinuosity above 2.5. High sinuosities occur typically under two conditions: (1, top panels) the amplitude is disproportionally large or meander lengths disproportionally short, which typically plot close to the upper confidence limit when amplitude is plotted against length, (2, lower panels) along-channel distance is disproportionally large compared to the meander length, usually caused by asymmetry in meander bends, which plot on or below the regression line of amplitude against length.

Table 2: Rivers used in this study for meander measurements from Google Earth, accessed January-August 2017. Distance to the tidal limit was measured as along-channel distance from the mouth up to the point where channel width approaches a constant value. Climate zones: Am = Monsoon climate, Af = Equatorial climate, Aw = Tropical savanna climate, Cfa/Cwa = Humid subtropical climate, Cfb = Marine climate, Cwb = Oceanic subtropical highland climate, Csb = Temperate mediterranean climate, Dfc = Subarctic climate, Dfb = Temperate continental climate.

Nr	Name	Location	Distance to tidal limit (km)	Köppen climate zone
1	Acará	Brazil	80	Aw, Am, Af
2	Acarima	New Zealand	8.1	Cfb
3	Alsea	USA	25	Csb
4	Aurá	Brazil	33	Aw
5	Barrow	Ireland	35	Cfb
6	Belmunda	Australia	15.5	Cwa
7	Charente	France	40	Cfb
8	Chizha	Russia	5.8	Dfc
9	Clwyd	UK	6	Cfb
10	Cobequid	Canada	34.5	Dfb
11	Conwy	UK	14	Cfb
12	Cornwallis	Canada	12	Dfb
13	Cree	UK	12	Cfb
14	Dart	UK	22	Cfb
15	Dovey	UK	14	Cfb
16	Estero Real	Nicaragua	42	Af
17	Exe	UK	15	Cfb
18	Ferryside	UK	23	Cfb
19	Forth	UK	30	Cfb
20	Gannel	UK	4	Cfb
21	Gironde	France	90	Cfb
22	Girondesouth	France	90	Cfb
23	Grande	Panama	20	Aw
24	Hebert	Canada	40	Dfb
25	Humber	UK	90	Cfb
26	Kakadu	Australia	80	Aw
27	Kennetcook	Canada	16	Dfb
28	Koumala	Australia	6.5	Cwa
29	L'Authie	France	8	Cfb
30	Limpopo	Mozambique	50	Aw
31	Loughor	UK	27	Cfb
32	Maccan	Canada	16	Dfb
33	Maputo	Mozambique	45	Aw
34	Matola	Mozambique	13.5	Aw
35	Mawddach	UK	14	Cfb
36	Memracook	Canada	16	Dfb
37	Mersey	UK	43	Cfb
38	Merwe	NL, historic map	30	Cfb
39	Mucelo	Mozambique	35	Aw
40	Nestucca	USA	15	Csb
41	Ord	Australia	60	Aw
42	Oreti	New Zealand	25	Cfb
43	Ouse	UK	36	Cfb
44	Pericumã	Brazil	35	Aw
45	Pesca	Mexico	60	Af
46	Petitcodiac	Canada	40	Dfb
47	Púngué	Mozambique	70	Aw
48	Roddsbay north	Australia	12.5	Cfa
49	Roddsbay south	Australia	13.6	Cfa
50	Salmon	Canada	12	Dfb
51	Santa Maria	Panama	15	Aw
52	Severn	UK	45	Cfb
53	Shoyna	Russia	13	Dfc
54	Shubenacadie	Canada	30	Dfb
55	Solway	UK	25	Cfb
56	Solwaysouth	UK	25	Cfb
57	Tamar	UK	25	Cfb
58	Tawtorridge	UK	15	Cfb
59	Tawtorridgesouth	UK	18	Cfb
60	Tembe	Mozambique	35	Aw
61	Tempisque	Costa Rica	34	Aw
62	Thames	UK	90	Cfb
63	Trent	UK	90	Cfb
64	Usk	UK	16	Cfb
65	Wairoa	New Zealand	50	Cfb
66	Westerschelde	NL	110	Cfb
67	Wye	UK	18	Cfb
68	Wyre	UK	20	Cfb