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Supplement of

Historical changes in frequency of extreme floods in Prague

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- 1 Estimated maximal water levels and discharges (equal or greater then Q_2) for
- 2 pre-instrumental and early instrumental period 1118–1824 (FRPs are in grey, POTQ10 are in
- 3 red).

N.	Year	M	D	Water level estimation	EF	IJ	Hest [cm]	Qest [m ³ .s ⁻¹]	A	G	C
1	1118			OMF, WLi: 5m a. Br.	C		650	6000	1	100	B
2	1126	2	22	Ii: D?			250	1800	1	50	B
3	1141	4	15	Ii: D?			300	2500	1	100	B
4	1250	7	15	F?			250	1800	1	50	B
5	1257	8	8	Ii: DH			300	2500	1	75	B
6	1264	12	7	Ii: DH			250	1800	1	50	B
7	1270	?	?	F!			200	1500	1	50	B
8	1272	3	19	Ii: DBr		I?	420	3500	2	100	B
9	1273	8	25	WLi: Ni			420	3500	1	100	B
10	1281	4	1	Ii: MO			300	2500	1	50	B
11	1315	8	2	Ii: DM			300	2500	1	50	B
12	1316	?	?	Ii: DM	C		300	2500	1	50	B
13	1321	7	4	Ii: DH			300	2500	1	50	B
14	1322	?	?	DiB: BE			250	1800	1	90	B
15	1327	6	0	Ii: Agr			200	1500	1	100	B
16	1342	8	2	Ii: DBr, DW, DM		I?	420	3500	1	100	B
17	1359	9	1	WLi: Ni	C		420	3500	1	100	B
18	1364	1	27	F!			300	2500	2	100	B
19	1367	11	3	WLi: Ag, Ni	C?		440	3500	1	100	B
20	1370	8	23	WLi: Ag, Li			420	3500	1	100	B
21	1373	3	21	WLi: OTi			420	3500	2	100	B
22	1374	2	12	WLi: Ag, Ni	C		420	3500	2	100	B
23	1387	9	20	WLi: ML			300	2500	3	100	B

24	1392	12	13	Ii: DM			300	2500	1	100	B
25	1405	7	4	F?			250	1900	1	50	B
26	1432	3	13	WLi: Li			420	3500	1	100	B
27	1432	7	30	WLi: Ag, Ni, OTS Ii: DBr, DH, DW	C		650	6000	1	100	A
28	1432	12	15	=1432III			420	3500	1	100	B
29	1434	8	5	DiB: BE			250	1800	1	90	C
30	1445	7	3	WLi: Rcoll			355	2700	1	75	B
31	1464	3	13	Ii: FO			250	1900	3	50	D
32	1481	6	2	BM, nose			355	2700	1	100	B
33	1481	6	17	BM, pate			395	3000 <u>3100</u>	1	100	A
34	1501	8	25	BM, 120 cm above a head Ii: Bar WLi: ML			516	4000 <u>4200</u>	1	100	A
35	1504	3	16	Ii: D?			200	1500	1	100	A
36	1511	7	31	DiB: UV			200	1500	1	75	
37	1515	7	3	Ii: MO			300	2200	1	100	A-B
38	1515	7	31	BM, beard	C		335	2600 <u>2600</u>	1	100	A-B
39	1515	9	3	F?			200	1500	1	100	C
40	1521	6	5	Ii: MO			250	1800	1	100	B
41	1523	7	14	Ii: MO			200	1500	1	100	B
42	1523	11	20	Ii: WT		I?	240	1800	1	100	
43	1528	6	26	Ii: WT	C		250	1900	1	100	B
44	1531	5	11	BM			370	2800 <u>2900</u>	1	100	B
45	1533	?	?	F?			200	1500	1	100	C

46	1534	?	?	DiB: BE			200	1500	1	75	C
47	1537	6	2	BM: eyes, Ii: WT	C		375	2900	1	100	A
48	1544	9	1	Ii: D?, WLi: KK	C		250	1900	1	100	B
49	1545	7	24	Ii: D?			250	1900	2	100	B
50	1554	1		DiB: OT			200	1500	3	75	B
51	1560	12	15	Wli: Cell			250	1900	2	100	B
52	1563	6	11	Ii: D?	C		200	1500	1	90	B
53	1564	7	14	BM, beard Wli: Rcoll, Acoll			335	2600	2	100	B
54	1566	2	15	BM, mouth			345	2700	3	100	A
55	1567	9	10	BM, below a head	C		335	2600	3	100	B
56	1568	6	23	BM, eyebrow			380	3000	1	100	B
57	1569	7	1	BM, eyes	C		375	2900 <u>2900</u>	1	100	A- B
58	1570	2	10	BM, mouth			350	2700	1	100	A
59	1575	?	?	BM, beard			335	2600	2	100	B
60	1582	5	12	BM, eyes			370	2800	1	100	A
61	1582	6	13	BM, eyebrow Ii: Bar			385	3000 <u>3000</u>	1	100	A
62	1587	6	8	BM, eyes			375	2900	1	100	B
63	1595	3	29	DiB: UV, LU, EL	C		200	1500	1	75	B
64	1595	8	17	F?			250	1800	1	100	
65	1598	3	17	BM, 90 cm above a head			485	3700 <u>4000</u>	1	100	A
66	1598	8	18	BM, 90 cm above a head	C		485	3800 <u>4000</u>	1	100	A
67	1604	12	15	Ii: D?			200	1500	3	100	B
68	1613	6	14	Ii: D?			200	1500	1	100	B

69	1615	3	18	BM, above a head			405	3100	1	100	A
70	1629	10	1	Wli: Val, Li, Ii: MO, DiB: EL			350	2400	2	100	A
71	1651	1	18	DiB: UV, EL	W		290	2400	1	75	B
72	1651	5	11	Ii: WT, D?			300	2500	2	100	B
73	1651	12	2	Ii: WT, D!			300	2500	2	100	B
74	1655	2	14	Ii: D?, DiB: EL	C		500	4000	1	100	A
75	1656	6	12	DiB: UV, LU			200	1500	1	75	C
76	1658			DiB: EL	W		310	2400	?	50	C
77	1668	3	21	DiB: UV			200	1500	1	100	B
78	1670	3	15	DiB: BE, EL			270	2200	1	75	C
79	1675	6	23	FM, Wli: Ag			485	3800 <u>3900</u>	1	100	A
80	1682	1	26	Wli: Huk	C		420	3500	1	100	B
81	1698	7	23	Wli: SIs			350	2800	1	100	B
82	1712	4	24	FM			368	3000	1	100	A
83	1714	7	31	DiB: SA Ii: WT, ST			250	1800	1	100	C
84	1734	6	21	FM* =1740 _{XII} -60cm			265	2000	1	100	A
85	1736	6	19	<u>FM</u> , BM, nose WLi: ML			369	3000	1	100	A
86	1740	3	16	DiB: OT, Ii: D?	W	I?	200	1500	1	100	A
87	1740	8	25	Ii: DW			130	1300	1	100	B
88	1740	12	22	FM*			325	2500	1	100	B
89	1741	1	13	F?			200	1500	1	100	A
90	1741	2	4	=1734			265	2000	1	100	B

91	1745	6	15	Wli: FO, WT			230	1800	1	100	B
92	1746	4	23	Wli: WT			200	1500	1	100	B
93	1747	4	2	F?			265	2000	1	100	A
94	1747	12	14	> 1734			270	2100	1	100	B
95	1750	6	17	FM, =1734			265	2000	1	100	A
96	1750	7	12	FM*, >1740			295	2200	1	100	A
97	1752	8	13	FM*,=1734			265	2000	1	100	A
98	1755	7	7	FM*, =1750 _{VII}			295	2200	1	100	A
99	1757	5	31	li:D?, WLi: OTI			280	2100	1	100	B
100	1769	12	21	DiB: BE		I?	270	2000	1	75	C
101	1770	4	4	FM*			295	2500	1	100	A
102	1771	3	17	FM			415	3200	1	100	A
103	1775	2	5	DiB: BE			250	2000	1	75	A
104	1777	2	25	DiB: BE			200	1500	1	75	A
105	1782	3	23	EM			297	2300	1	100	A
106	1784	2	28	EM	W		575	4400	1	75	A
107	1785	4	16	EM	C		280	2100	1	100	A
108	1786	8	17	EM			336	2500	1	100	A
109	1796	12	24	EM			267	2100	1	100	A
110	1799	1	22	EM	W			3900	1	100	A
111	1803	2	19	EM			238	1800	1	100	A
112	1803	3	3	EM			208	1600	1	100	A
113	1804	6	15	EM	C		354	2700	1	100	A
114	1805	2	26	EM			267	2100	1	100	A
115	1807	2	14	EM			238	1830	1	100	A
116	1809	1	28	EM			320	2450	1	100	A
117	1810	3	3	EM			312	2400	1	100	A
118	1814	3	23	EM			207	1600	3	75	A

119	1815	8	9	EM			267	2060	1	75	A
120	1820	1	20	EM			208	1600	1	100	A
121	1821	3	9	EM			191	1500	3	100	A
122	1824	6	26	EM			444	3760	1	100	A
				Ii: TW, Bar							

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Explanatory notes:

- **Year, M (month), D (day)**

The dates before 1584 were recalculated according to Gregorian calendar

- **Water level and discharge estimation approach**

Ii (Impact indicator):

D (damages) + (H - houses, M - mills, W - weirs, Br – bridge, ? - in general, ! - big damages, Bar – barriers in front of the bridge, Agr: damages in agriculture)

FO - Ferries stopped (>120 cm)

WT - Wood taken from lumber yards away (>250 cm)

ST - Salt warehouses flooded and a supplies taken away (>250 cm)

MO - Mills out of order (250–300 cm)

Wli (water level indicator): the important buildings and squares,

Acoll: Angel College of Prague University, Ag: St. Giles, Cell: cellars in general, Huk: House “U křížku”, Li: St. Leonhard, KK: Kings Kiln, ML: St. Mary in Lacu, Ni: St. Nicholas, OTi: important part of Old Town, OTl: lower part of Old Town, OTS: Old Town Square, Rcoll: Reček college of Prague University, SIs: Střelecký island, Val:

St. Valentine.

5 m a. Br: 5 m above wooden bridge

Measured water levels:

BM - Bearded Man, beard, mouth, nose, eyes, eyebrow, pate (see the picture by Elleder et al (2013)

FM - flood marks, * recently disappeared flood mark

EM - early measurement by Prague Klementinum observatory (Elleder, 2010b)

Dib (Discharge balance):

UV (the Upper Vltava River), LU (the Lužnice River), OT: (the Otava River), SA (the Sázava River), BE (the Berounka River), EL (the Elbe River)

Other possibilities: F? (Flood in general), BF (Big flood), OMF (Flood out of memory)

Underlining: dominant indicator

1 • **Water level and discharge - results**

2
3 Hest: H [cm] water level estimation

4 Qest: Q [$\text{m}^3 \cdot \text{s}^{-1}$] peak discharge estimation, underlined values: hydraulic approach (Elleder
5 et al, 2013).

6
7 IJ: Ice jam, possible ice jam impact for some water levels <300 cm or floods before the
8 year 1350.

9 EF: European floods C: CEF (Central Europe – the Elbe, the Oder, the Danube, the
10 Rhine), W: WCEF (West and Central - the Elbe, the Oder, the Danube, the Rhine the
11 Loire, the Garrone, the Seine)

12
13 A - Authenticity level (1 - based on primary source (eye-witnessed), 2 - documentary
14 source: 50–150 years after the flood, 3 - secondary source: more than 150 years after the
15 flood)

16 G [%] - probability of the flood in Prague 100 % - for sure, 90% - very probable, 75% -
17 probable, 50% - cannot be excluded

18 Reliability control, A - flood is recorded in Prague and Dresden, B - in Prague, C - Prague
19 flood assumed
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21