

Climatic extremes in Portugal in the 1780s based on documentary and instrumental records

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Table S1. Types of documentary evidence stored in the Klimhist database (classification adapted from Brázdil et al, 2010).

Types of documentary evidence		17th century	18th century	19th century
Individual	Memoirs, Annals, Chronicles	10	25	2
	Private Correspondence	1	1	
	Voyage books		2	3
	Periodicals/Newspaper		24	15
	Poem		3	
	Scientific books	2	6	
	Sub-total	13	61	20
Institutional	Minutes of the Cathedrals	5	14	2
	Official letters	3	26	13
	Memoirs	1	4	
	Reports		1	2
	Book of the Processions	5	6	2
	Daily Records			3
	Others	4	7	
	Sub-total	18	58	22
Civil	Books of Account	1		
	Minutes of the Town Halls	13	19	5
	Official letters		8	17
	Others	4	4	
	Sub-total	18	31	22
Total	49	150	64	

Table S2. Main impacts description caused to 23-24 February Storm in 1788.

Hazard	Day	Location	Impacts			
			Magnitude evidences		Consequences	
			Quantitative/Semi-quantitative information	Qualitative information	Material loss	Human casualties
Floods	24-25	Oporto, Portugal	<i>"(...)31 hand spans (6.89 m) above its normal level"</i> (S32, Supl.à Gazeta, N°10)	<i>"Horrendous flooding"</i> (S32, Supl.à Gazeta, N°10)	5 ship wrecks	
	23-25	Oporto, Portugal	<i>"the water rose to the height of 22 geometric feet (6.7 m), measured from the last point of low tide . A similar height was reached during the latest formidable flooding of the month of February of this year of 1788"</i> (S10)	<i>"Significant damage"</i> (S10)	<i>"2 million cruzados are not enough to return to a normal status"</i> (S32, N°11)	2 drownings
			18 flooded streets and over then 1000 flooded dwellings (S35)	<i>"The amount of water that overflowed from the river Douro was such..."</i> (S35)	Several dwellings destroyed;4 wine warehouses demolished and several others damaged; Several streets were littered with sand (<i>Cais da Ribeira, Rua da Porta Nova, Passeio de Miragaia</i>) (S35)	
	24-25	Oporto, Portugal	<i>"(...) On the 24th the water from the Porta da Lingoeta joined waters coming from the Ourina fountain and waters coming from Alfândega street reached the ground floor entrances. On the night of the 24th to the 25th, the water reached the end of the aforementioned street and flooded Terreiro;(...)"</i> (S17)			
	22-24	Coimbra, Portugal	<i>"the water reached the Church of Santa Cruz</i> (S32, Supl.à Gazeta, N°10)	<i>"(...) the greatest rainfall ever seen, which caused a flood that destroyed everything in its path".</i> (S32, Supl.à Gazeta, N°10)	Coimbra bridge destroyed Dwellings and mills destroyed (S32, Supl.à Gazeta, N°10)	Several people drowned; Cattle drowned (S32, Supl.à Gazeta,N°10)
23-24	Alcobaça, Portugal		<i>"... the rivers that crossed that town rose to extraordinary heights on the night of the 23 of February"</i> (S32, Supl.à Gazeta, N°10)	Destruction of bridges, roads, walls, dwellings, walls, trees and roads. Inundation of dwellings (S32, Supl.à Gazeta, N°10)		
		<i>"On the inner side of the door on the lower floor, the waters of the Alcoa river rose 9 and a half hand spans (2.2 m)"; "(...) Great rise of the river Baça (...) rose 16 hand spans(3.7 m) over the pavement of the Botado street (...)"</i> (S11)				
Floods	24-25	Tudela de Duero e Laguna de Duero (Valladolid), Spain	<i>"The town of Tudela de Duero suffered the most from the flooding river. (...) by midnight the water had reached plaza mayor, destroying 30 dwellings and causing noticable damage to another 100"</i> (S19)		Destruction of 30 dwellings and 100 dwellings damaged; Partial destruction of El Abrojo monastery; Destruction of Boecillo bridge (Duero) (S19)	

Hazard	Day	Location	Impacts		Consequences	
			Magnitude evidences			
			Quantitative/Semi-quantitative information	Qualitative information	Material loss	Human casualties
	23-25	Valladolid Spain	Six days of <i>Pro Serenitate</i> rogations (S49)	<p><i>“the copious rains were felt in Castilla during the entire month of February and were especially strong on the days and nights of the 23 and ” (S39)</i></p> <p><i>“no other effect of the rains was reported on the 23rd and 24th other than the rising of the rivers Pisuerga y Esgueva” (S34)</i></p>	<p>Flooding of the city centre; a large number of dwellings (more than 150) were destroyed or damaged;</p> <p>Destruction of 12 over 14 bridges in Esgueva river [3]</p> <p>Estimated costs for reconstruction: 470.470 reales (S34)</p>	
	24-25	Navarra Spain		<p><i>“Strong winds and a westerly hurricane (...): copious amounts of rain started to fall over the Serra d’Alcarama, which continued with the same strength until 10 o’clock in the morning of the 24th of February. The riveres Alama and Añamaza reached never before seen heights”. Reference to a violent current that changed the surface of the destroyed terrain”. (S32, Supl.à Gazeta, N°13)</i></p>		
Storm surge	23-24	Cantabria coast		<p><i>“in the Cantabria ports of the north (...) on the same days of 23 and 24 of February there were reports of tides so high, so fast and tempestuous that the sea reached faraway places ” (S34)</i></p>		
Wind/ Windstorm	20-22	Oporto, Portugal		<p><i>“a terrible hurricane from the West that lasted, without slowing, for three successive days”(S10)</i></p>	<p><i>“ripped-out thick trees and sent several rooftops and skylights flying through the air”(S10)</i></p>	
Wind/ Windstorm	22-24	Alcobaça, Portugal		<p><i>“The Southerly wind, having blown with Great force during the entire day of the</i></p>		

Hazard	Day	Location	Impacts			
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				<i>22, forewarned ruinous consequences (...)</i> (S11)		
	21-27	Lisbon, Portugal		<i>"For the entirety of the past week we have felt very tempestuous weather: some ships lost their anchoring due to the strength of the winds..."</i> .(S32, Supl.à Gazeta, N°13)		