

Supplementary Information: This Supplementary Information has not been peer reviewed.

Title: Why forests can mitigate floods of all sizes: Evaluating the scientific basis for forest-based flood mitigation

Table S1. Overview of studies quantitatively investigating the effects of forest cover changes on peak flows using a deterministic and/or stochastic analysis procedure following a Before-After, Control-Impact (BACI) or modelled catchment design. Review studies without quantitative data analysis and studies investigating effects to other variables such as water yield without examining peak flows are not included. For each cited study, the following information is provided: location(s) with any applicable provinces or states in parentheses, catchment size(s) including both control and treatment catchments, hydroclimatic regime(s), whether it is a field/paired or modelled catchment study, and whether it is deterministic and/or stochastic.

Citation	Location(s)	Catchment Size(s) (km ²)	Hydroclimatic Regime(s) (ROS = rain-on-snow)	Field/Paired (F/P) or Modelled (M)	Deterministic (D) or Stochastic (S)
(Alila et al., 2009)	United States (Colorado, Oregon)	0.6–8.03	Snow & ROS	F/P	D & S
(Barnes et al., 2023)	United Kingdom	335 (headwaters: 1–10)	Rain	M	D & S
(Bathurst et al., 2011)	Ecuador, Chile, Costa Rica, Argentina	0.6–1545	Rain & ROS	F/P	D
(Bathurst et al., 2018)	United Kingdom	1.4–6.9	Rain	F/P	D & S

(Bathurst et al., 2020)	Chile, New Zealand, United Kingdom, United States (Oregon)	0.34–3.1	Primarily rain	F/P	D & S
(Beschta et al., 2000)	United States (Oregon)	0.6–640	ROS	F/P	D
(Birkinshaw et al., 2011)	Chile	0.35	Rain	M	D & S
(Birkinshaw et al., 2014)	United Kingdom	1.5	Primarily rain	M	D & S
(Burton, 1997)	United States (Utah)	21.34–22.33	Snow	F/P	D
(Cheng, 1989)	Canada (British Columbia)	33.9–40.7	Snow	F/P	D
(Duncan, 1995)	New Zealand	0.04-0.077	Rain	F/P	S
(Fahey & Payne, 2017)	New Zealand	2.16-3.1	Primarily rain	F/P	D & S
(Goodbrand et al., 2022)	Canada (Alberta)	15.2–28.3	Rain & snow	F/P	D
(Green & Alila, 2012)	Canada (British Columbia),	3–37	Snow	F/P & M	D & S

	United States (Colorado)				
(Guillemette et al., 2005)	Canada (Quebec)	1.22–3.94	Rain	F/P	D
(Harr et al., 1979)	United States (Oregon)	0.486–0.692	Rain & snow	F/P	D
(Harr & McCorison, 1979)	United States (Oregon)	0.085–0.102	Rain, snow, & ROS	F/P	D
(Harr, 1980)	Oregon (United States)	0.59–2.53	Rain, snow, & ROS	F/P	D
(Harr et al., 1982)	United States (Oregon)	0.13–21.4	Snow & ROS	F/P	D
(Harr, 1986)	United States (Oregon)	0.085–0.96	ROS	F/P	D
(Harris, 1977)	United States (Oregon)	0.70–3.03	Rain	F/P	D
(Hewlett & Helvey, 1970)	United States (North Carolina)	0.44–0.49	Rain	F/P	D
(Hornbeck et al., 1970)	United States (New England)	0.16–0.42	Rain & snow	F/P	D
(Hornbeck, 1973)	United States (New Hampshire)	0.156–0.424	Rain & snow	F/P	D

(Hurkmans et al., 2009)	Rhine Basin in west Europe	185000 (tributaries: 4118–27088)	Rain & snow	M	S
(Johnson & Alila, 2023)	Canada (British Columbia)	99–1011	Snow	F/P	S
(Jones & Grant, 1996)	United States (Oregon)	0.6–600	Rain & ROS	F/P	D
(Jones, 2000)	United States (Oregon)	0.1–2.53	Rain & ROS	F/P	D
(King, 1989)	United States (Idaho)	0.22–1.48	Snow & ROS	F/P	D
(Kuraś et al., 2012)	Canada (British Columbia)	4.74	Snow	M	S
(Lallemant et al., 2021)	Myanmar	113800	Rain	M	S
(McEachran et al., 2021)	United States (Minnesota)	0.089–0.526	Rain, snow, & ROS	F/P	D & S
(Moore & Scott, 2005)	Canada (British Columbia)	33.9–40.7	Snow	F/P	D
(Pham et al., 2025)	United States (North Carolina)	0.12–0.16	Rain	F/P	S
(Reynard et al., 2001)	United Kingdom	9895–9948	Rain	M	S

(Rothacher, 1973)	United States (Oregon)	0.61–0.96	ROS	F/P	D
(Schnorbus & Alila, 2004)	Canada (British Columbia)	26	Snow	M	S
(Schnorbus & Alila, 2013)	Canada (British Columbia)	4.70	Snow	M	S
(Storck et al., 1998)	United States (Washington)	5.2–388	Snow & ROS	M	D
(Te Linde et al., 2010)	Rhine Basin in northwest Europe	185000	Rain & snow	M	S
(Thomas & Megahan, 1998)	United States (Oregon)	0.6–600	Rain & ROS	F/P	D
(Tonina et al., 2008)	United States (Idaho)	12.6–30.2	Snow & ROS	M	S
(Troendle & King, 1985)	United States (Colorado)	2.89–8.03	Snow	F/P	D
(Troendle & King, 1987)	United States (Colorado)	0.41–7.67	Snow	F/P	D
(Troendle et al., 2001)	United States (Wyoming)	9.08–16.73	Snow	F/P	D

(Ursic, 1991)	United States (Mississippi)	0.0134– 0.0185	Rain	F/P	D
(Van Haveren, 1988)	United States (Colorado)	0.81–0.9	Snow	F/P	D
(Verry et al., 1983)	United States (Minnesota)	0.34–0.53	Rain & snow	F/P	D & S
(Walsh et al., 2020)	Australia (New South Wales)	0.013–0.048	Rain	F/P	D
(Xiao et al., 2022)	United Kingdom, Ireland	0.08–3.9	Rain	F/P	D

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