

Supplementary Materials: The following are available online at www.mdpi.com/xxx/s1, Table S1: Derived curve numbers, Table S2: Zones of rock types and their corresponding degree of permeability, Figure S1: Flood conditioning factors: a) elevation, b) slope angle, Figure S2: Flood conditioning factors: a) river network density, b) distance from river, c) flow accumulation, Figure S3: Input maps: a) hydrological soil groups, b) CORINE Land Cover from 2018, Table S3: Reciprocal pair-wise comparison matrix.

Table S1. Derived curve numbers.

CORINE Land Cover (CLC) class	Hydrological soil group	
	B	C
111 Continuous urban fabric	85	90
112 Discontinuous urban fabric	75	83
121 Industrial or commercial units	88	91
122 Road and rail networks and associated land	89	92
131 Mineral extraction sites	77	85
132 Dump sites	77	85
133 Construction sites	77	85
141 Green urban areas	69	79
142 Sport and leisure facilities	79	86
211 Non-irrigated arable land	79	84
221 Vineyards	65	76
222 Fruit trees and berry plantations	58	72
231 Pastures	61	74
242 Complex cultivation patterns	74	82
243 Land principally occupied by agriculture, with significant areas of natural vegetation	69	78
311 Broad-leaved forest	60	73
312 Coniferous forest	60	73
313 Mixed forest	60	73
324 Transitional woodland-shrub	56	70
411 Inland marshes	100	100
511 Water courses	100	100
512 Water bodies	100	100

Table S2. Zones of rock types and their corresponding degree of permeability.

Zones of different rock types	Degree of permeability
Flyschoid rocks	Very low
Highly metamorphosed rocks	Low
Intrusive rocks	Low
Effusive rocks	Moderate
Volcanoclastic rocks	Moderate
Undivided volcanic rocks	Moderate
Conglomerate-sandstone rocks	Moderate
Claystone-limestone rocks	Moderate
Clay-silty sediments	High
Undivided sedimentary rocks	High
Alternating clay-silty with sandy to gravel sediments	High

Organic sediments	High
River terrace deposits	High
Deluvial deposits	High
Proluvial deposits	High
Aeolian sands on floodplain deposits	High
Limestone-dolomite rocks	Very high
Gravel-sandy sediments	Very high
Quaternary carbonates	Very high
Floodplain deposits	Very high
Loess deposits	Very high

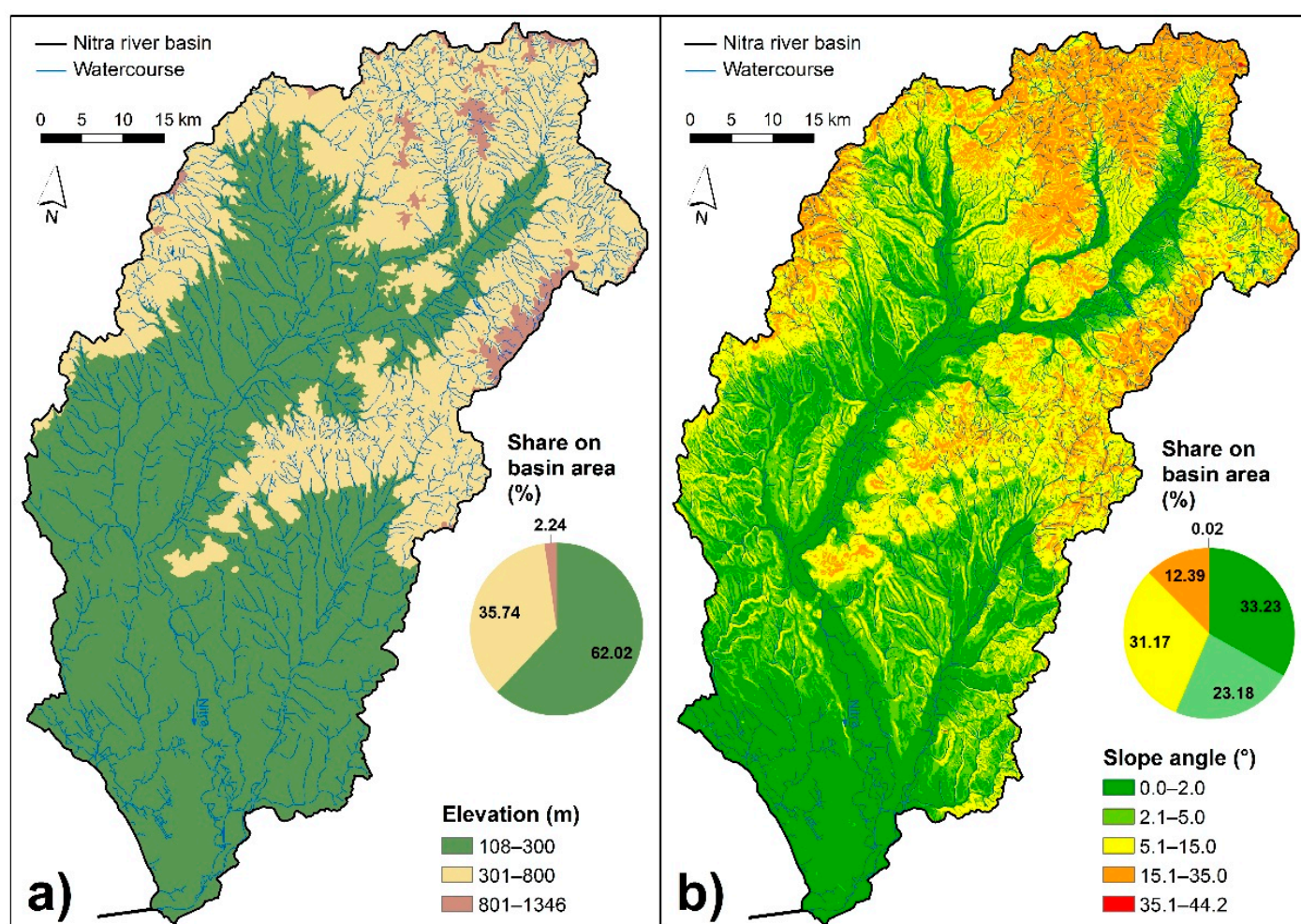


Figure S1. Flood conditioning factors: a) elevation, b) slope angle.

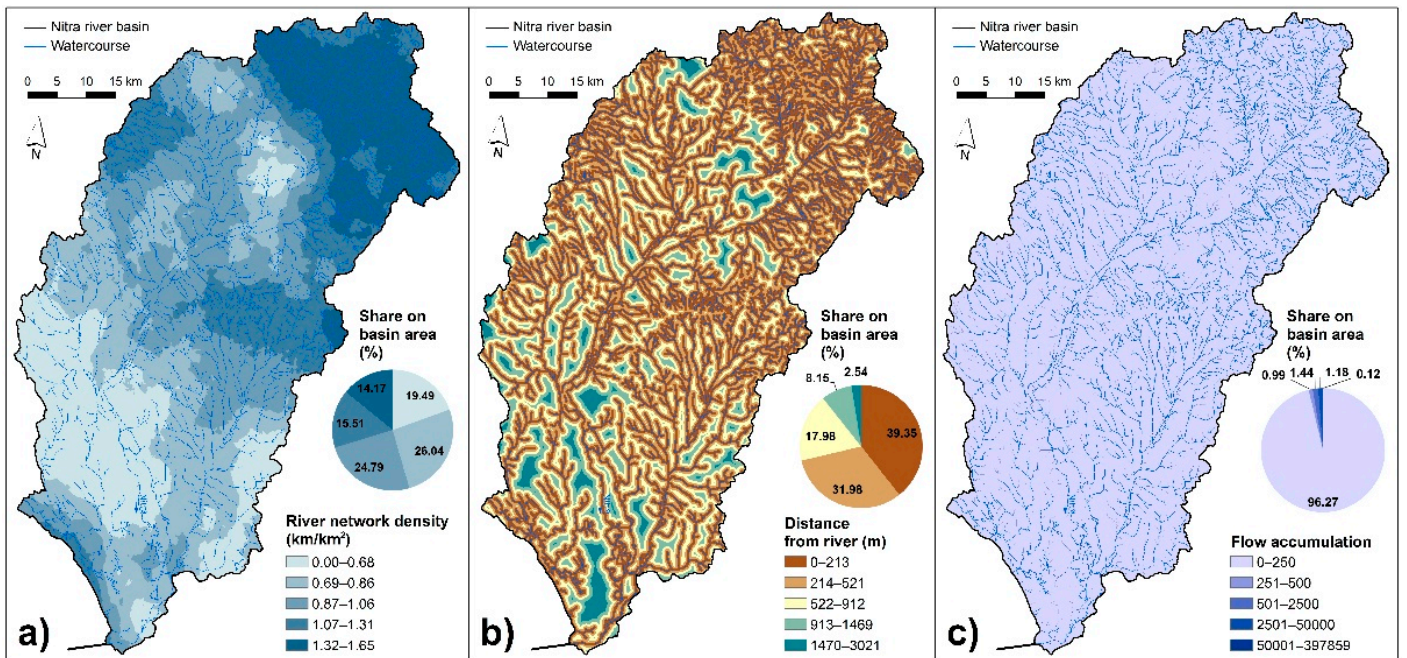


Figure S2. Flood conditioning factors: a) river network density, b) distance from river, c) flow accumulation.

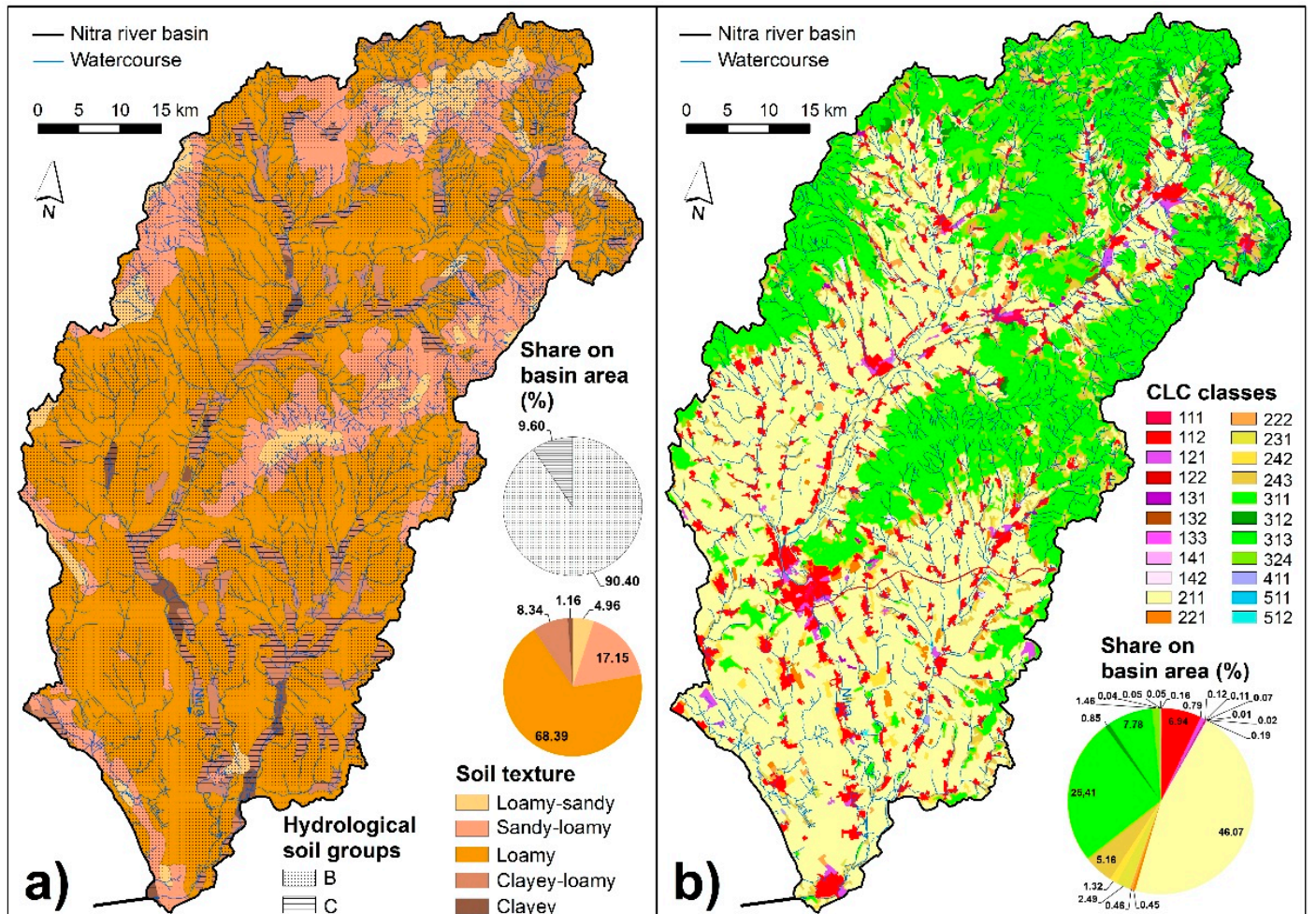


Figure S3. Input maps: a) hydrological soil groups, b) CORINE Land Cover from 2018.

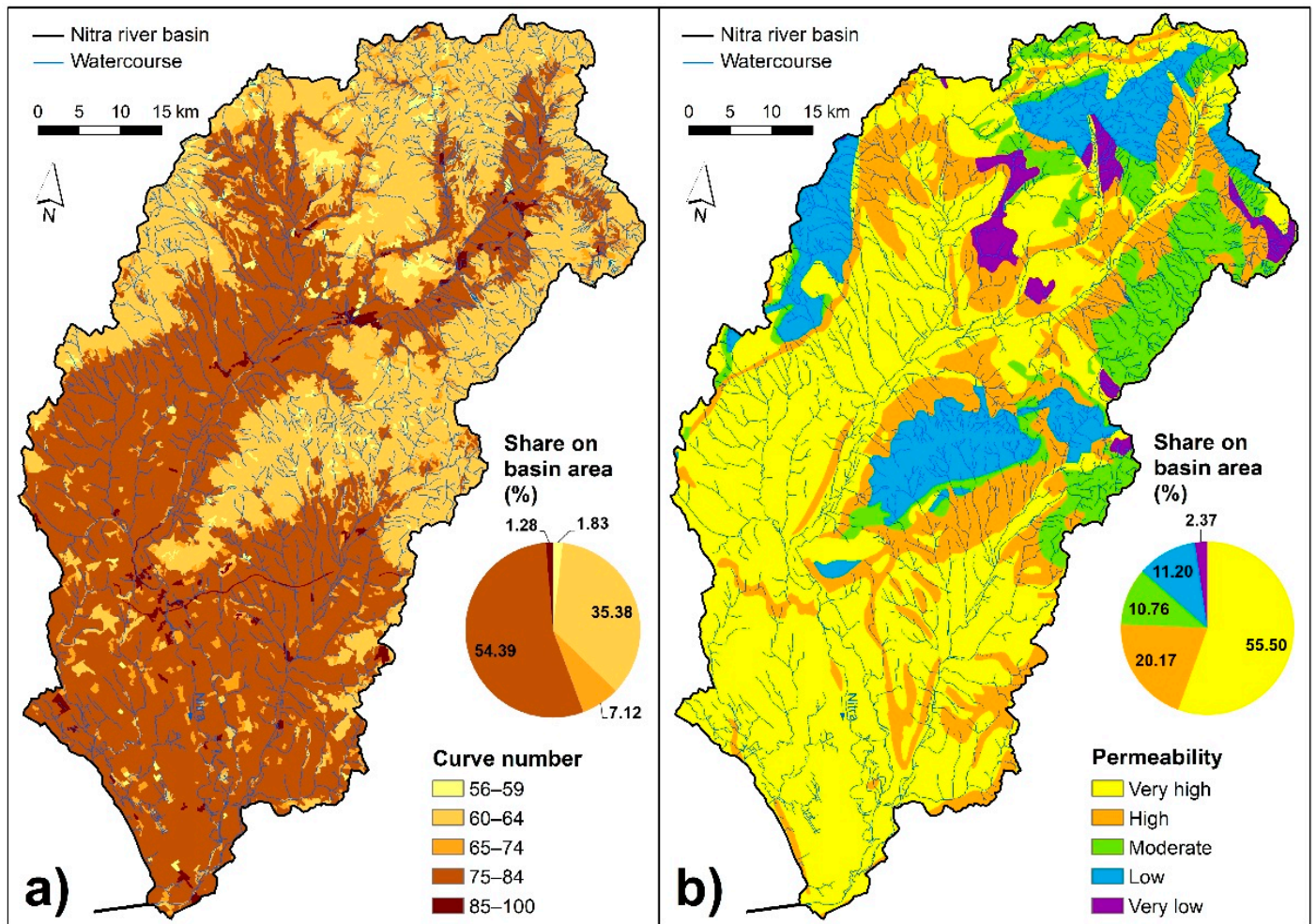


Figure S4. Flood conditioning factors: a) curve numbers, b) lithology (degree of permeability).

Table S3. Reciprocal pair-wise comparison matrix.

Factors	Slope	River network density	Distance from river	Flow accumulation	Elevation	Curve number	Lithology
Slope	1	2	3	4	5	6	7
River network density	1/2	1	2	3	4	5	6
Distance from river	1/3	1/2	1	2	3	4	5
Flow accumulation	1/4	1/3	1/2	1	2	3	4
Elevation	1/5	1/4	1/3	1/2	1	2	3
Curve number	1/6	1/5	1/4	1/3	1/2	1	2
Lithology	1/7	1/6	1/5	1/4	1/3	1/2	1