

Hydro-climatic changes of wetlandscapes across the world

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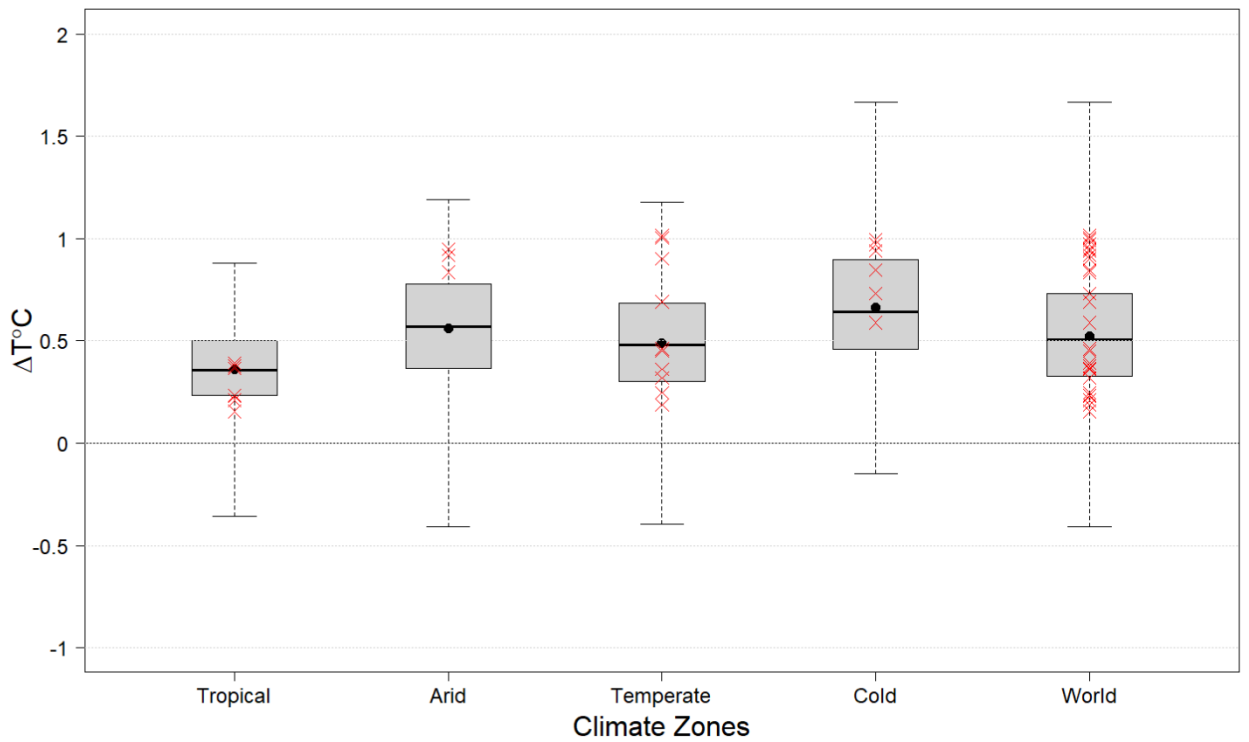
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53 **Supplementary Materials**



92 **Fig. S1. Change in temperature $\Delta T^{\circ}\text{C}$.** Boxplots showing $\Delta T^{\circ}\text{C}$ for each climate zone and wetlandscape
93 between the period of 1976-1995 and 1996-2015 the mean $\Delta T^{\circ}\text{C}$ for the climate zones are shown as black
94 points and as red crosses for the wetlandscapes.
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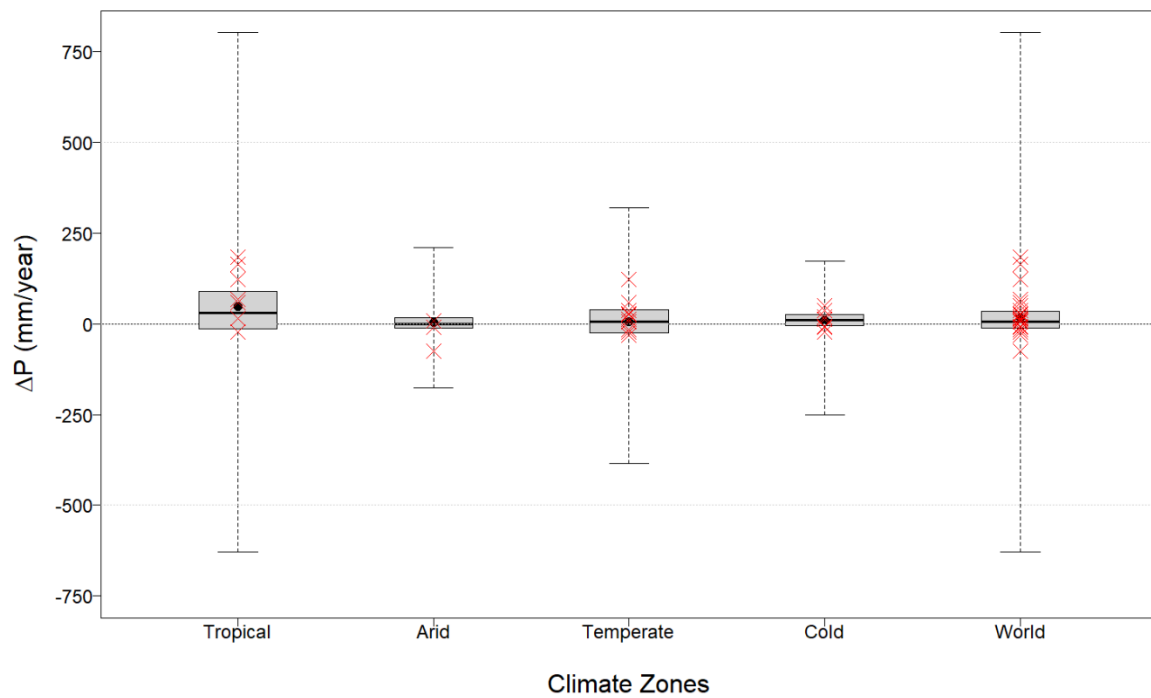
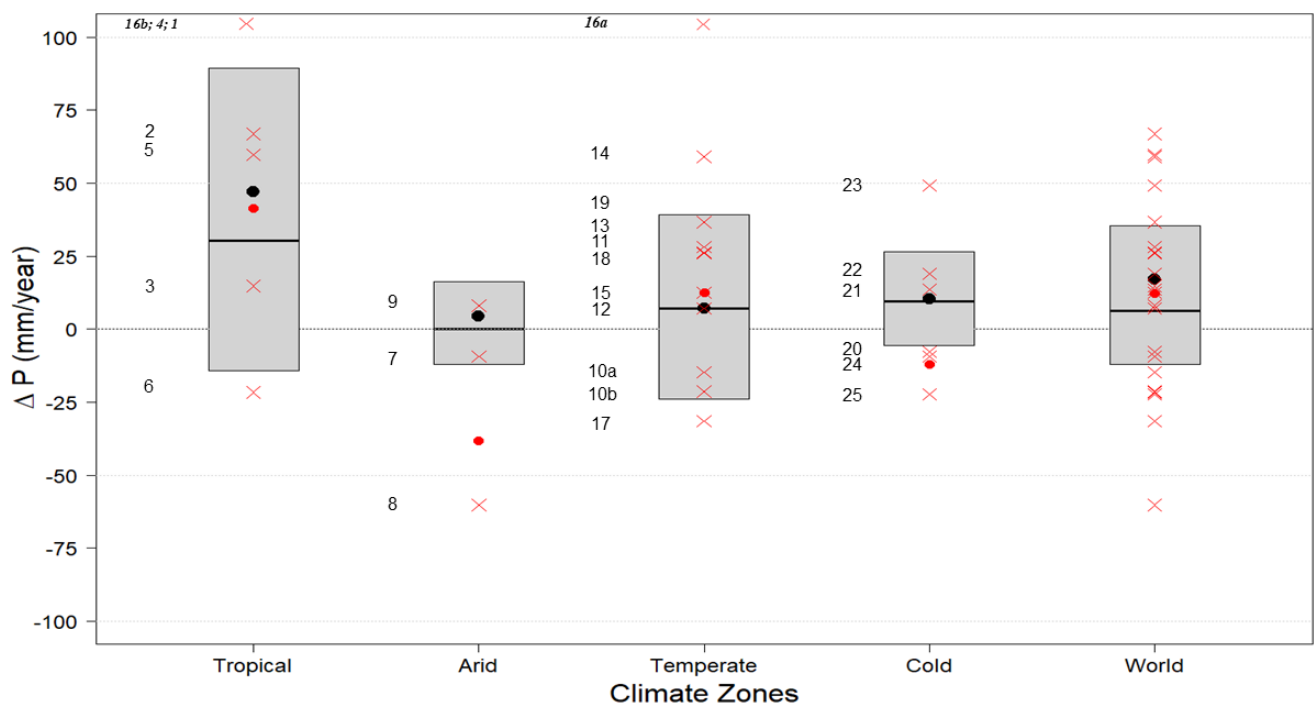
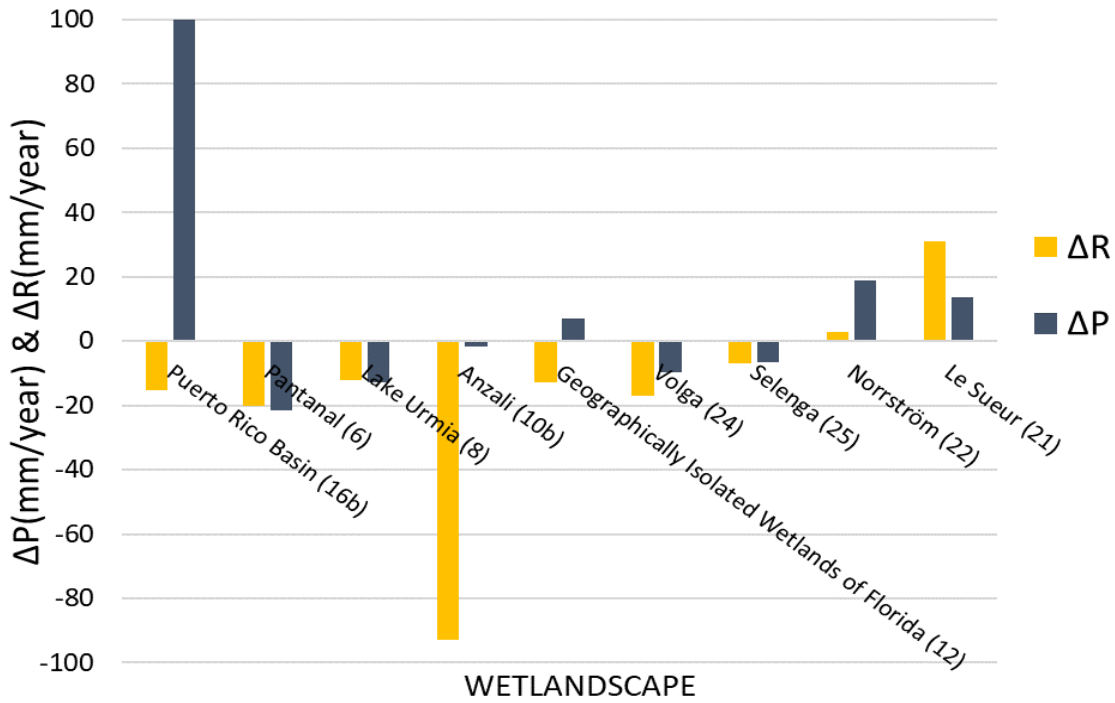


Fig. S2. Change in precipitation ΔP (mm/year). Boxplot showing the ΔP for each climate zone and wetlandscape between the period of 1976-1995 and 1996-2015. Mean ΔP for the climate zones are shown as white points and as red crosses for the wetlandscapes



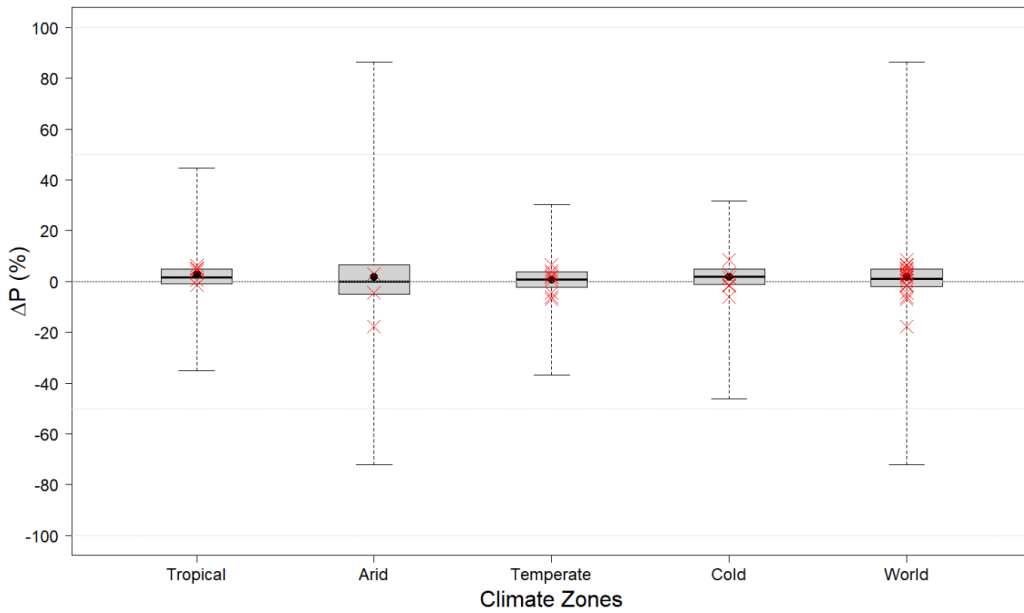
103 **Fig. S3. Change in precipitation ΔP (mm/year).** Boxplot showing ΔP (mm/years) for each climate zone for the period between 1976-1995 and 1996-2015. The ΔP for each wetlandscape is presented as red crosses with a corresponding number relating to the name of the wetlandscape (see Table 1). Mean ΔP (mm/years) for the climate zones are shown as black points, while the red points show the mean ΔP (mm/years) for the wetlandscapes.

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Fig. S4. Change in precipitation and runoff for the wetlandscapes with available discharge data. The studied time period of change in precipitation and discharge are sometime differing between the wetlandscapes. This information can be read in Table 1 (found in manuscript).



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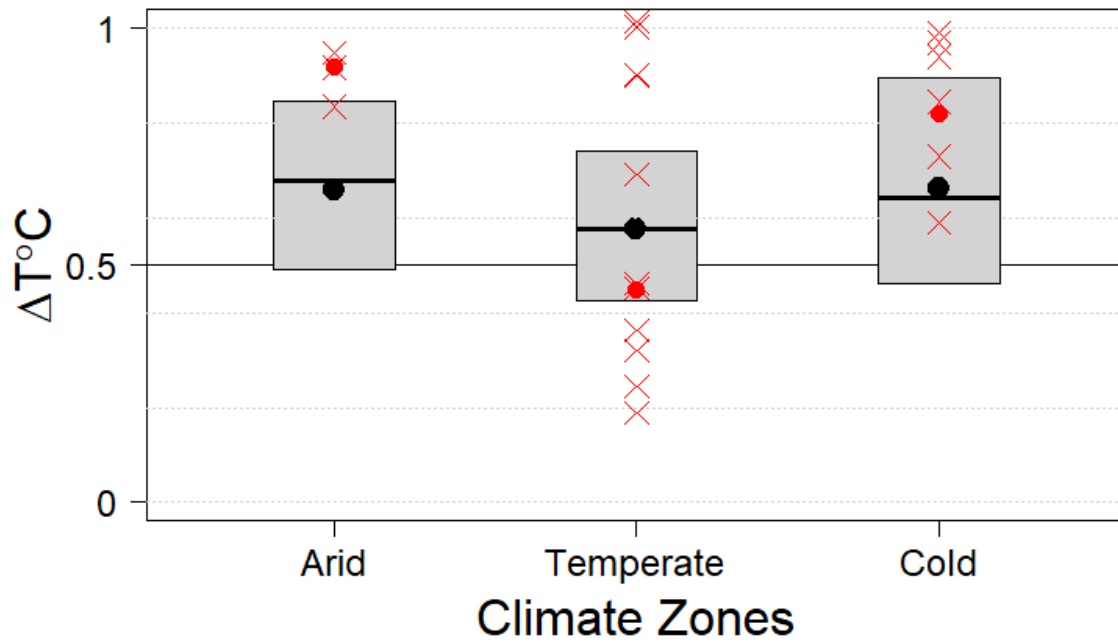
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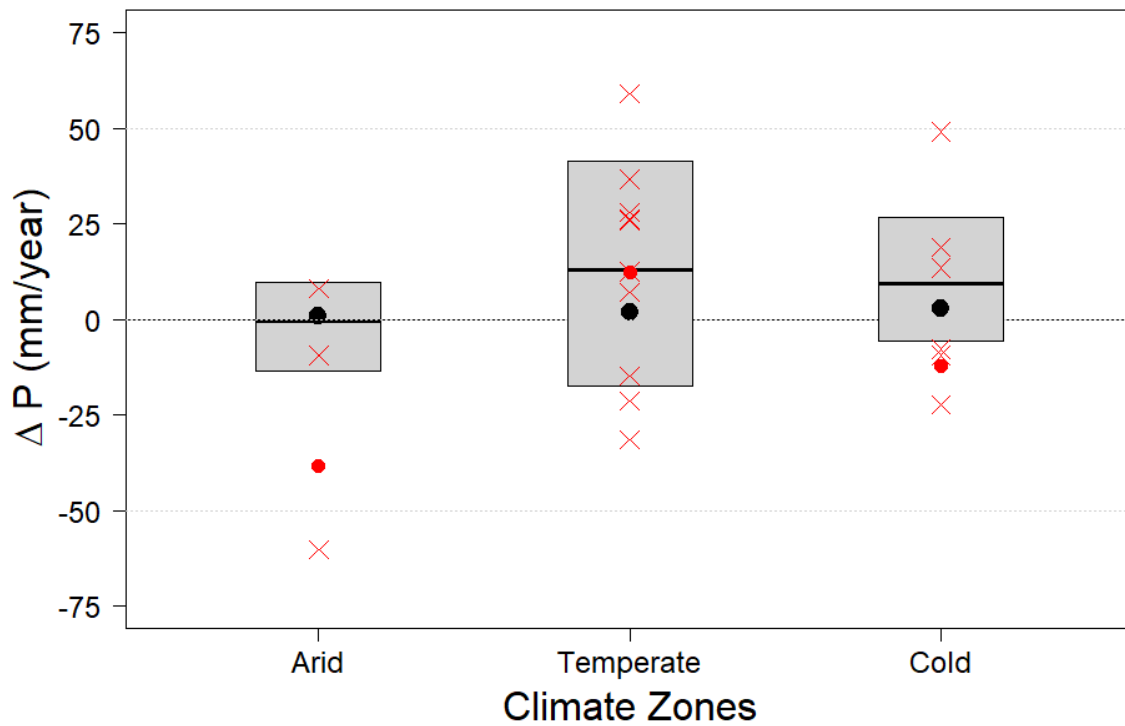
Fig. S5. Relative change in precipitation $\Delta P\%$. Boxplot showing $\Delta P\%$ for each climate zone and wetlandscapes between the period of 1976-1995 and 1996-2015. Mean $\Delta P\%$ for the climate zones are shown as white points and as red crosses for the wetlandscapes.

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113 **Fig. S6. Change in temperature ($\Delta T^{\circ}\text{C}$) for climate zone located in the north hemisphere.** Boxplot
114 (without whisker) showing the $\Delta T^{\circ}\text{C}$ for climate zone located in the north hemisphere between the periods
115 of 1976-1995 and 1996-2015. The $\Delta T^{\circ}\text{C}$ for each wetlandscape is shown as red crosses. Mean $\Delta T^{\circ}\text{C}$ for
116 the climate zones are shown as black points, while the red points show the mean $\Delta T^{\circ}\text{C}$ for the
117 wetlandscapes.

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 125 **Fig. S7. Change in precipitation ΔP (mm/year) of climate zones located in the north hemisphere.**
 126 *Boxplot showing ΔP (mm/years) for each climate zone located in the north hemisphere for the period*
 127 *between 1976-1995 and 1996-2015. The ΔP for each wetlandscape is presented as red crosses. Mean ΔP*
 128 *(mm/years) for the climate zones are shown as black points, while the red points show the mean ΔP*
 129 *(mm/years) for the wetlandscapes.*

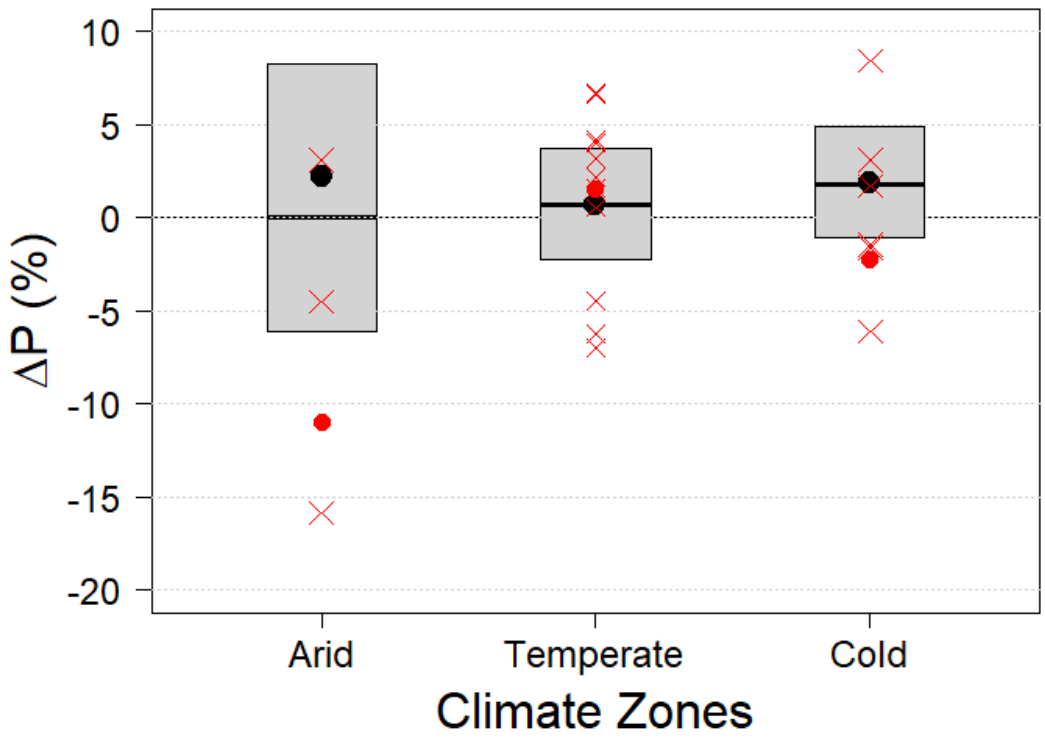
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137 **Fig. S8. Relative change in precipitation ($\Delta P\%$) of climate zones located in the north hemisphere.**
 138 *Boxplots show the relative ΔP in percent for each climate zone located in the north hemisphere for the*
 139 *periods between 1976-1995 and 1996-2015. The relative ΔP for each wetlandscape is presented as red*
 140 *crosses. Mean $\Delta P\%$ for the climate zones are shown as black points, while the red points show the mean*
 141 *$\Delta P\%$ for the wetlandscapes. For detailed boxplots with whiskers, see supplementary material.*

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145 **Table S1. Characteristics of the wetlandscapes.** Table showing the characteristics of the wetlandscapes
 146 in terms of wetland type and wetland area coverage of the wetlandscapes.

ID	Site name	Country	Wetland type	Area of wetlands relative to total catchment/wetland scape area (%)
1	Ciénaga Grande de Santa Marta	Colombia	Estuarine	0.77
2	Everglades	USA	Freshwater wetland, coastal wetland	32
3	Gatun Lake	Panama	Chagres River, lake	13
4	León–Atrato	Colombia	Marshes and swamps	17
5	Mekong	Vietnam	Marine	5
6	Pantanal	Brazil	Periodically inundated savanna	27
7	Shadegan	Iran	Palustrine, estuarine, marine	31
8	Lake Urmia	Iran	Lake	8.8
9	Zone Humide de Souss	Morocco	Marine and coastal	0.01
10	Anzali Mordab	Iran	Inland and marine/coastal wetland	4
11	Gialova Lagoon	Greece	Coastal wetland	13
12	Geographically isolated wetlands	USA	Freshwater marshes and swamps	30
13	Lagunas Plaza and Grande	Colombia	Glacial lake	4.4
14	Fúquene, Cucunubá y Palacio	Colombia	Natural shallow lake	1.7
15	Lower Mississippi River Delta Plain	USA	Riverine, marine, estuarine, Lacustrine	3.5
16	Páramo Sumapaz	Colombia	High-altitude wetland	46
17	Sacca Di Goro	Italy	Shallow saltwater coastal lagoon	4.2
18	Simpevarp	Sweden	Bogs, fens	0.01
19	Upper Lough Erne	Ireland	Flood plain/shallow lakes	22
20	Forsmark	Sweden	Bogs, fens, marshes, (shallow lakes)	0.01
21	Le Sueur	USA	Isolated, fluvial/riparian, lakes/ponds, marshes, forest/shrubs, constructed	5
22	Norrström	Sweden	Multiple	5
23	Tavvavuoma	Sweden	Peat plateau/thermokarst lake complex	2.8
24	Volga	Russia	Marshes (riverine, palustrine)	1
25	Selenga	Russia	Marshes (riverine, palustrine)	0.13

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167 **Table S2. Results of the Wilcoxon Rank Sum test at 95% confidence level.** Table showing resulting *p*-
 168 values from the Wilcoxon Rank Sum test at 95 % confidence level between two sample periods (period 1
 169 and period 2) for precipitation (*P*), temperature (*T*) and runoff (*R*) for each wetlandscape. Significant
 170 results ($p < 0.05$) are shown in bold.

<i>ID</i>	<i>Wetlandscapes</i>	<i>p-value (P)</i>	<i>p-value (T)</i>	<i>p-value (R)</i>
1	<i>Ciénaga Grande de Santa Marta</i>	0.232	0.038	
2	<i>Everglades</i>	0.149	0.013	
3	<i>Gatun Lake</i>	0.529	0.009	
4	<i>León-Atrato</i>	0.301	0.046	
5	<i>Mekong</i>	0.097	0.001	
6	<i>Pantanal</i>	0.478	0.000	0.00004
7	<i>Shadegan</i>	0.820	0.000	
8	<i>Lake Urmia</i>	0.006	0.000	0.217
9	<i>Zone Humide de Souss</i>	0.989	0.000	
10	<i>Anzali Mordab</i>	0.183	0.000	0.020
11	<i>Gialova Lagoon</i>	0.862	0.000	
12	<i>Geographically Isolated Wetlands of Florida</i>	0.639	0.049	0.221
13	<i>Lagunas Plaza and Grande</i>	0.583	0.002	
14	<i>Fúquene, Cucunúba Y Palacio</i>	0.201	0.023	
15	<i>Lower Mississippi River Delta Plain</i>	0.968	0.043	
16	<i>Páramo Sumapaz</i>	0.232	0.060	0.463
17	<i>Sacca Di goro</i>	0.301	0.000	
18	<i>Simpevarp</i>	0.242	0.001	
19	<i>Upper Lough Erne</i>	0.398	0.000	
20	<i>Forsmark</i>	0.718	0.001	
21	<i>Le Sueur</i>	0.947	0.043	0.429
22	<i>Norrström</i>	0.800	0.001	0.883
23	<i>Tavvavuoma</i>	0.091	0.002	
24	<i>Volga</i>	0.904	0.012	0.091
25	<i>Selenga</i>	0.149	0.002	0.274