Table S2a. Median, lower, and upper 95% highest density posterior distributions for model parameters and wetland basins. Model parameters included an intercept (α), an error term (σ), precipitation (βRAIN), an autoregression term (βAR1), total precipitation over the previous seven days (βWEEKRAIN), the 12-month standardized precipitation-evapotranspiration index (βSPEI), potential evapotranspiration (βPET), and associated interactions and quadratic effects.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | α | βAR1 | βRAIN | βRAIN:AR1 | βPET | βPET2 |
| 1 | 0.78 (-0.67, 2.17) | 0.94 (0.93, 0.96) | 6.65 (5.83, 7.40) | -0.29 (-0.32, -0.26) | -0.49 (-1.17, 0.17) | -0.02 (-0.10, 0.05) |
| 2 | 1.06 (0.06, 2.06) | 0.98 (0.97, 0.98) | 3.70 (3.19, 4.22) | -0.10 (-0.12, -0.08) | -0.60 (-1.06, -0.12) | 0.01 (-0.03, 0.06) |
| 3A | -0.12 (-1.34, 1.00) | 0.97 (0.96, 0.98) | 3.03 (2.64, 3.46) | -0.06 (-0.08, -0.04) | -0.24 (-0.78, 0.33) | -0.03 (-0.09, 0.03) |
| 3B | 0.04 (-0.85, 1.02) | 0.98 (0.97, 0.98) | 2.74 (2.37, 3.13) | -0.08 (-0.09, -0.06) | -0.15 (-0.58, 0.3) | -0.01 (-0.07, 0.02) |
| 4 | -0.94 (-2.31, 0.44) | 0.98 (0.97, 0.99) | 4.84 (4.28, 5.33) | -0.25 (-0.27, -0.23) | -0.13 (-0.79, 0.46) | -0.03 (-0.10, 0.03) |
| 5 | -0.68 (-2.43, 0.98) | 0.98 (0.97, 0.99) | 3.61 (2.82, 4.33) | -0.17 (-0.19, -0.15) | -0.25 (-1.00, 0.51) | -0.03 (-0.12, 0.04) |
| 7 | -1.75 (-3.21, -0.33) | 0.98 (0.97, 0.99) | 6.61 (5.70, 7.54) | -0.15 (-0.18, -0.13) | 0.33 (-0.33, 0.97) | -0.06 (-0.13, 0.01) |
| 10 | -0.54 (-2.19, 1.25) | 0.97 (0.96, 0.98) | 3.60 (2.24, 5.07) | -0.11 (-0.15, -0.07) | -0.55 (-1.31, 0.23) | 0.00 (-0.07, 0.09) |
| 12 | 0.73 (-0.41, 1.76) | 0.98 (0.97, 0.99) | 2.63 (2.27, 3.00) | -0.06 (-0.07, -0.05) | -0.55 (-1.07, -0.02) | 0.02 (-0.04, 0.08) |
| 13 | 1.47 (0.08, 2.82) | 0.95 (0.94, 0.96) | 3.06 (2.60, 3.57) | -0.08 (-0.1, -0.06) | -0.93 (-1.59, -0.29) | 0.03 (-0.04, 0.10) |
| 14 | 1.14 (-0.13, 2.44) | 0.98 (0.97, 0.99) | 2.62 (2.10, 3.13) | -0.05 (-0.07, -0.03) | -0.70 (-1.3, -0.09) | 0.03 (-0.02, 0.1) |
| 15 | 1.02 (0.05, 1.96) | 0.97 (0.96, 0.98) | 2.90 (2.45, 3.28) | -0.07 (-0.09, -0.05) | -0.63 (-1.09, -0.21) | 0.03 (-0.01, 0.08) |
| 16 | 1.28 (-0.27, 2.81) | 0.98 (0.97, 1.00) | 1.95 (1.14, 2.83) | -0.20 (-0.25, -0.14) | -0.89 (-1.57, -0.14) | 0.05 (-0.02, 0.12) |
| 19 | 0.45 (-0.13, 1.01) | 0.99 (0.99, 1.00) | 2.58 (2.35, 2.81) | -0.06 (-0.07, -0.05) | -0.5 (-0.78, -0.22) | 0.02 (0.00, 0.05) |
| 21 | 0.39 (-1.00, 1.77) | 0.97 (0.96, 0.98) | 3.01 (2.42, 3.64) | -0.18 (-0.22, -0.14) | -0.22 (-0.89, 0.44) | -0.02 (-0.09, 0.05) |
| 30A | -0.22 (-1.22, 0.77) | 0.98 (0.97, 0.99) | 4.04 (3.47, 4.61) | -0.27 (-0.31, -0.23) | 0.00 (-0.52, 0.46) | -0.04 (-0.01, 0.00) |
| 30B | 0.10 (-0.72, 0.93) | 0.99 (0.98, 0.99) | 5.15 (4.62, 5.69) | -0.25 (-0.28, -0.22) | -0.21 (-0.62, 0.16) | 0.00 (-0.05, 0.03) |
| 31 | 0.12 (-0.73, 0.91) | 0.99 (0.98, 1.00) | 5.21 (4.72, 5.70) | -0.20 (-0.22, -0.18) | -0.26 (-0.66, 0.10) | 0.00 (-0.04, 0.03) |
| 32 | 0.3 (-0.18, 0.77) | 0.98 (0.97, 0.98) | 1.43 (1.21, 1.64) | -0.04 (-0.05, -0.03) | -0.24 (-0.47, -0.02) | 0.00 (-0.02, 0.02) |
| 33 | 0.98 (-0.48, 2.46) | 0.97 (0.96, 0.98) | 3.14 (2.56, 3.68) | -0.07 (-0.09, -0.05) | -0.87 (-1.56, -0.12) | 0.02 (-0.06, 0.10) |
| 34 | 0.43 (-0.22, 1.05) | 1.00 (0.99, 1.00) | 2.60 (2.36, 2.85) | -0.05 (-0.06, -0.04) | -0.45 (-0.75, -0.14) | 0.02 (-0.01, 0.05) |
| 36 | 1.38 (0.14, 2.58) | 0.97 (0.96, 0.98) | 5.65 (4.99, 6.29) | -0.23 (-0.26, -0.20) | -0.93 (-1.5, -0.36) | 0.03 (-0.02, 0.10) |
| 40A | 0.31 (-0.41, 1.06) | 0.99 (0.98, 0.99) | 2.73 (2.44, 3.01) | -0.09 (-0.1, -0.07) | -0.30 (-0.64, 0.02) | 0.00 (-0.03, 0.04) |
| 40B | 0.68 (-0.39, 1.80) | 0.98 (0.97, 0.99) | 4.45 (3.88, 5.01) | -0.12 (-0.15, -0.10) | -0.57 (-1.11, -0.04) | 0.02 (-0.03, 0.08) |
| 41 | 1.03 (-0.42, 2.41) | 0.98 (0.97, 0.99) | 2.58 (2.04, 3.19) | -0.04 (-0.06, -0.02) | -0.54 (-1.19, 0.1) | 0.00 (-0.07, 0.07) |
| 49 | -1.11 (-2.22, -0.07) | 0.99 (0.98, 1.00) | 5.67 (5.05, 6.29) | -0.15 (-0.17, -0.13) | 0.33 (-0.12, 0.78) | -0.06 (-0.11, -0.02) |
| 50 | -0.24 (-1.32, 0.88) | 0.99 (0.98, 1.00) | 0.66 (0.21, 1.09) | -0.14 (-0.16, -0.12) | -0.03 (-0.54, 0.48) | -0.03 (-0.08, 0.02) |
| 51 | -1.14 (-2.73, 0.36) | 0.98 (0.98, 0.99) | 4.08 (3.32, 4.86) | -0.13 (-0.15, -0.11) | -0.2 (-0.89, 0.49) | -0.03 (-0.11, 0.04) |
| 52 | 1.54 (-0.93, 4.29) | 0.97 (0.96, 0.98) | 4.88 (3.70, 6.05) | -0.02 (-0.04, -0.01) | -1.82 (-2.96, -0.52) | 0.10 (-0.02, 0.24) |
| 53 | -0.51 (-1.54, 0.47) | 0.99 (0.98, 1.00) | 2.62 (2.22, 3.01) | -0.15 (-0.17, -0.12) | 0.02 (-0.45, 0.48) | -0.03 (-0.08, 0.01) |
| 107 | 1.09 (-0.50, 2.74) | 0.98 (0.97, 0.99) | 4.05 (3.18, 4.83) | -0.13 (-0.17, -0.1) | -0.87 (-1.6, -0.18) | 0.04 (-0.03, 0.12) |
| 112 | 0.87 (-0.20, 2.02) | 0.98 (0.98, 0.99) | 7.10 (6.55, 7.64) | -0.11 (-0.12, -0.1) | -0.54 (-1.06, -0.04) | 0.01 (-0.04, 0.07) |
| 202 | 0.53 (-0.34, 1.38) | 0.99 (0.98, 1.00) | 3.12 (2.69, 3.53) | -0.13 (-0.15, -0.11) | -0.34 (-0.75, 0.06) | 0.00 (-0.04, 0.04) |
| 212 | -0.86 (-2.57, 0.78) | 0.96 (0.95, 0.97) | 7.86 (6.88, 8.79) | -0.22 (-0.25, -0.18) | 0.00 (-0.75, 0.72) | -0.06 (-0.14, 0.01) |
| 215 | 1.69 (0.58, 2.78) | 0.97 (0.96, 0.98) | 5.83 (5.17, 6.46) | -0.05 (-0.07, -0.02) | -0.97 (-1.46, -0.43) | 0.05 (0.00, 0.11) |

Table S2b. Median, lower, and upper 95% highest density posterior distributions for model parameters and wetland basins. Model parameters included an intercept (α), an error term (σ), precipitation (βRAIN), an autoregression term (βAR1), total precipitation over the previous seven days (βWEEKRAIN), the 12-month standardized precipitation-evapotranspiration index (βSPEI), potential evapotranspiration (βPET), and associated interactions and quadratic effects.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | βWEEKRAIN | βSPEI | βSPEI:RAIN | βRAIN:AR1:SPEI | σ |
| 1 | 0.64 (0.5, 0.81) | -0.37 (-0.64, -0.09) | -0.68 (-1.21, -0.08) | 0.00 (-0.03, 0.01) | 5.36 (5.18, 5.56) |
| 2 | 0.46 (0.35, 0.57) | -0.18 (-0.38, 0.00) | 0.12 (-0.22, 0.44) | -0.01 (-0.02, 0.00) | 3.77 (3.63, 3.9) |
| 3A | 0.47 (0.34, 0.60) | -0.18 (-0.4, 0.02) | 0.47 (0.17, 0.77) | -0.02 (-0.03, 0.00) | 4.61 (4.47, 4.78) |
| 3B | 0.29 (0.20, 0.40) | -0.25 (-0.42, -0.08) | 0.34 (0.08, 0.60) | -0.02 (-0.03, 0.00) | 3.64 (3.53, 3.77) |
| 4 | 0.48 (0.33, 0.62) | 0.07 (-0.20, 0.36) | -0.57 (-0.99, -0.17) | 0.05 (0.03, 0.06) | 5.43 (5.25, 5.61) |
| 5 | 0.51 (0.33, 0.7) | 0.07 (-0.26, 0.46) | 0.11 (-0.4, 0.67) | 0.00 (-0.02, 0.00) | 6.50 (6.28, 6.74) |
| 7 | 0.33 (0.17, 0.49) | -0.15 (-0.52, 0.20) | -0.54 (-1.12, 0.00) | 0.04 (0.02, 0.05) | 5.6 (5.41, 5.81) |
| 10 | 0.52 (0.34, 0.69) | 0.24 (-0.26, 0.71) | 0.94 (-0.15, 1.98) | 0.02 (0.00, 0.05) | 4.81 (4.61, 5.07) |
| 12 | 0.28 (0.17, 0.39) | -0.14 (-0.35, 0.06) | 0.76 (0.50, 1.04) | -0.05 (-0.06, -0.04) | 3.94 (3.79, 4.07) |
| 13 | 0.47 (0.34, 0.6) | -0.06 (-0.30, 0.20) | -0.88 (-1.32, -0.43) | 0.05 (0.02, 0.07) | 4.84 (4.66, 5.01) |
| 14 | 0.29 (0.17, 0.4) | -0.13 (-0.36, 0.12) | -0.10 (-0.52, 0.29) | 0.00 (-0.01, 0.01) | 4.27 (4.1, 4.43) |
| 15 | 0.28 (0.18, 0.38) | -0.09 (-0.27, 0.07) | 0.64 (0.32, 0.92) | -0.03 (-0.05, -0.02) | 3.51 (3.39, 3.64) |
| 16 | 0.28 (0.07, 0.48) | -0.14 (-0.78, 0.46) | 3.71 (2.36, 4.97) | 0.07 (0.00, 0.14) | 4.25 (4.04, 4.47) |
| 19 | 0.26 (0.20, 0.32) | -0.02 (-0.14, 0.09) | 0.30 (0.14, 0.47) | 0.00 (-0.01, 0.00) | 2.21 (2.13, 2.29) |
| 21 | 0.14 (0.01, 0.27) | 0.20 (-0.09, 0.52) | -2.50 (-3.15, -1.83) | 0.16 (0.12, 0.2) | 4.38 (4.20, 4.57) |
| 30A | 0.25 (0.15, 0.35) | -0.03 (-0.29, 0.20) | -0.62 (-1.15, -0.13) | 0.07 (0.04, 0.11) | 3.34 (3.21, 3.47) |
| 30B | 0.29 (0.20, 0.38) | -0.16 (-0.32, 0.00) | 0.30 (-0.02, 0.64) | 0.00 (-0.02, 0.00) | 2.78 (2.68, 2.89) |
| 31 | 0.32 (0.23, 0.42) | 0.01 (-0.16, 0.19) | -0.26 (-0.83, 0.26) | 0.01 (0.00, 0.03) | 2.65 (2.54, 2.75) |
| 32 | 0.21 (0.15, 0.26) | -0.02 (-0.11, 0.06) | 0.12 (0, 0.26) | 0.00 (-0.01, 0.00) | 1.82 (1.76, 1.89) |
| 33 | 0.37 (0.21, 0.52) | -0.07 (-0.34, 0.19) | 0.51 (0.15, 0.89) | -0.02 (-0.04, -0.01) | 4.95 (4.77, 5.13) |
| 34 | 0.17 (0.11, 0.24) | 0.00 (-0.14, 0.13) | 0.83 (0.53, 1.1) | -0.02 (-0.03, -0.01) | 2.01 (1.93, 2.09) |
| 36 | 0.56 (0.42, 0.69) | -0.01 (-0.26, 0.25) | -0.86 (-1.48, -0.30) | 0.02 (0.00, 0.05) | 3.99 (3.82, 4.14) |
| 40A | 0.19 (0.12, 0.25) | -0.15 (-0.28, -0.01) | 0.82 (0.61, 1.04) | -0.03 (-0.04, -0.02) | 2.46 (2.37, 2.55) |
| 40B | 0.31 (0.2, 0.43) | -0.06 (-0.31, 0.18) | -0.48 (-1.12, 0.14) | 0.02 (0.00, 0.04) | 3.70 (3.55, 3.85) |
| 41 | 0.25 (0.13, 0.38) | 0.11 (-0.24, 0.44) | 1.21 (0.59, 1.79) | -0.04 (-0.06, -0.02) | 4.47 (4.3, 4.66) |
| 49 | 0.11 (0.01, 0.2) | 0.13 (-0.09, 0.35) | -0.36 (-0.74, 0.00) | 0.03 (0.01, 0.04) | 3.67 (3.54, 3.82) |
| 50 | 0.2 (0.10, 0.31) | 0.00 (-0.19, 0.23) | 0.63 (0.32, 0.98) | -0.02 (-0.03, -0.01) | 3.91 (3.77, 4.06) |
| 51 | 0.39 (0.25, 0.53) | 0.27 (-0.02, 0.58) | -0.25 (-0.79, 0.27) | 0.01 (0.00, 0.03) | 5.25 (5.05, 5.45) |
| 52 | 1.05 (0.79, 1.30) | -0.25 (-0.96, 0.44) | 1.45 (0.47, 2.39) | -0.02 (-0.03, -0.01) | 8.15 (7.78, 8.5) |
| 53 | 0.23 (0.13, 0.31) | 0.00 (-0.19, 0.19) | -0.03 (-0.30, 0.24) | 0.02 (0.01, 0.04) | 3.65 (3.53, 3.78) |
| 107 | 0.35 (0.21, 0.50) | -0.10 (-0.50, 0.32) | -0.79 (-1.36, -0.16) | 0.02 (0.00, 0.05) | 4.51 (4.31, 4.73) |
| 112 | 0.13 (0.03, 0.23) | -0.10 (-0.30, 0.09) | 0.65 (0.27, 1.03) | 0.00 (-0.01, 0.00) | 3.74 (3.61, 3.88) |
| 202 | 0.22 (0.14, 0.30) | -0.17 (-0.33, -0.01) | 0.59 (0.28, 0.91) | -0.03 (-0.04, -0.01) | 2.93 (2.83, 3.05) |
| 212 | 0.56 (0.40, 0.73) | 0.32 (-0.02, 0.69) | -0.68 (-1.4, 0.05) | 0.03 (0.01, 0.06) | 6.05 (5.82, 6.27) |
| 215 | 0.21 (0.08, 0.35) | -0.03 (-0.41, 0.35) | 1.41 (0.39, 2.49) | -0.05 (-0.09, -0.01) | 3.3 (3.14, 3.45) |