**S1 Table. The best fitting models predicting the probability of fire (500x500 m) for different variables based on the AIC**. Only the six best models based on AIC are shown. **Variables:** MAP=Mean Annual Precipitation (mm $yr^{-1}$); tree cover=tree cover (%); PWQ=Precipitation of Wettest Quarter (mm $yr^{-1}$); PDQ=Precipitation of Driest Quarter (mm $yr^{-1}$), std. precip. =standard deviation of annual precipitation (mm $yr^{-1}$), cv precip. =coefficient of variation of annual precipitation (mm $yr^{-1}$), MSI=Markham's seasonality index (-), TLU=Livestock density in number of livestock units ($km^{-2}$). **Area:** all = all tropic, SA = South America, AF = Africa and AU+AS = Australia and Asia. **Formula:** double Hill: $P_{fire}(T) = p_1 \frac{T^{p_3}}{T^{p_3}+p_2{}^{p_3}} \frac{p_4{}^{p_5}}{T^{p_5}+p_4{}^{p_5}}$, Hill function: $P_{fire}(T) = p_1 \frac{T^{p_3}}{T^{p_3}+p_2{}^{p_3}}$, inverse Hill function: $P_{fire}(T) = p_1 \frac{p_2{}^{p_3}}{T^{p_3}+p_2{}^{p_3}}$, logistic: $Pfire\ (T) = \frac{1}{1+\exp(-(p_2 T + p_1))}$, logistic optimum:
$Pfire\ (T) = \frac{1}{1+\exp(-(p_1 T^2 + p_2 T + p_3))}$. Parameters $p_1$–$p_5$ differ for each of these formulas, and are simply meant to describe empirical patterns.

| Variable | Area | Formula | p1 | p2 | p3 | p4 | p5 | AIC |
|---|---|---|---|---|---|---|---|---|
| MAP | all | logistic opt. | -7.2 | 0.0109 | -4.97E-06 | | | 10163 |
| tree cover | all | double Hill | 0.175 | 2.74 | 2.42 | 37.2 | 6.55 | 10596 |
| PWQ | all | logistic opt. | -7.63 | 0.0208 | -1.78E-05 | | | 10862 |
| MSI | all | double Hill | 0.31 | 67.3 | 3.62 | 82.3 | 114 | 11069 |
| PDQ | all | inverse Hill | 0.173 | 19.4 | 1.27 | | | 11138 |
| std precip | all | logistic opt. | -4.53 | 0.0258 | -6.90E-05 | | | 12030 |
| tree cover | SA | double Hill | 103 | 3.65 | 3.62 | 3.6533.4 | 3.56 | 1007 |
| MAP | SA | logistic opt. | -7.57 | 0.00649 | -2.48E-06 | | | 1043 |
| std precip | SA | logistic opt. | -9.14 | 0.0551 | -0.000133 | | | 1058 |
| PDQ | SA | Hill function | 0.02 | 146 | -4.8 | | | 1059 |
| TLU | SA | double Hill | 2210 | 32.9 | 3.46 | 0.756 | 2.86 | 1073 |
| MSI | SA | logistic opt. | -14.4 | 0.408 | -0.00383 | | | 1077 |
| MAP | AF | logistic opt. | -8.04 | 0.0135 | -6.19E-06 | | | 6633 |
| tree cover | AF | double Hill | 0.282 | 2.66 | 2.39 | 39.7 | 5.57 | 6762 |
| PWQ | AF | logistic opt. | -7.81 | 0.0221 | -1.82E-05 | | | 7084 |
| MSI | AF | double Hill | 0.215 | 38.5 | 11.9 | 82.5 | 116 | 7232 |
| cv precip | AF | double Hill | 0.252 | -0.0905 | 0.774 | 0.218 | 5.28 | 7315 |
| std precip | AF | double Hill | 3.63 | 127 | 7.31 | 48 | 2.22 | 7618 |
| MSI | AU+AS | logistic | -8.8 | 0.0973 | | | | 1676 |
| MAP | AU+AS | logistic opt. | -6.38 | 0.00861 | -3.73E-06 | | | 1755 |
| std precip | AU+AS | logistic opt. | -12.1 | 0.0793 | -1.51E-04 | | | 1772 |
| PDQ | AU+AS | Hill function | 0.193 | -10.4 | -1.64 | | | 1786 |
| PWQ | AU+AS | double Hill | 0.421 | 715 | 2.13 | 785 | 7.63 | 1845 |
| tree cover | AU+AS | double Hill | 0.117 | 2.66 | 2.48E+00 | 24.1 | 4.18 | 1899 |