Probability of occurrance

Call:

model.avg(object = Morn\_mod)

Component model call:

lme.formula(fixed = <10 unique values>, data = Occurrance2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

2 4 -1590.85 3189.71 0.00 0.96

12 5 -1593.10 3196.22 6.51 0.04

24 5 -1594.82 3199.66 9.95 0.01

124 6 -1596.83 3205.69 15.98 0.00

234 6 -1599.43 3210.88 21.17 0.00

1 4 -1602.23 3212.47 22.75 0.00

4 4 -1603.96 3215.94 26.23 0.00

14 5 -1605.65 3221.33 31.61 0.00

12346 8 -1607.75 3231.54 41.83 0.00

123456 9 -1610.41 3238.87 49.16 0.00

Term codes:

Denning Moonlight\_before Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5 6

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 7.995e-01 3.335e-02 3.336e-02 23.967 <2e-16 \*\*\*

Moonlight\_before -9.713e-03 1.784e-03 1.784e-03 5.443 1e-07 \*\*\*

Denningyes 9.522e-04 6.720e-03 6.721e-03 0.142 0.887

Temperature 3.064e-05 4.730e-04 4.731e-04 0.065 0.948

Rainfall -4.857e-08 1.200e-05 1.200e-05 0.004 0.997

Rainfall:Temperature 1.680e-13 2.088e-08 2.089e-08 0.000 1.000

Denningyes:Temperature -3.312e-13 9.627e-08 9.628e-08 0.000 1.000

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 0.7995404 0.0333490 0.0333603 23.967 <2e-16 \*\*\*

Moonlight\_before -0.0097136 0.0017834 0.0017841 5.445 1e-07 \*\*\*

Denningyes 0.0255411 0.0241505 0.0241596 1.057 0.290

Temperature 0.0043973 0.0035920 0.0035934 1.224 0.221

Rainfall -0.0020087 0.0013844 0.0013849 1.450 0.147

Rainfall:Temperature 0.0002072 0.0007035 0.0007037 0.294 0.768

Denningyes:Temperature -0.0163731 0.0137860 0.0137912 1.187 0.235

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Call:

model.avg(object = Day\_mod)

Component model call:

lme.formula(fixed = <7 unique values>, data = Occurrance2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

1 4 -617.70 1243.42 0.00 0.85

3 4 -619.43 1246.87 3.46 0.15

13 5 -622.42 1254.86 11.44 0.00

23 5 -625.16 1260.35 16.93 0.00

134 6 -626.02 1264.06 20.65 0.00

1234 7 -631.75 1277.54 34.12 0.00

1235 7 -634.33 1282.69 39.28 0.00

Term codes:

Denning Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 1.358e-01 4.397e-02 4.398e-02 3.087 0.00202 \*\*

Denningyes 8.688e-03 1.696e-02 1.697e-02 0.512 0.60861

Temperature -3.364e-04 1.308e-03 1.308e-03 0.257 0.79705

Rainfall 1.248e-07 1.658e-05 1.659e-05 0.008 0.99400

Denningyes:Temperature -1.056e-07 5.740e-05 5.742e-05 0.002 0.99853

Rainfall:Temperature 1.257e-12 3.622e-08 3.622e-08 0.000 0.99997

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 0.1357687 0.0439668 0.0439791 3.087 0.00202 \*\*

Denningyes 0.0102278 0.0179691 0.0179759 0.569 0.56937

Temperature -0.0021935 0.0026608 0.0026618 0.824 0.40992

Rainfall 0.0006988 0.0010253 0.0010257 0.681 0.49567

Denningyes:Temperature -0.0037917 0.0101929 0.0101967 0.372 0.71000

Rainfall:Temperature 0.0005015 0.0005215 0.0005217 0.961 0.33633

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Call:

model.avg(object = Even\_mod)

Component model call:

lme.formula(fixed = <10 unique values>, data = Occurrance2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

24 5 -1839.18 3688.38 0.00 0.90

124 6 -1840.67 3693.36 4.98 0.07

2 4 -1843.90 3695.81 7.44 0.02

12 5 -1844.24 3698.49 10.12 0.01

234 6 -1844.73 3701.49 13.11 0.00

4 4 -1846.91 3701.84 13.46 0.00

14 5 -1848.05 3706.12 17.75 0.00

1 4 -1851.01 3710.04 21.66 0.00

12346 8 -1852.48 3721.00 32.62 0.00

123456 9 -1855.67 3729.40 41.02 0.00

Term codes:

Denning Moonlight Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5 6

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 1.217e+00 1.329e-01 1.329e-01 9.154 < 2e-16 \*\*\*

Temperature -1.620e-02 4.689e-03 4.690e-03 3.454 0.000552 \*\*\*

Moonlight -9.809e-03 1.950e-03 1.951e-03 5.028 5e-07 \*\*\*

Denningyes 3.407e-03 1.379e-02 1.379e-02 0.247 0.804859

Rainfall -5.333e-07 5.551e-05 5.553e-05 0.010 0.992337

Rainfall:Temperature 7.207e-12 2.095e-07 2.096e-07 0.000 0.999973

Denningyes:Temperature 7.273e-12 5.413e-07 5.414e-07 0.000 0.999989

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 1.217e+00 1.329e-01 1.329e-01 9.154 < 2e-16 \*\*\*

Temperature -1.666e-02 3.871e-03 3.872e-03 4.302 1.69e-05 \*\*\*

Moonlight -9.821e-03 1.921e-03 1.922e-03 5.110 3.00e-07 \*\*\*

Denningyes 4.260e-02 2.660e-02 2.661e-02 1.601 0.109

Rainfall -4.183e-04 1.497e-03 1.498e-03 0.279 0.780

Rainfall:Temperature 9.614e-05 7.592e-04 7.594e-04 0.127 0.899

Denningyes:Temperature 6.555e-03 1.487e-02 1.487e-02 0.441 0.659

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Moonlight Temperature Denning Rainfall Rainfall:Temperature Denning:Temperature

Importance: 1 0.97 0.08 <0.01 <0.01 <0.01

N containing models: 7 7 6 3 2 1

Call:

model.avg(object = Night\_mod)

Component model call:

lme.formula(fixed = <10 unique values>, data = Occurrance2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

24 5 -1824.95 3659.92 0.00 0.84

124 6 -1825.64 3663.30 3.38 0.16

234 6 -1829.01 3670.04 10.13 0.01

12346 8 -1832.44 3680.93 21.02 0.00

123456 9 -1834.60 3687.25 27.33 0.00

12 5 -1849.25 3708.51 48.60 0.00

2 4 -1851.35 3710.70 50.79 0.00

4 4 -1976.08 3960.18 300.26 0.00

14 5 -1975.20 3960.42 300.50 0.00

1 4 -1993.21 3994.43 334.51 0.00

Term codes:

Denning Moonlight Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5 6

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) -6.794e-01 1.104e-01 1.104e-01 6.152 <2e-16 \*\*\*

Temperature 3.033e-02 3.868e-03 3.869e-03 7.839 <2e-16 \*\*\*

Moonlight 3.464e-02 1.913e-03 1.914e-03 18.095 <2e-16 \*\*\*

Denningyes -8.220e-03 2.179e-02 2.179e-02 0.377 0.706

Rainfall -1.259e-05 3.431e-04 3.431e-04 0.037 0.971

Rainfall:Temperature -4.765e-08 1.042e-05 1.042e-05 0.005 0.996

Denningyes:Temperature -2.181e-08 2.647e-05 2.647e-05 0.001 0.999

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) -0.6793839 0.1103939 0.1104347 6.152 <2e-16 \*\*\*

Temperature 0.0303312 0.0038680 0.0038694 7.839 <2e-16 \*\*\*

Moonlight 0.0346368 0.0019135 0.0019142 18.095 <2e-16 \*\*\*

Denningyes -0.0530163 0.0262316 0.0262414 2.020 0.0433 \*

Rainfall -0.0023609 0.0040643 0.0040647 0.581 0.5614

Rainfall:Temperature -0.0019929 0.0007547 0.0007550 2.639 0.0083 \*\*

Denningyes:Temperature -0.0223641 0.0147707 0.0147762 1.514 0.1301

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Moonlight Temperature Denning Rainfall Rainfall:Temperature Denning:Temperature

Importance: 1 1 0.16 0.01 <0.01 <0.01

N containing models: 7 7 6 3 2 1

# Morning

Call:

model.avg(object = Morn\_dur)

Component model call:

lme.formula(fixed = <10 unique values>, data = Morning2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

123456 9 -14462.70 28943.46 0.00 0.58

14 5 -14467.65 28945.33 1.87 0.23

1 4 -14469.57 28947.16 3.70 0.09

124 6 -14467.94 28947.90 4.45 0.06

12 5 -14469.84 28949.71 6.25 0.03

12346 8 -14467.03 28950.12 6.67 0.02

4 4 -14482.75 28973.52 30.06 0.00

234 6 -14481.52 28975.07 31.61 0.00

24 5 -14483.04 28976.10 32.64 0.00

2 4 -14486.81 28981.64 38.18 0.00

Term codes:

Denning Moonlight\_before Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5 6

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 220.05701 21.27025 21.27657 10.343 <2e-16 \*\*\*

Temperature -1.17705 0.76449 0.76471 1.539 0.124

Rainfall -1.77208 2.95912 2.96016 0.599 0.549

Moonlight\_before 0.03734 0.24803 0.24814 0.150 0.880

DenningYes -57.48211 79.88222 79.89365 0.719 0.472

Rainfall:Temperature 0.07629 0.11455 0.11459 0.666 0.506

DenningYes:Temperature 2.88446 2.97957 2.98000 0.968 0.333

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 220.05701 21.27025 21.27657 10.343 <2e-16 \*\*\*

Temperature -1.33111 0.67518 0.67546 1.971 0.0488 \*

Rainfall -2.97430 3.33485 3.33639 0.891 0.3727

Moonlight\_before 0.05464 0.29845 0.29859 0.183 0.8548

DenningYes -57.48213 79.88222 79.89365 0.719 0.4718

Rainfall:Temperature 0.12805 0.12408 0.12414 1.031 0.3023

DenningYes:Temperature 5.01417 2.18036 2.18137 2.299 0.0215 \*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Denning Temperature Moonlight\_before Rainfall Rainfall:Temperature Denning:Temperature

Importance: 1.00 0.88 0.68 0.60 0.60 0.58

N containing models: 6 7 7 3 2 1

|  |
| --- |
| Call:  model.avg(object = Morn\_int)  Component model call:  lme.formula(fixed = <10 unique values>, data = Morning2, random = ~1 | ID, na.action = na.exclude)  Component models:  df logLik AICc delta weight  14 5 -10198.06 20406.14 0.00 0.43  1 4 -10199.14 20406.30 0.17 0.40  4 4 -10200.50 20409.01 2.87 0.10  124 6 -10199.76 20411.54 5.40 0.03  12 5 -10200.92 20411.87 5.73 0.02  24 5 -10202.16 20414.34 8.20 0.01  2 4 -10204.06 20416.13 9.99 0.00  234 6 -10204.33 20420.70 14.56 0.00  12346 8 -10204.39 20424.83 18.69 0.00  123456 9 -10204.30 20426.67 20.53 0.00  Term codes:  Denning Moonlight\_before Rainfall Temperature Denning:Temperature Rainfall:Temperature  1 2 3 4 5 6  Model-averaged coefficients:  (full average)  Estimate Std. Error Adjusted SE z value Pr(>|z|)  (Intercept) 5.143e+01 4.646e+00 4.646e+00 11.070 <2e-16 \*\*\*  Temperature -1.503e-01 1.582e-01 1.582e-01 0.950 0.342  DenningYes 1.383e+00 8.766e-01 8.768e-01 1.577 0.115  Moonlight\_before -2.322e-03 1.730e-02 1.730e-02 0.134 0.893  Rainfall 2.935e-05 6.212e-03 6.214e-03 0.005 0.996  Rainfall:Temperature -1.058e-06 2.293e-04 2.293e-04 0.005 0.996  DenningYes:Temperature -9.953e-07 1.691e-03 1.692e-03 0.001 1.000    (conditional average)  Estimate Std. Error Adjusted SE z value Pr(>|z|)  (Intercept) 51.43383 4.64557 4.64642 11.070 <2e-16 \*\*\*  Temperature -0.26216 0.11960 0.11966 2.191 0.0285 \*  DenningYes 1.56003 0.76847 0.76882 2.029 0.0424 \*  Moonlight\_before -0.03615 0.05860 0.05863 0.616 0.5376  Rainfall 0.08353 0.32069 0.32079 0.260 0.7946  Rainfall:Temperature -0.02000 0.02436 0.02437 0.821 0.4119  DenningYes:Temperature -0.06599 0.43042 0.43062 0.153 0.8782  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Relative variable importance:  Denning Temperature Moonlight\_before Rainfall Rainfall:Temperature Denning:Temperature  Importance: 0.89 0.57 0.06 <0.01 <0.01 <0.01  N containing models: 6 7 7 3 2 1 |
|  |
| |  | | --- | | > | |

Start

Component model call:

lme.formula(fixed = <10 unique values>, data = Morning2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

14 5 7085.74 -14161.46 0.00 0.99

1 4 7080.02 -14152.02 9.44 0.01

4 4 7078.79 -14149.57 11.89 0.00

124 6 7078.72 -14145.41 16.05 0.00

12 5 7072.50 -14134.97 26.49 0.00

24 5 7071.54 -14133.05 28.41 0.00

2 4 7068.99 -14129.97 31.49 0.00

234 6 7062.99 -14113.94 47.52 0.00

12346 8 7060.84 -14105.63 55.83 0.00

123456 9 7054.88 -14091.69 69.77 0.00

Term codes:

Denning Moonlight\_before Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5 6

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 2.720e-01 5.250e-03 5.252e-03 51.791 <2e-16 \*\*\*

Temperature -8.599e-04 1.841e-04 1.842e-04 4.668 3e-06 \*\*\*

DenningYes -5.385e-03 1.099e-03 1.099e-03 4.898 1e-06 \*\*\*

Moonlight\_before -4.580e-08 2.934e-06 2.935e-06 0.016 0.988

Rainfall 1.904e-15 9.434e-10 9.438e-10 0.000 1.000

Rainfall:Temperature 1.399e-19 2.937e-11 2.939e-11 0.000 1.000

DenningYes:Temperature -4.334e-19 2.284e-11 2.284e-11 0.000 1.000

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 2.720e-01 5.250e-03 5.252e-03 51.791 <2e-16 \*\*\*

Temperature -8.676e-04 1.660e-04 1.661e-04 5.223 2e-07 \*\*\*

DenningYes -5.399e-03 1.065e-03 1.066e-03 5.065 4e-07 \*\*\*

Moonlight\_before -1.403e-04 8.185e-05 8.189e-05 1.713 0.0867 .

Rainfall 3.951e-05 1.300e-04 1.301e-04 0.304 0.7613

Rainfall:Temperature 1.881e-07 3.406e-05 3.408e-05 0.006 0.9956

DenningYes:Temperature -6.212e-04 6.015e-04 6.017e-04 1.032 0.3019

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Denning Temperature Moonlight\_before Rainfall Rainfall:Temperature Denning:Temperature

Importance: 1 0.99 <0.01 <0.01 <0.01 <0.01

N containing models: 6 7 7 3 2 1

Call:

model.avg(object = Morn\_stop)

Component model call:

lme.formula(fixed = <10 unique values>, data = Morning2, random = ~1 | ID, na.action = na.exclude)

Component models:

df logLik AICc delta weight

4 4 4794.00 -9579.99 0.00 0.43

14 5 4794.59 -9579.16 0.82 0.29

1 4 4793.56 -9579.10 0.89 0.28

24 5 4786.65 -9563.27 16.72 0.00

124 6 4787.17 -9562.32 17.67 0.00

12 5 4786.02 -9562.01 17.98 0.00

2 4 4782.95 -9557.88 22.11 0.00

234 6 4781.88 -9551.73 28.25 0.00

12346 8 4774.48 -9532.91 47.08 0.00

123456 9 4770.66 -9523.25 56.73 0.00

Term codes:

Denning Moonlight\_before Rainfall Temperature Denning:Temperature Rainfall:Temperature

1 2 3 4 5 6

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 4.131e-01 2.366e-02 2.366e-02 17.463 <2e-16 \*\*\*

Temperature -1.236e-03 8.405e-04 8.405e-04 1.470 0.142

DenningYes 5.272e-03 5.032e-03 5.032e-03 1.048 0.295

Moonlight\_before -2.721e-08 3.486e-06 3.487e-06 0.008 0.994

Rainfall 1.203e-10 2.305e-07 2.305e-07 0.001 1.000

Rainfall:Temperature 2.445e-15 6.343e-10 6.344e-10 0.000 1.000

DenningYes:Temperature 5.678e-16 1.406e-09 1.407e-09 0.000 1.000

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 4.131e-01 2.366e-02 2.366e-02 17.463 < 2e-16 \*\*\*

Temperature -1.711e-03 4.054e-04 4.055e-04 4.220 2.44e-05 \*\*\*

DenningYes 9.322e-03 2.649e-03 2.650e-03 3.518 0.000435 \*\*\*

Moonlight\_before -1.202e-04 1.980e-04 1.981e-04 0.607 0.544048

Rainfall 3.783e-04 1.547e-04 1.548e-04 2.444 0.014506 \*

Rainfall:Temperature 9.356e-05 8.150e-05 8.154e-05 1.147 0.251198

DenningYes:Temperature 2.730e-03 1.435e-03 1.435e-03 1.902 0.057169 .

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Temperature Denning Moonlight\_before Rainfall Rainfall:Temperature Denning:Temperature

Importance: 0.72 0.57 <0.01 <0.01 <0.01 <0.01

N containing models: 7 6 7 3 2 1

# Evening

|  |
| --- |
| Call:  model.avg(object = Evening\_dur)  Component model call:  lme.formula(fixed = <10 unique values>, data = Evening2, random = ~1 | ID, na.action =  na.exclude)  Component models:  df logLik AICc delta weight  1235 7 -12677.46 25368.96 0.00 0.80  1234567 10 -12676.08 25372.26 3.30 0.15  123457 9 -12678.31 25374.70 5.74 0.05  235 6 -12696.22 25404.47 35.51 0.00  2345 7 -12695.51 25405.06 36.10 0.00  123 6 -12701.39 25414.81 45.85 0.00  15 5 -12710.74 25431.50 62.54 0.00  23 5 -12726.85 25463.73 94.77 0.00  1 4 -12730.65 25469.32 100.36 0.00  5 4 -12731.86 25471.74 102.79 0.00  Term codes:  Denning Moonlight Moonrise\_sun Rainfall Temperature  1 2 3 4 5  Denning:Temperature Rainfall:Temperature  6 7  Model-averaged coefficients:  (full average)  Estimate Std. Error Adjusted SE z value Pr(>|z|)  (Intercept) 226.494573 12.533706 12.539881 18.062 <2e-16 \*\*\*  Temperature -3.010965 0.443603 0.443821 6.784 <2e-16 \*\*\*  Moonlight -1.843667 0.219071 0.219179 8.412 <2e-16 \*\*\*  Moonrise\_sun -0.006336 0.114749 0.114805 0.055 0.956  DenningYes 7.432989 25.564484 25.569651 0.291 0.771  Rainfall -0.014220 0.995420 0.995912 0.014 0.989  Rainfall:Temperature 0.002697 0.037970 0.037988 0.071 0.943  DenningYes:Temperature 0.313894 0.951435 0.951624 0.330 0.742    (conditional average)  Estimate Std. Error Adjusted SE z value Pr(>|z|)  (Intercept) 226.494573 12.533706 12.539881 18.062 <2e-16 \*\*\*  Temperature -3.010965 0.443603 0.443821 6.784 <2e-16 \*\*\*  Moonlight -1.843667 0.219071 0.219179 8.412 <2e-16 \*\*\*  Moonrise\_sun -0.006336 0.114749 0.114805 0.055 0.956  DenningYes 7.432989 25.564484 25.569651 0.291 0.771  Rainfall -0.071344 2.228704 2.229807 0.032 0.974  Rainfall:Temperature 0.013533 0.084181 0.084223 0.161 0.872  DenningYes:Temperature 2.039534 1.536959 1.537720 1.326 0.185  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Relative variable importance:  Moonlight Moonrise\_sun Temperature Denning Rainfall Rainfall:Temperature  Importance: 1.00 1.00 1.00 1.00 0.20 0.20  N containing models: 7 7 7 6 3 2  Denning:Temperature  Importance: 0.15  N containing models: 1 |
|  |
| |  | | --- | | > | |

Call:

model.avg(object = Evening\_Intensity)

Component model call:

lme.formula(fixed = <10 unique values>, data = Evening2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

15 5 -9587.98 19185.98 0.00 0.55

1235 7 -9586.54 19187.13 1.15 0.31

123457 9 -9586.01 19190.08 4.10 0.07

1234567 10 -9585.05 19190.19 4.20 0.07

1 4 -9607.88 19223.78 37.79 0.00

123 6 -9607.89 19227.81 41.83 0.00

235 6 -9620.61 19253.26 67.28 0.00

2345 7 -9620.11 19254.27 68.29 0.00

5 4 -9623.61 19255.24 69.26 0.00

23 5 -9650.23 19310.49 124.51 0.00

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 62.982890 3.794458 3.796200 16.591 <2e-16 \*\*\*

Temperature -0.828668 0.128431 0.128491 6.449 <2e-16 \*\*\*

DenningYes 7.497329 4.948398 4.949382 1.515 0.130

Moonlight -0.095304 0.113524 0.113532 0.839 0.401

Moonrise\_sun -0.002572 0.022091 0.022102 0.116 0.907

Rainfall -0.195872 0.542573 0.542624 0.361 0.718

Rainfall:Temperature 0.007966 0.021779 0.021781 0.366 0.715

DenningYes:Temperature -0.038835 0.183825 0.183860 0.211 0.833

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 62.982890 3.794458 3.796200 16.591 < 2e-16 \*\*\*

Temperature -0.828668 0.128430 0.128491 6.449 < 2e-16 \*\*\*

DenningYes 7.497329 4.948398 4.949382 1.515 0.129823

Moonlight -0.212285 0.062237 0.062268 3.409 0.000651 \*\*\*

Moonrise\_sun -0.005729 0.032695 0.032711 0.175 0.860980

Rainfall -1.416138 0.632705 0.633018 2.237 0.025278 \*

Rainfall:Temperature 0.057593 0.023899 0.023911 2.409 0.016010 \*

DenningYes:Temperature -0.576225 0.437881 0.438098 1.315 0.188413

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Denning Temperature Moonlight Moonrise\_sun Rainfall Rainfall:Temperature

Importance: 1.00 1.00 0.45 0.45 0.14 0.14

N containing models: 6 7 7 7 3 2

Denning:Temperature

Importance: 0.07

N containing models: 1

Call:

model.avg(object = Evening\_start)

Component model call:

lme.formula(fixed = <10 unique values>, data = Evening2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

1235 7 6089.15 -12164.26 0.00 0.9

15 5 6084.90 -12159.78 4.48 0.1

235 6 6079.39 -12146.75 17.51 0.0

2345 7 6077.13 -12140.22 24.04 0.0

5 4 6073.28 -12138.53 25.73 0.0

123457 9 6077.74 -12137.42 26.85 0.0

1234567 10 6074.51 -12128.94 35.33 0.0

1 4 6034.40 -12060.78 103.48 0.0

123 6 6033.45 -12054.87 109.40 0.0

23 5 6013.91 -12017.80 146.46 0.0

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 6.555e-01 6.315e-03 6.318e-03 103.756 < 2e-16 \*\*\*

Temperature 2.430e-03 2.157e-04 2.158e-04 11.260 < 2e-16 \*\*\*

Moonlight 6.374e-04 2.317e-04 2.317e-04 2.751 0.00594 \*\*

Moonrise\_sun -1.275e-06 5.360e-05 5.363e-05 0.024 0.98104

DenningYes -7.509e-03 1.350e-03 1.350e-03 5.561 < 2e-16 \*\*\*

Rainfall -2.271e-09 1.581e-06 1.581e-06 0.001 0.99885

Rainfall:Temperature 1.429e-11 4.964e-08 4.967e-08 0.000 0.99977

DenningYes:Temperature -3.589e-11 2.790e-07 2.790e-07 0.000 0.99990

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 6.555e-01 6.315e-03 6.318e-03 103.756 <2e-16 \*\*\*

Temperature 2.430e-03 2.157e-04 2.158e-04 11.260 <2e-16 \*\*\*

Moonlight 7.051e-04 1.076e-04 1.077e-04 6.548 <2e-16 \*\*\*

Moonrise\_sun -1.410e-06 5.638e-05 5.641e-05 0.025 0.9801

DenningYes -7.510e-03 1.347e-03 1.347e-03 5.575 <2e-16 \*\*\*

Rainfall -3.345e-04 5.060e-04 5.063e-04 0.661 0.5088

Rainfall:Temperature 1.053e-05 4.129e-05 4.131e-05 0.255 0.7989

DenningYes:Temperature -1.862e-03 7.552e-04 7.556e-04 2.465 0.0137 \*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Temperature Denning Moonlight Moonrise\_sun Rainfall Rainfall:Temperature

Importance: 1 1 0.9 0.9 <0.01 <0.01

N containing models: 7 6 7 7 3 2

Denning:Temperature

Importance: <0.01

N containing models: 1

Call:

model.avg(object = Evening\_stop)

Component model call:

lme.formula(fixed = <10 unique values>, data = Evening2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

1 4 6057.25 -12106.48 0.00 0.54

23 5 6058.04 -12106.05 0.43 0.43

5 4 6053.96 -12099.90 6.58 0.02

123 6 6054.71 -12097.39 9.09 0.01

15 5 6051.98 -12093.93 12.55 0.00

235 6 6051.53 -12091.03 15.44 0.00

1235 7 6048.80 -12083.56 22.92 0.00

2345 7 6043.57 -12073.10 33.37 0.00

123457 9 6031.83 -12045.59 60.88 0.00

1234567 10 6025.66 -12031.23 75.24 0.00

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 8.210e-01 2.368e-03 2.368e-03 346.637 <2e-16 \*\*\*

DenningYes 1.782e-03 1.904e-03 1.904e-03 0.936 0.349

Moonlight -2.659e-04 3.082e-04 3.082e-04 0.863 0.388

Moonrise\_sun -3.052e-06 3.837e-05 3.839e-05 0.079 0.937

Temperature 7.931e-06 6.212e-05 6.213e-05 0.128 0.898

Rainfall -2.569e-12 2.029e-08 2.030e-08 0.000 1.000

Rainfall:Temperature 7.241e-19 8.596e-12 8.600e-12 0.000 1.000

DenningYes:Temperature -7.669e-21 4.110e-12 4.112e-12 0.000 1.000

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 8.210e-01 2.368e-03 2.368e-03 346.637 <2e-16 \*\*\*

DenningYes 3.271e-03 1.335e-03 1.335e-03 2.449 0.0143 \*

Moonlight -6.032e-04 1.096e-04 1.096e-04 5.501 <2e-16 \*\*\*

Moonrise\_sun -6.923e-06 5.756e-05 5.758e-05 0.120 0.9043

Temperature 3.718e-04 2.137e-04 2.138e-04 1.739 0.0820 .

Rainfall -8.433e-05 8.006e-05 8.010e-05 1.053 0.2924

Rainfall:Temperature 2.234e-05 4.220e-05 4.222e-05 0.529 0.5967

DenningYes:Temperature -3.111e-04 7.671e-04 7.675e-04 0.405 0.6852

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Denning Moonlight Moonrise\_sun Temperature Rainfall Rainfall:Temperature

Importance: 0.54 0.44 0.44 0.02 <0.01 <0.01

N containing models: 6 7 7 7 3 2

Denning:Temperature

Importance: <0.01

N containing models: 1

# Night

Call:

model.avg(object = Night\_dur)

Component model call:

lme.formula(fixed = <10 unique values>, data = Night2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

1234567 10 -8261.37 16542.93 0.00 1

123457 9 -8268.58 16555.32 12.39 0

1235 7 -8272.10 16558.30 15.37 0

123 6 -8274.95 16561.97 19.03 0

2345 7 -8275.26 16564.62 21.69 0

235 6 -8277.33 16566.75 23.81 0

23 5 -8280.23 16570.51 27.58 0

15 5 -8283.89 16577.84 34.91 0

1 4 -8286.81 16581.65 38.71 0

5 4 -8289.15 16586.34 43.40 0

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 226.2786 203.6213 203.8467 1.110 0.266981

Temperature 0.3429 7.1093 7.1172 0.048 0.961573

Rainfall -18.3648 42.1832 42.2299 0.435 0.663652

Moonlight 10.5927 3.1977 3.2013 3.309 0.000937 \*\*\*

Moonrise\_sun 4.4938 2.0278 2.0301 2.214 0.026857 \*

DenningYes 2046.4457 849.7164 850.6439 2.406 0.016139 \*

Rainfall:Temperature 0.7054 1.5682 1.5699 0.449 0.653210

DenningYes:Temperature -75.5084 31.9330 31.9679 2.362 0.018176 \*

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 226.2786 203.6213 203.8467 1.110 0.266981

Temperature 0.3429 7.1096 7.1174 0.048 0.961572

Rainfall -18.3747 42.1925 42.2392 0.435 0.663551

Moonlight 10.5927 3.1977 3.2013 3.309 0.000937 \*\*\*

Moonrise\_sun 4.4938 2.0278 2.0301 2.214 0.026857 \*

DenningYes 2046.5015 849.6608 850.5884 2.406 0.016129 \*

Rainfall:Temperature 0.7058 1.5685 1.5703 0.449 0.653101

DenningYes:Temperature -75.7050 31.7410 31.7762 2.382 0.017198 \*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Moonlight Moonrise\_sun Denning Temperature Rainfall Rainfall:Temperature

Importance: 1 1 1 1 1 1

N containing models: 7 7 6 7 3 2

Denning:Temperature

Importance: 1

N containing models: 1

Call:

model.avg(object = Night\_Intensity)

Component model call:

lme.formula(fixed = <10 unique values>, data = Night2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

1 4 -4705.36 9418.76 0.00 0.37

15 5 -4704.57 9419.20 0.44 0.30

123 6 -4704.74 9421.55 2.79 0.09

1235 7 -4703.77 9421.63 2.88 0.09

5 4 -4706.85 9421.74 2.98 0.08

23 5 -4706.76 9423.57 4.81 0.03

235 6 -4706.11 9424.30 5.54 0.02

2345 7 -4706.75 9427.60 8.84 0.00

1234567 10 -4704.19 9428.58 9.82 0.00

123457 9 -4705.73 9429.62 10.87 0.00

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 31.6184645 8.1606552 8.1650457 3.872 0.000108 \*\*\*

DenningYes 1.6403678 3.1899162 3.1924586 0.514 0.607374

Temperature 0.2056989 0.2794224 0.2795639 0.736 0.461862

Moonlight 0.0813204 0.1560784 0.1561073 0.521 0.602418

Moonrise\_sun 0.0140130 0.0471850 0.0472230 0.297 0.766664

Rainfall 0.0063393 0.1536348 0.1537258 0.041 0.967106

Rainfall:Temperature -0.0002795 0.0059301 0.0059334 0.047 0.962427

DenningYes:Temperature 0.0030469 0.0884942 0.0885500 0.034 0.972551

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 31.61846 8.16066 8.16505 3.872 0.000108 \*\*\*

DenningYes 1.91842 3.37149 3.37431 0.569 0.569670

Temperature 0.40909 0.26846 0.26875 1.522 0.127962

Moonlight 0.33065 0.12888 0.12902 2.563 0.010386 \*

Moonrise\_sun 0.05698 0.08127 0.08136 0.700 0.483733

Rainfall 0.71714 1.46984 1.47091 0.488 0.625872

Rainfall:Temperature -0.06402 0.06304 0.06311 1.014 0.310384

DenningYes:Temperature 1.11132 1.27463 1.27605 0.871 0.383806

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Denning Temperature Moonlight Moonrise\_sun Rainfall Rainfall:Temperature

Importance: 0.86 0.5 0.25 0.25 0.01 <0.01

N containing models: 6 7 7 7 3 2

Denning:Temperature

Importance: <0.01

N containing models: 1

Call:

model.avg(object = Night\_start)

Component model call:

lme.formula(fixed = <10 unique values>, data = Night2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

5 4 -623.59 1255.21 0.00 0.75

1 4 -625.59 1259.21 4.00 0.10

15 5 -625.18 1260.42 5.20 0.06

23 5 -625.19 1260.44 5.23 0.06

235 6 -624.73 1261.53 6.32 0.03

123 6 -627.15 1266.38 11.16 0.00

1235 7 -626.49 1267.08 11.87 0.00

2345 7 -628.44 1270.98 15.77 0.00

123457 9 -635.59 1289.34 34.13 0.00

1234567 10 -636.75 1293.70 38.48 0.00

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 8.980e-01 2.631e-01 2.632e-01 3.411 0.000646 \*\*\*

Temperature -1.607e-02 9.206e-03 9.210e-03 1.745 0.081005 .

DenningYes -3.798e-03 2.547e-02 2.549e-02 0.149 0.881556

Moonlight 8.176e-05 1.026e-03 1.027e-03 0.080 0.936572

Moonrise\_sun -8.004e-04 2.595e-03 2.595e-03 0.308 0.757753

Rainfall 1.373e-06 9.893e-05 9.896e-05 0.014 0.988927

Rainfall:Temperature 2.413e-11 3.235e-07 3.238e-07 0.000 0.999941

DenningYes:Temperature 1.781e-10 3.635e-06 3.636e-06 0.000 0.999961

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 0.8979655 0.2631046 0.2632247 3.411 0.000646 \*\*\*

Temperature -0.0191239 0.0065153 0.0065225 2.932 0.003368 \*\*

DenningYes -0.0234099 0.0594850 0.0595446 0.393 0.694210

Moonlight 0.0008889 0.0032765 0.0032802 0.271 0.786385

Moonrise\_sun -0.0087020 0.0021080 0.0021103 4.124 3.73e-05 \*\*\*

Rainfall 0.0048554 0.0033210 0.0033247 1.460 0.144181

Rainfall:Temperature 0.0007432 0.0016343 0.0016362 0.454 0.649638

DenningYes:Temperature 0.0539504 0.0330630 0.0330996 1.630 0.103114

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Temperature Denning Moonlight Moonrise\_sun Rainfall Rainfall:Temperature

Importance: 0.84 0.16 0.09 0.09 <0.01 <0.01

N containing models: 7 6 7 7 3 2

Denning:Temperature

Importance: <0.01

N containing models: 1

Call:

model.avg(object = Night\_stop)

Component model call:

lme.formula(fixed = <10 unique values>, data = Night2, random = ~1 | ID, na.action =

na.exclude)

Component models:

df logLik AICc delta weight

23 5 -111.94 233.92 0.00 0.78

123 6 -112.21 236.50 2.57 0.21

235 6 -115.35 242.77 8.85 0.01

1235 7 -116.14 246.37 12.45 0.00

1 4 -121.44 250.91 16.98 0.00

2345 7 -119.76 253.62 19.70 0.00

5 4 -124.88 257.79 23.87 0.00

15 5 -125.50 261.06 27.13 0.00

123457 9 -125.30 268.76 34.83 0.00

1234567 10 -126.95 274.10 40.17 0.00

Term codes:

Denning Moonlight Moonrise\_sun Rainfall Temperature

1 2 3 4 5

Denning:Temperature Rainfall:Temperature

6 7

Model-averaged coefficients:

(full average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 3.356e-01 2.751e-02 2.753e-02 12.190 <2e-16 \*\*\*

Moonlight -1.338e-02 2.083e-03 2.085e-03 6.414 <2e-16 \*\*\*

Moonrise\_sun 1.151e-03 1.331e-03 1.333e-03 0.864 0.388

DenningYes 1.584e-02 3.441e-02 3.442e-02 0.460 0.645

Temperature -6.614e-05 7.681e-04 7.684e-04 0.086 0.931

Rainfall 1.123e-07 2.335e-05 2.336e-05 0.005 0.996

Rainfall:Temperature -3.681e-11 2.897e-07 2.898e-07 0.000 1.000

DenningYes:Temperature 4.930e-11 1.515e-06 1.516e-06 0.000 1.000

(conditional average)

Estimate Std. Error Adjusted SE z value Pr(>|z|)

(Intercept) 0.335577 0.027511 0.027528 12.190 <2e-16 \*\*\*

Moonlight -0.013378 0.002076 0.002078 6.437 <2e-16 \*\*\*

Moonrise\_sun 0.001151 0.001331 0.001333 0.864 0.3877

DenningYes 0.073447 0.035494 0.035534 2.067 0.0387 \*

Temperature -0.006082 0.004203 0.004207 1.445 0.1483

Rainfall 0.002739 0.002408 0.002410 1.137 0.2557

Rainfall:Temperature -0.001626 0.001031 0.001032 1.575 0.1153

DenningYes:Temperature 0.033634 0.020865 0.020888 1.610 0.1074

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Relative variable importance:

Moonlight Moonrise\_sun Denning Temperature Rainfall Rainfall:Temperature

Importance: 1 1 0.22 0.01 <0.01 <0.01

N containing models: 7 7 6 7 3 2

Denning:Temperature

Importance: <0.01

N containing models: 1