Kristin Schaefer

Project #3 : Functional Decomposition

Test Results

Month	Temperature (°C)	Precipitation (Cm)	Deer	Height (Cm)	Hunting Licenses
1	3.33	17.78	2	22.61	0
2	8.35	26.87	3	28.89	0
3	9.33	33.51	4	28.25	0
4	20.66	28.03	5	18.09	0
5	23.82	33.13	6	5.39	0
6	26.17	26.07	5	0.51	1
7	22.24	14.12	4	0.51	3
8	25.07	2.37	2	0.51	4
9	12.97	4.92	1	0.51	3
10	7.90	4.95	1	6.09	2
11	9.67	6.90	1	9.09	1
12	7.23	16.63	2	19.79	0
13	9.18	17.01	3	22.06	0
14	2.65	30.90	4	31.55	0
15	14.52	29.44	5	22.22	0
16	16.10	37.57	6	7.20	0
17	22.28	32.51	5	0.51	0
18	28.51	21.30	4	0.51	1
19	27.96	18.38	3	0.51	2
20	27.65	2.76	1	0.51	1
21	22.67	4.16	1	0.51	0
22	15.25	7.38	1	0.51	0
23	11.66	9.44	1	0.82	0
24	6.03	18.16	1	17.72	0
25	4.00	19.55	2	34.18	0
26	6.77	24.93	3	45.75	0
27	7.81	30.56	4	53.34	0
28	14.86	28.51	5	43.84	0
29	18.30	32.06	6	28.65	0
30	24.13	19.99	7	10.87	2
31	28.56	10.98	5	0.51	4
32	19.66	8.47	3	0.51	5
33	14.09	8.12	1	0.51	4
34	7.96	0.00	1	3.60	3
35	11.92	8.87	1	3.52	2
36	9.53	16.93	1	9.83	1
37	5.26	23.39	2	26.97	0
38	6.74	28.21	3	38.40	0
39	8.12	34.53	4	43.75	0
40	22.67	29.79	5	31.05	0
41	26.31	25.41	6	18.35	0
42	25.31	25.46	7	0.57	1
43	23.58	10.53	6	0.51	3
44	18.96	10.85	4	0.51	5
45	20.03	0.00	2	0.51	6
46	16.43	0.00	1	0.51	5
47	6.81	11.20	1	11.92	4
48	3.07	11.80	1	25.52	3
49	5.89	19.34	1	43.16	2
50	3.30	24.85	1	62.53	1
51	17.45	32.68	2	57.54	0
52	19.56	27.61	3	49.93	0
53	20.27	28.38	4	42.32	0
54	23.53	26.59	5	29.62	2
55	28.10	17.36	5	16.92	4
56	28.07	2.13	5	4.22	5
57	13.08	7.11	3	0.51	6
58	14.48	7.53	1	0.51	5
59	9.50	7.00	1	3.87	4
60	0.26	9.59	1	10.13	3
61	3.85	21.03	1	29.54	2
62	6.39	23.56	1	47.12	1
63	14.87	32.36	2	42.67	0
64	14.48	33.78	3	38.38	0
65	17.90	31.05	4	30.82	0
66	27.90	18.90	5	20.66	1
67	30.69	10.79	6	7.96	3
68	24.07	2.40	4	0.51	5
69	18.19	0.00	2	0.51	6
70	12.65	7.80	1	0.51	5
71	7.79	3.55	1	5.55	4
72	9.33	10.49	1	10.48	3

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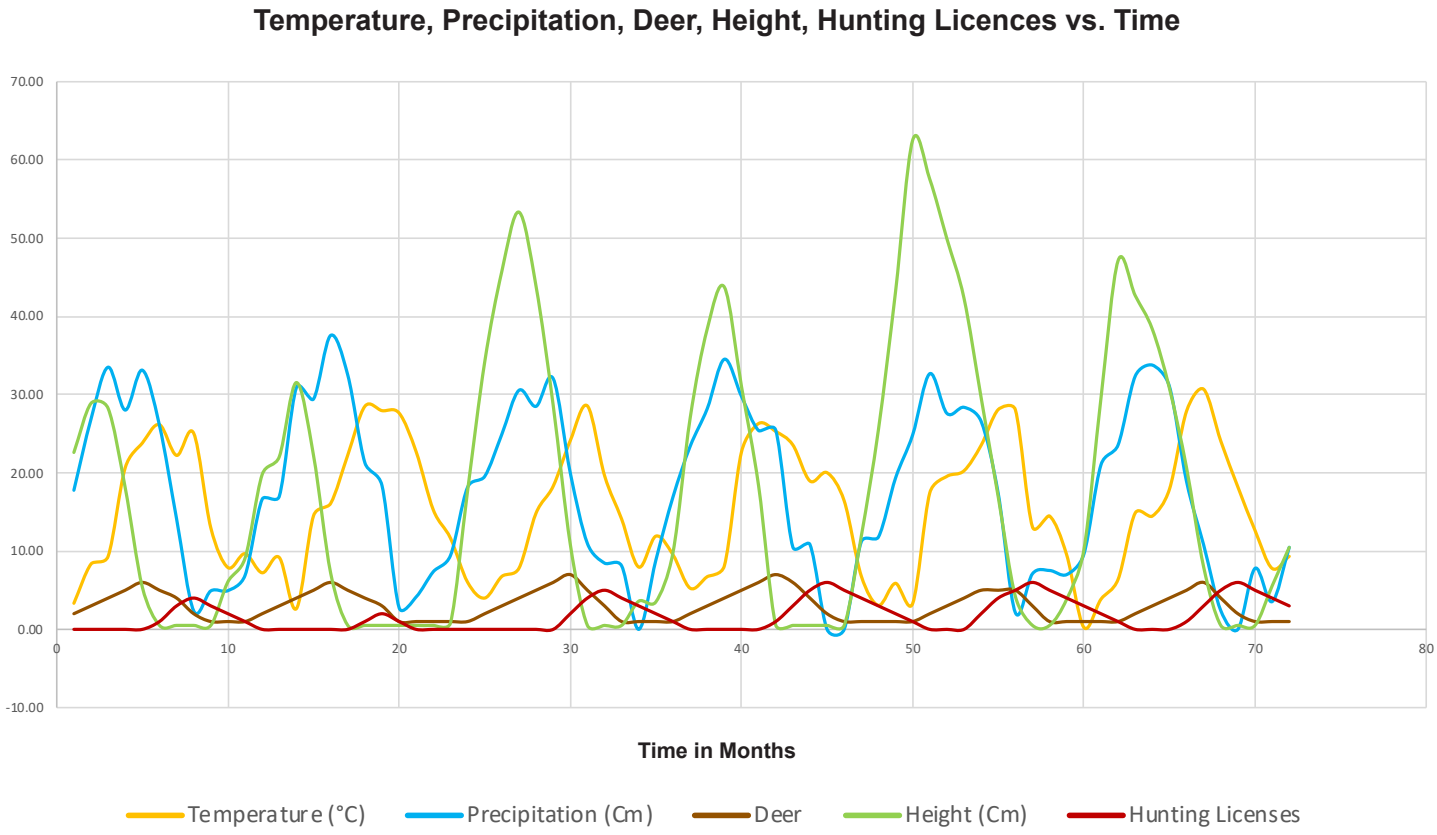

What your own-choice quantity was and how it fits into the simulation:

For my own-choice quantity I introduced 1 to 3 hunting licenses in the months of June to October if the number of Graindeer was greater or equal to 4. If it was not hunting season or the number of Graindeer was less than 4, then a hunting license was subtracted. In the Graindeer function, if the number of hunting licenses was greater or equal to 2, 1 deer was subtracted.

Commentary about the patterns in the graph and why they turned out that way. What evidence in the curves proves that your own quantity is actually affecting the simulation correctly:

The month of the year is a key factor in the program, as it affects both the temperature and precipitation. These climate conditions in turn affect the height of the grain, which the number of Graindeer is dependent on. Thus in the beginning of the year the temperature and precipitation are low, so the height of the grain and the number of Graindeer are also low. As the month increases to June and July the temperature and precipitation rise to their peaks, and then until the end of the year they gradually decrease. In parallel, the height of the grain and the number of Graindeer follow the rise and fall of the precipitation and temperature. The number of hunting licenses is a straight-forward calculation, so it is apparent that when the number of Graindeer exceeds 4 and the hunting season is active, then the number of hunting licenses increases. As the number of Graindeer decreases and hunting season ends, the hunting licenses decrease.