

Project #3

Functional Decomposition

PangFa Chou | choupa@oregonstate.edu

1. My own quantity is Alien from outer space. They come to Earth to do some animal research.

Therefore, they will steal some deers back to their spacecraft. However, they try not to be found by humans, so they cannot steal a lot of deer at once. Therefore, every alien only steals one deer at a time, and they won't do that if half of the deer population is less than the number of aliens.

2. The table below shows the result of simulation:

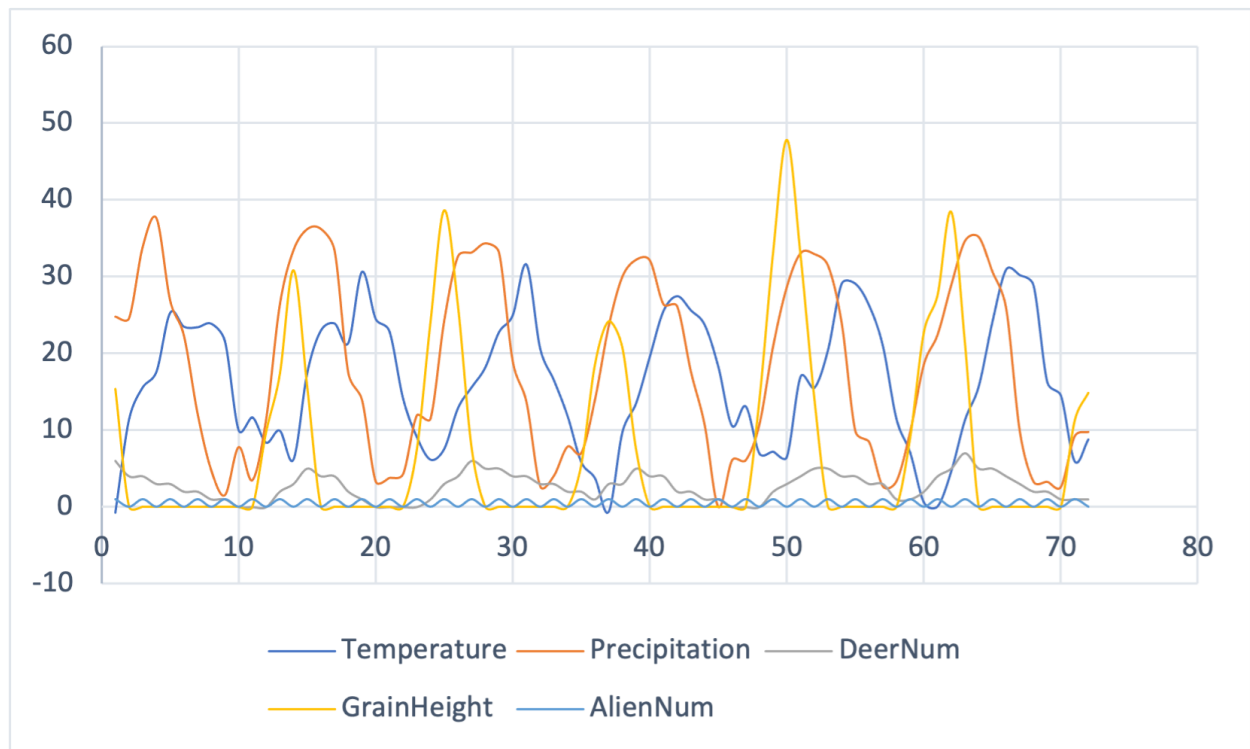
MM/YYYY	Temperature	Precipitation	DeerNum	GrainHeight	Alien
01/2022	-0.73	24.77	6	15.35	1
02/2022	11.42	24.56	4	0	0
03/2022	15.61	33.87	4	0	1
04/2022	17.63	37.58	3	0	0
05/2022	25.32	26.87	3	0	1
06/2022	23.52	22.32	2	0	0
07/2022	23.44	12.16	2	0	1
08/2022	23.9	4.75	1	0	0
09/2022	21.6	1.53	1	0	1
10/2022	10	7.78	0	0	0
11/2022	11.69	3.46	0	0	1
12/2022	8.4	11.34	0	9.69	0
01/2023	9.96	26.28	2	17.24	1
02/2023	6.19	33.42	3	30.8	0
03/2023	17.45	36.16	5	15.66	1

04/2023	23.01	36.19	4	0	0
05/2023	23.92	33.36	4	0	1
06/2023	21.39	17.44	2	0	0
07/2023	30.66	13.93	1	0	1
08/2023	24.51	3.3	0	0	0
09/2023	22.91	3.76	0	0	1
10/2023	14.12	4.27	0	0	0
11/2023	9.14	11.91	0	7.43	1
12/2023	6.17	11.48	1	24.11	0
01/2024	7.58	24.24	3	38.61	1
02/2024	12.88	32.62	4	26.18	0
03/2024	15.61	33.12	6	7.62	1
04/2024	18.21	34.32	5	0	0
05/2024	22.81	33.1	5	0	1
06/2024	25	18.94	4	0	0
07/2024	31.61	13.64	4	0	1
08/2024	20.66	2.69	3	0	0
09/2024	16.54	4.03	3	0	1
10/2024	11.87	7.84	2	0	0
11/2024	5.86	7.01	2	5.48	1
12/2024	3.75	13.97	1	18.56	0
01/2025	-0.62	23.51	3	24.15	1
02/2025	9.76	29.98	3	20.71	0
03/2025	13.52	32.18	5	7.44	1
04/2025	19.58	32.1	4	0	0
05/2025	25.57	26.36	4	0	1

06/2025	27.49	26.09	2	0	0
07/2025	25.64	17.6	2	0	1
08/2025	23.76	10.68	1	0	0
09/2025	18.29	0	1	0	1
10/2025	10.58	6.05	0	0	0
11/2025	13.12	6.07	0	0	1
12/2025	6.97	10.74	0	13.95	0
01/2026	7.22	20.93	2	33.18	1
02/2026	6.53	28.63	3	47.79	0
03/2026	16.99	33.03	4	32.72	1
04/2026	15.52	32.92	5	14.19	0
05/2026	20.44	31.43	5	0	1
06/2026	29.11	23.95	4	0	0
07/2026	29.11	9.83	4	0	1
08/2026	26.29	8.46	3	0	0
09/2026	21.05	2.67	3	0	1
10/2026	11.47	3.34	1	0	0
11/2026	7.09	9.77	1	9.01	1
12/2026	0.6	18.55	2	22.75	0
01/2027	0.09	22.42	4	27.58	1
02/2027	4.68	28.9	5	38.39	0
03/2027	11.36	34.64	7	21.2	1
04/2027	15.72	35.14	5	0	0
05/2027	24.14	30.62	5	0	1
06/2027	30.95	25.88	4	0	0
07/2027	30.23	9.8	3	0	1

08/2027	28.9	3.27	2	0	0
09/2027	16.29	3.26	2	0	1
10/2027	14.52	2.6	1	0	0
11/2027	5.96	9.18	1	11.2	1
12/2027	8.81	9.75	1	14.83	0

3. The graph below shows the result of simulation



4. From the graph, we can clearly see that when the temperature is conducive to the restructuring of precipitation, the growth of the grain, and the population of the deer also grows with the growth of the grain. At this time, when the number of deer groups is twice as much as or equal to the number of aliens, the aliens will steal the deer. The simulation is correct because the peaks of every parameter are interacted.