用雏菊 白雏菊

本周并未阅读与降尺度有关的文献,而是阅读了和气候物理化学作业——Daisy World有关的两篇文献

(1) Biological homeostasis of the global environment: the parable of Daisy world

(https://www.tandfonline.com/doi/pdf/10.3402/tellusb.v35i4.14616?needAccess=true)

存在两种雏菊——黑雏菊和灰雏菊,黑雏菊的反照率低,白雏菊的反照率高,在黑白雏菊未生长的地方裸露的土地同样存在反照率。地球的温度会随着雏菊的生长而相互影响,且黑白雏菊对温度的反应和作用不同。

(2) 为了进行扩展研究,继续进行了搜索并锁定了这篇文章——Daisy world modeling and feedback mechanisms By Mark Wittwer

增加雏菊的多样性(引入灰雏菊),增加生物的多

样性(引入食草动物 和食肉动物,例如兔 子和狐狸)。

$$\frac{dRabbit}{dt} = rfix * Rabbit ((1 - e^{-reat*Daisyarea}) * (1 - Rabbit) - rdeath)$$

Where: $\frac{dRabbit}{dt}$ = growth in rabbit population for that time step.

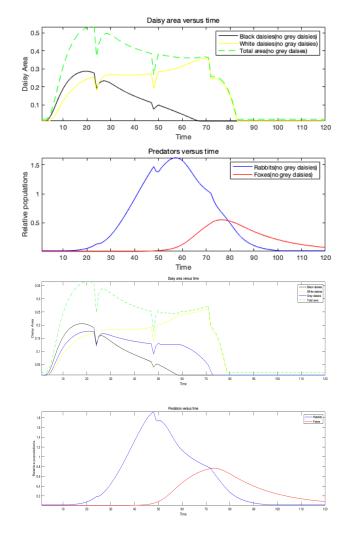
rfix = the fraction of daisy food consumed that the rabbit fixes to its biomass.

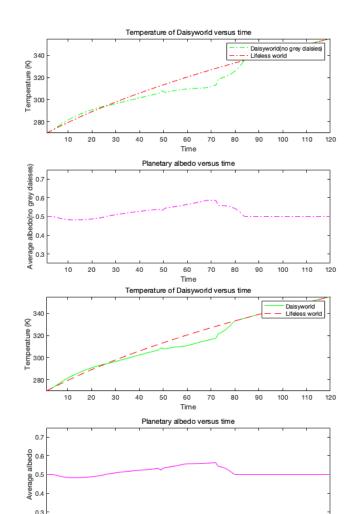
Rabbit = the rabbit population from the previous time step.

reat = the accessibility of the daisies to the rabbits

rdeath = the rabbit death rate per time step.

结果如下:





Time

100 110