# 2D Daisy World

## Environmental Modelling
## Final Project

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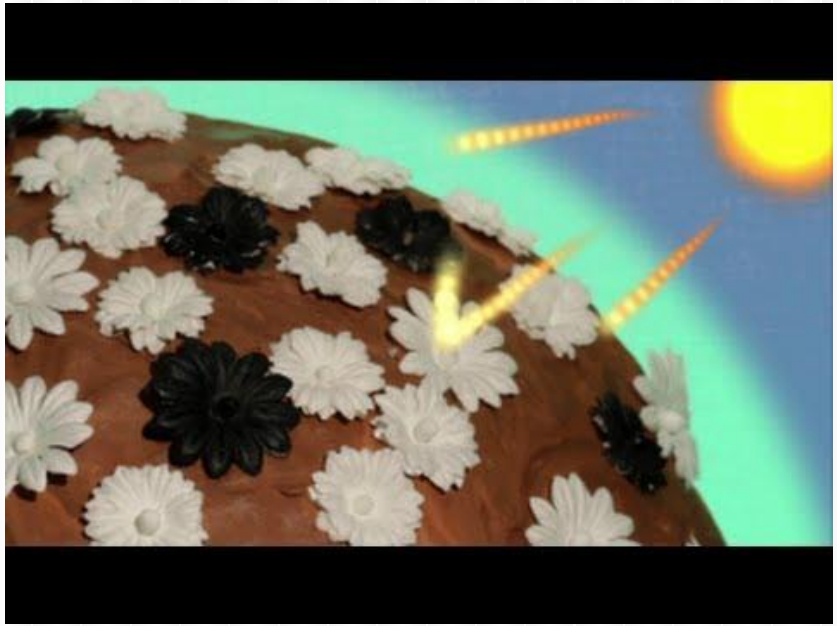
# Introduction

**Gaia Theory**: Lovelock in 1960's

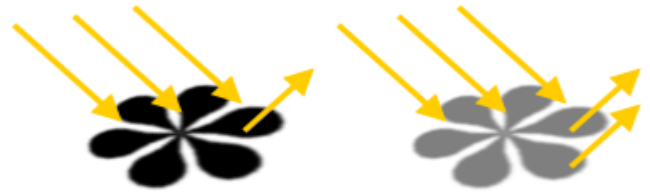
how the organisms life has a role on earth's climate



World Populated by:

- White daisies
- Black daisies
- Soil

Albedo:



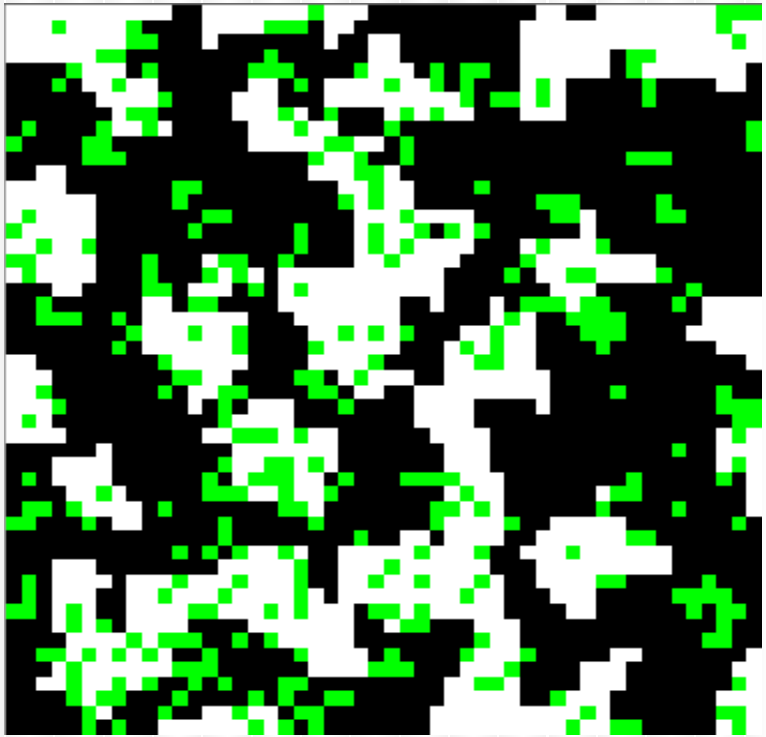
# Rules - Initial State

- Set dimension of CS by initial given value
- Initial percentage
  - Black and white daisies
  - Empty spaces
- Random values for soil temperature
- Set random initial age for daisies

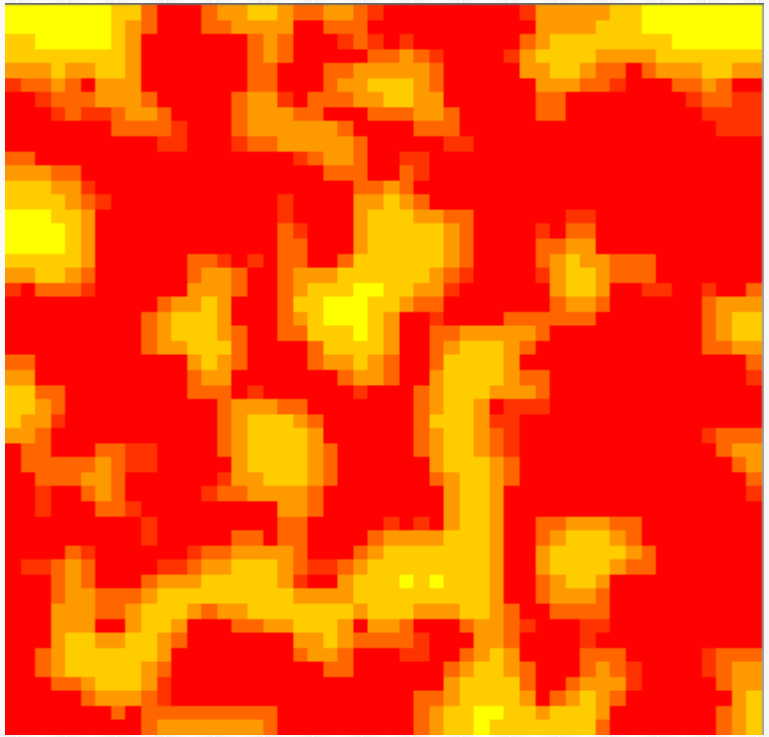
# Rules - CA

- Calculate temperature
  - Albedo + cell soil temperature
  - Mean from neighbours
- Reproduction
  - Empty cell
  - Inside range of temperature
  - Max. neighbourhood type
- Daisy die if certain age is reached

# Model

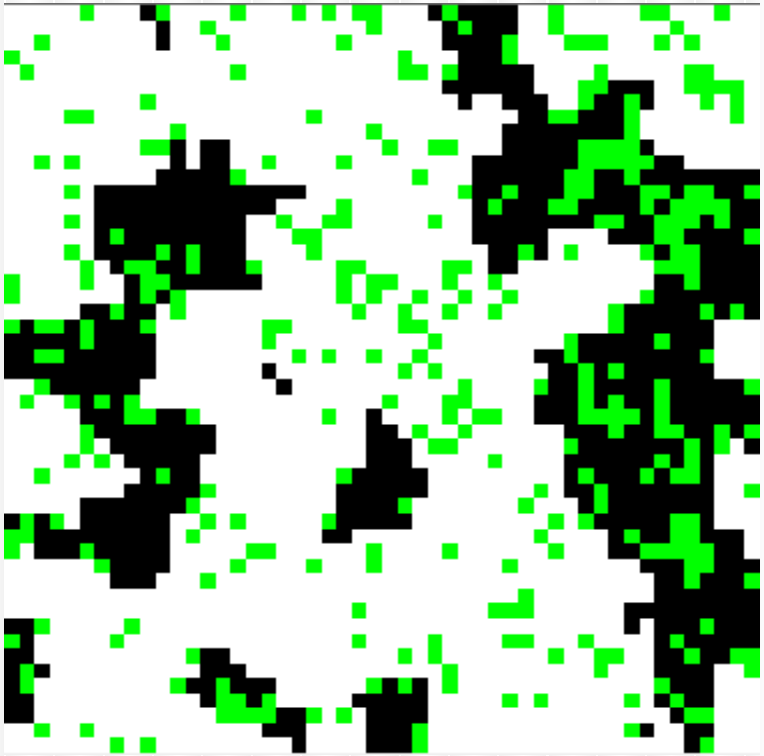


Daisies

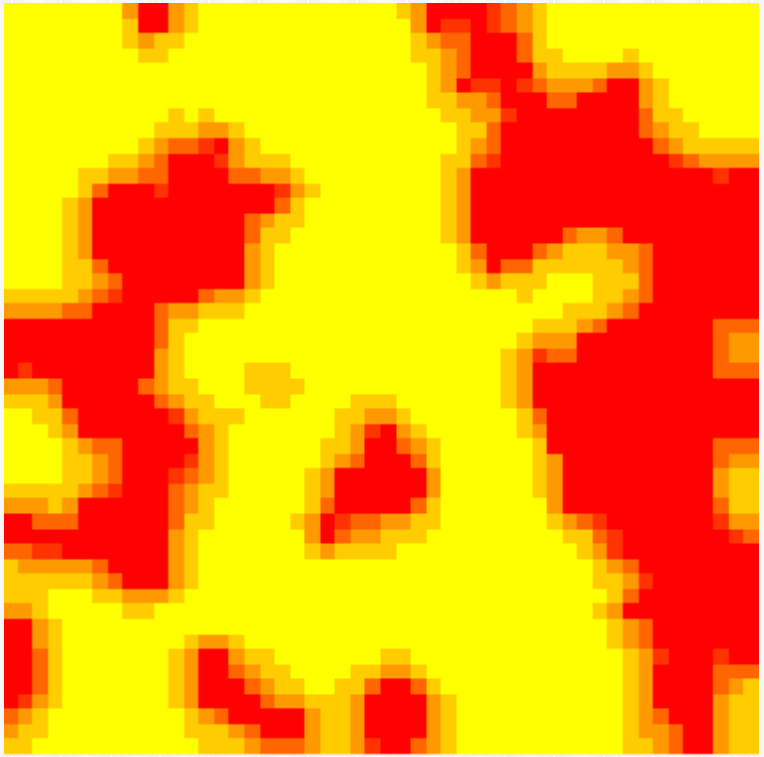


Soil temperature

# Model



Daisies



Soil temperature

# DEMO

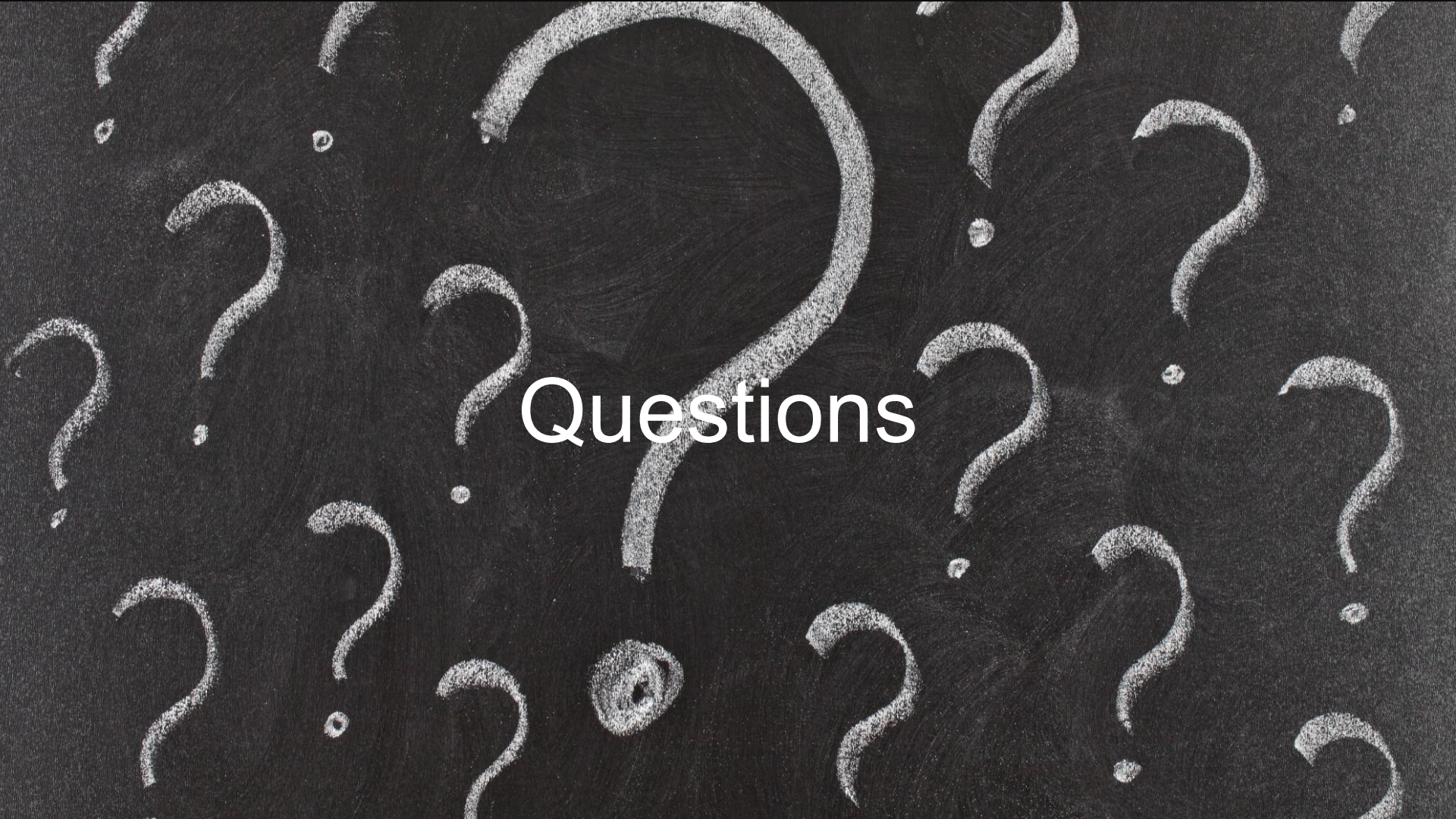
# Conclusions

- This model could be related to explain also climate change.
- Several patterns are created depending on the parameters.
- If the range of temperatures for reproduction is too small then all daisies will die.

# References

Novak, M. and Wilensky, U. (2006). NetLogo Daisyworld model. http://ccl.northwestern.edu/netlogo/models/Daisyworld. Center for Connected Learning and Computer-Based Modeling, **Northwestern University**, Evanston, IL.

Wilensky, U. (1999). NetLogo. http://ccl.northwestern.edu/netlogo/. Center for Connected Learning and Computer-Based Modeling, Northwestern University, Evanston, IL.


Questions