

# Fireflies Model

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# Introduction

- The model demonstrates how **fireflies** synchronize their flashing using only the interaction between the individual fireflies
- The model is like a distributed system that many interacting elements can coordinate themselves without a central coordinator.

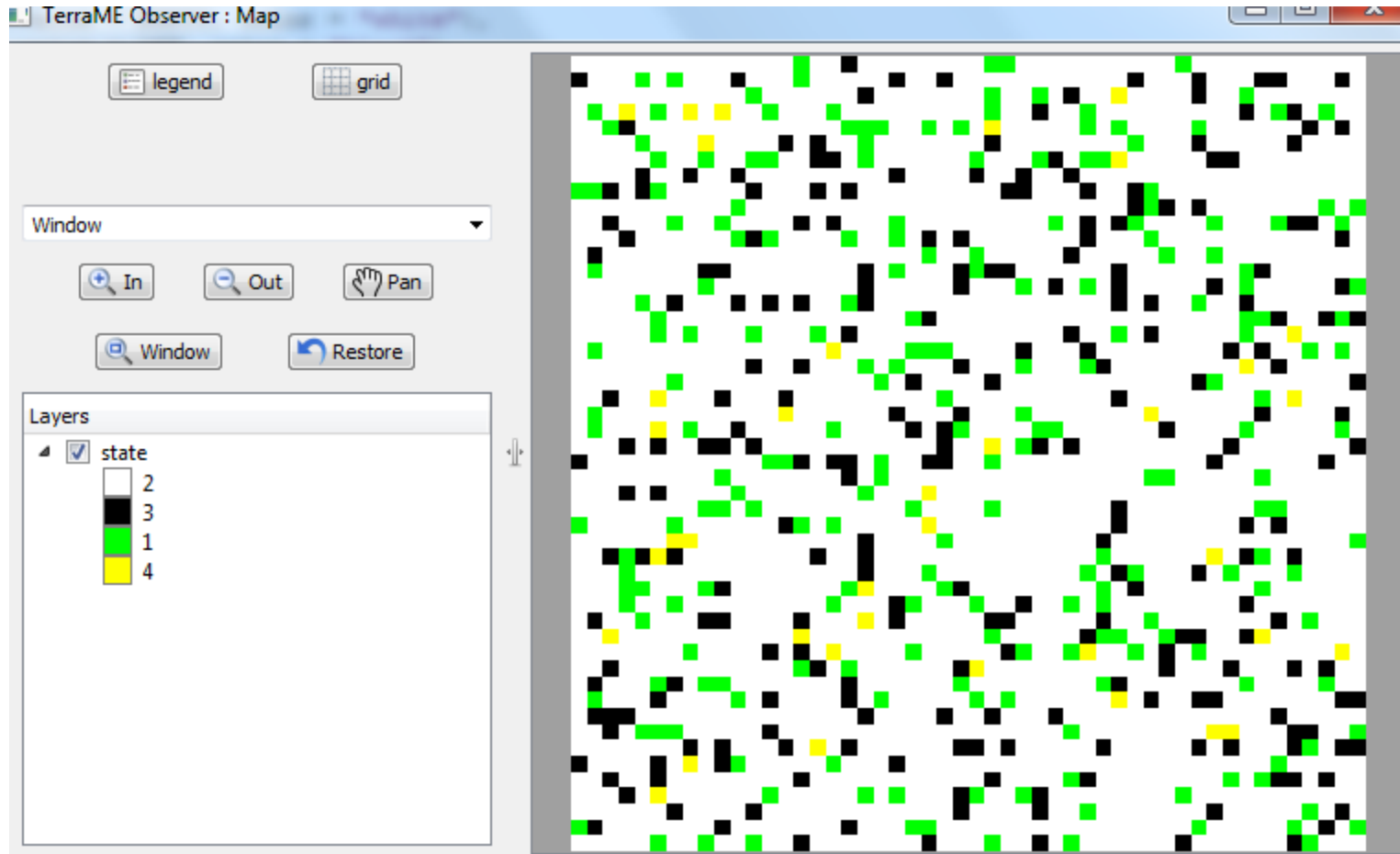
# Application of the Model

- It is one of the Sample Models in Biology
- It helps to show the individual synchronization of firefly species (insects)
- Most species of firefly are not generally known to synchronize in groups, here are some (for example):
  - *Pteroptyx cribellata*,
  - *Luciola pupilla*,
  - *Pteroptyx malaccaae*

# How the Model Works?

- Each firefly constantly cycles through its own clock.
- There is flashing at the beginning of each cycle and then resetting the clock to zero once it has reached the maximum.
- At the start of each simulation all fireflies begin at a random point in their cycles so that flashing will occur erratically through the population.

# Model Snapshot



# Demonstration

# Conclusion

- Fireflies model is an example of distributed system without a central coordinator.
- It can help understand behavior of various animal species
- It can help understand the network society, and how messages are transmitted between individuals