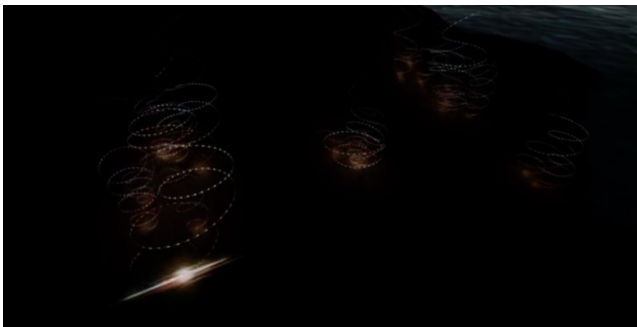

AFTERGLOW

BEHIND THE SIGNAL



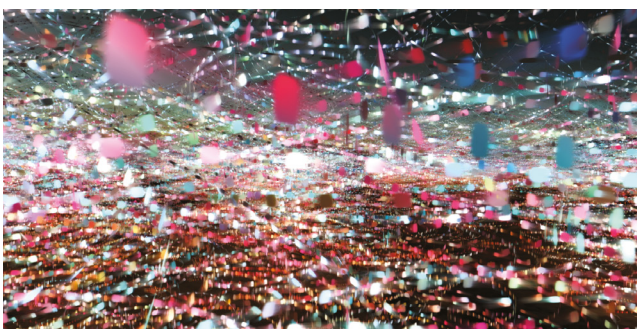
LIFE CYCLES

The malaria parasite has a complicated life cycle. It has different stages in the blood and liver of mammals (such as humans and monkeys) as well as in the gut and saliva of mosquitoes. These stages vary in duration from minutes to days. Here, the packets of light represent malaria-infected mosquitoes. The malaria parasite in the monkeys and humans is invisible and hides in the landscape.



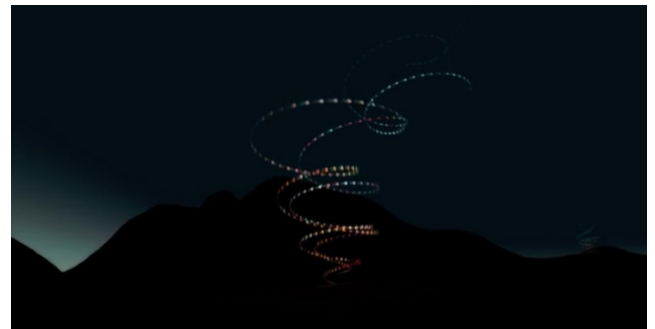
INFECTIOUS/INFECTED

You can be infected with malaria but you might not be infectious. For humans and monkeys to be infectious the parasites need to be in their blood stream so a feeding mosquito can suck them up. The parasites need to develop and move from the mosquito gut to the salivary glands to be injected into a human. The black turbulent spirals represent the period when mosquitos are infectious and could infect a monkey or human.



VISIBILITY

To build up a model you need data. The more data you have, the more accurate the model, but it is not always possible to get all the data you want. Deciding which factors are vital and how to represent them is an essential skill. Models help reveal hidden relationships between things. Here, the glowing infection helps reveal the landscape and the creatures hiding within it.



SUSCEPTIBLE/EXPOSED

In this model all mosquitoes are capable of becoming infected. When a susceptible mosquito becomes infected by biting an infected monkey a bright flash can be seen. Although the monkeys are invisible these flashes pinpoint their location. Sometimes it is hard to locate animals in the wild and researchers only know where they are by studying other things like their droppings, food sources or the infections they spread.



CONTROLLING THE SIGNAL

Mosquitoes might only be infectious for a short time but control measures can be used throughout their life cycle. One option is genetic engineering. Researchers have used this to create sterile males to cause a decline in the population, and to insert a malaria-fighting gene into the genome. Often a fluorescent tag is also coded in so researchers can identify which mosquitoes carry the mutations.