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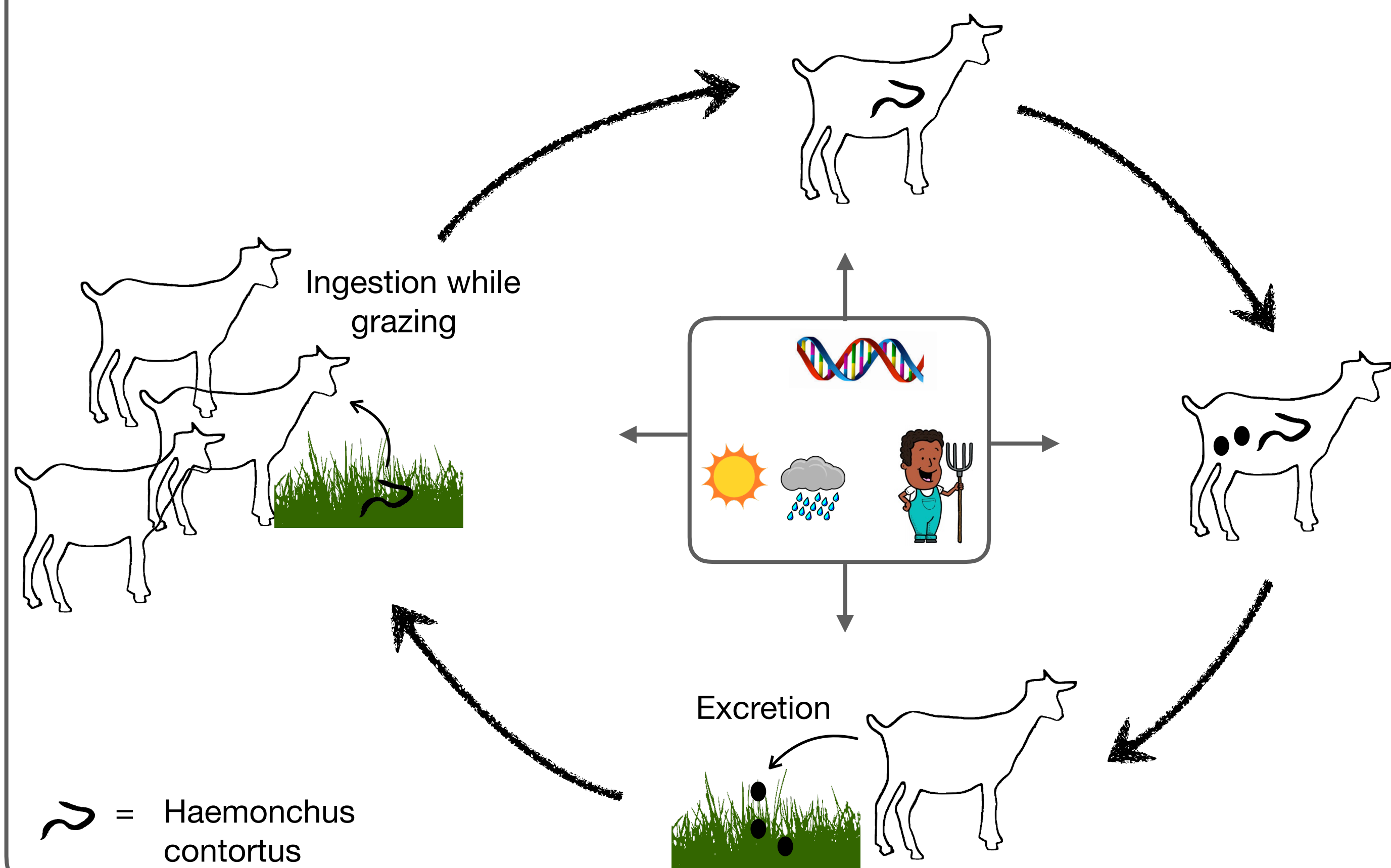
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# GOATS WORM BURDEN VARIABILITY ALSO RESULTS FROM NON-HOMOGENEOUS LARVAL INTAKE

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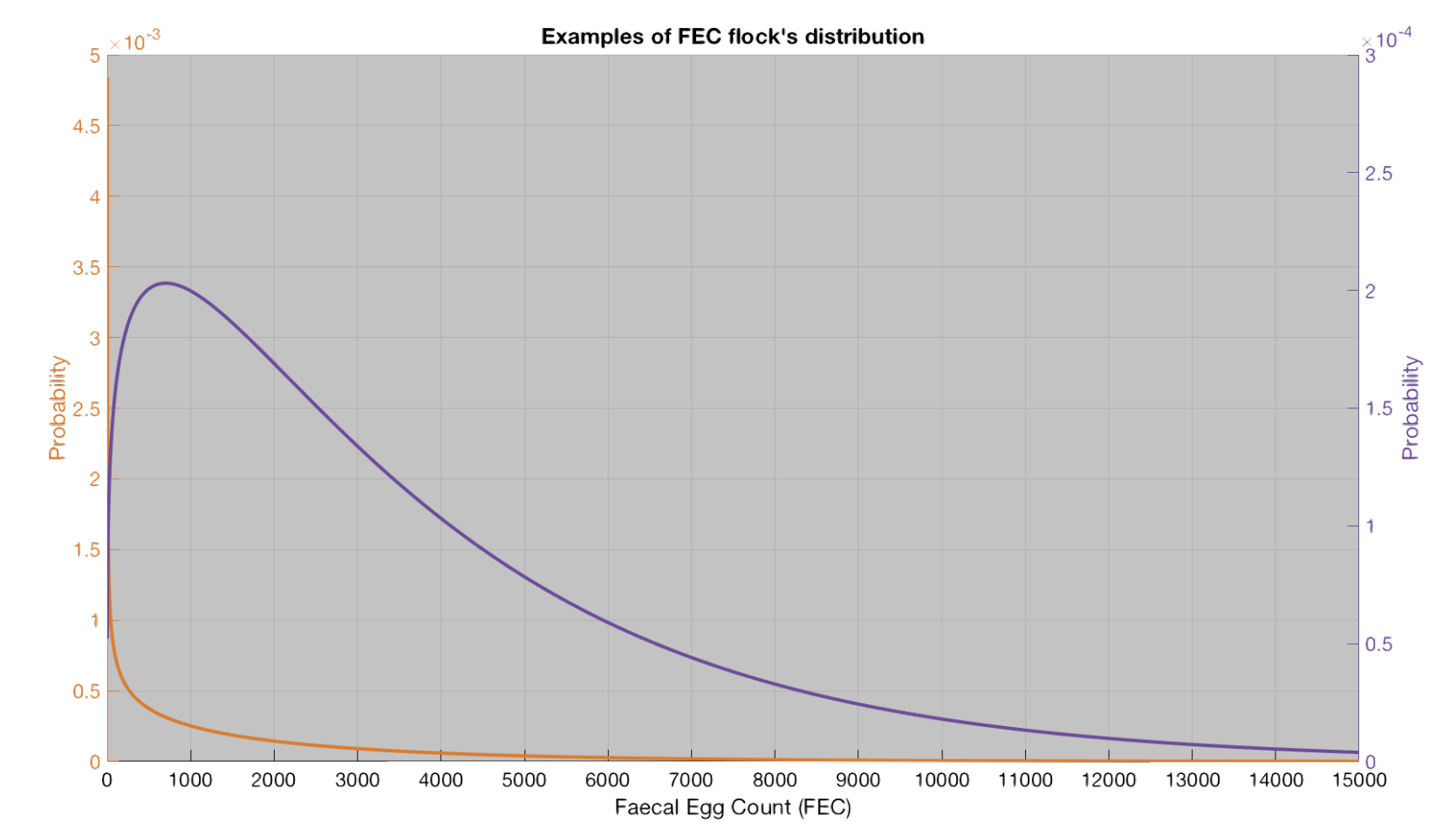
## INTRODUCTION



Worm burden distribution: few animals concentrate the infection

Why?

- Genetic resistance?
- Physiological status?
- Age?
- Infection history?
- Nutrition?
- ...
- **Grazing behavior?**



Does the grazing process also explains worm burden variability?

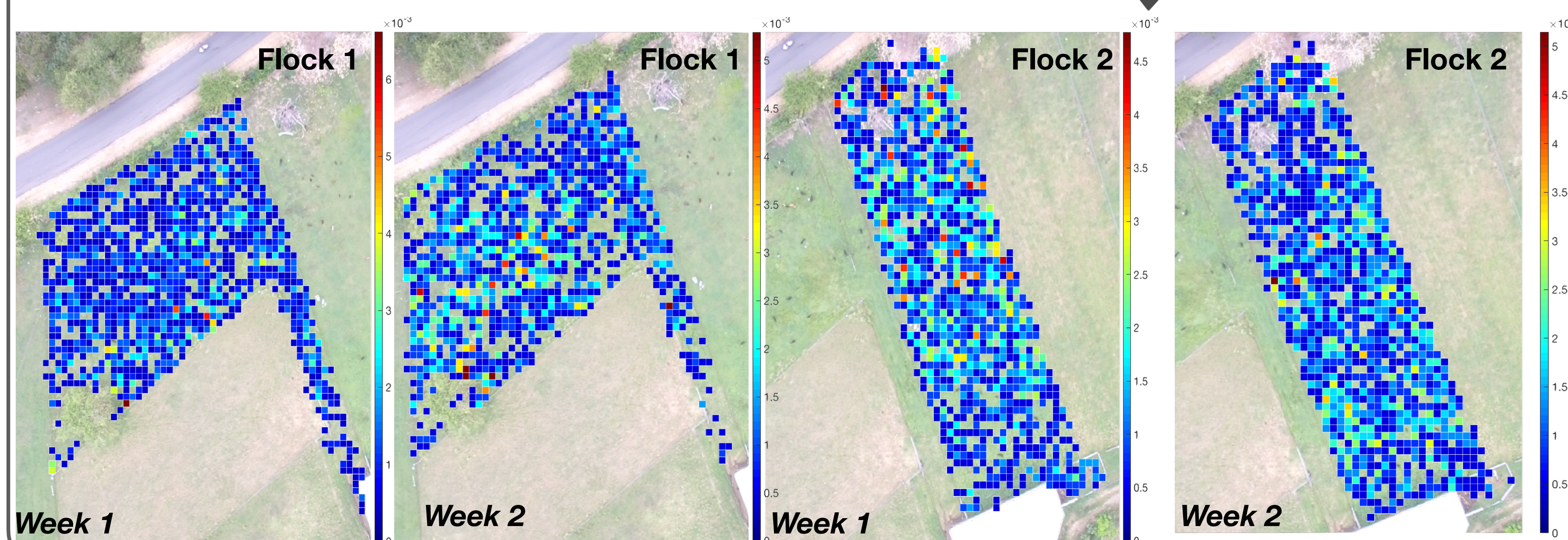
## Materials & Methods

**Challenge:** Estimate individual larval ingestion risk using the observed spatial distribution of the flock and a simulation model.

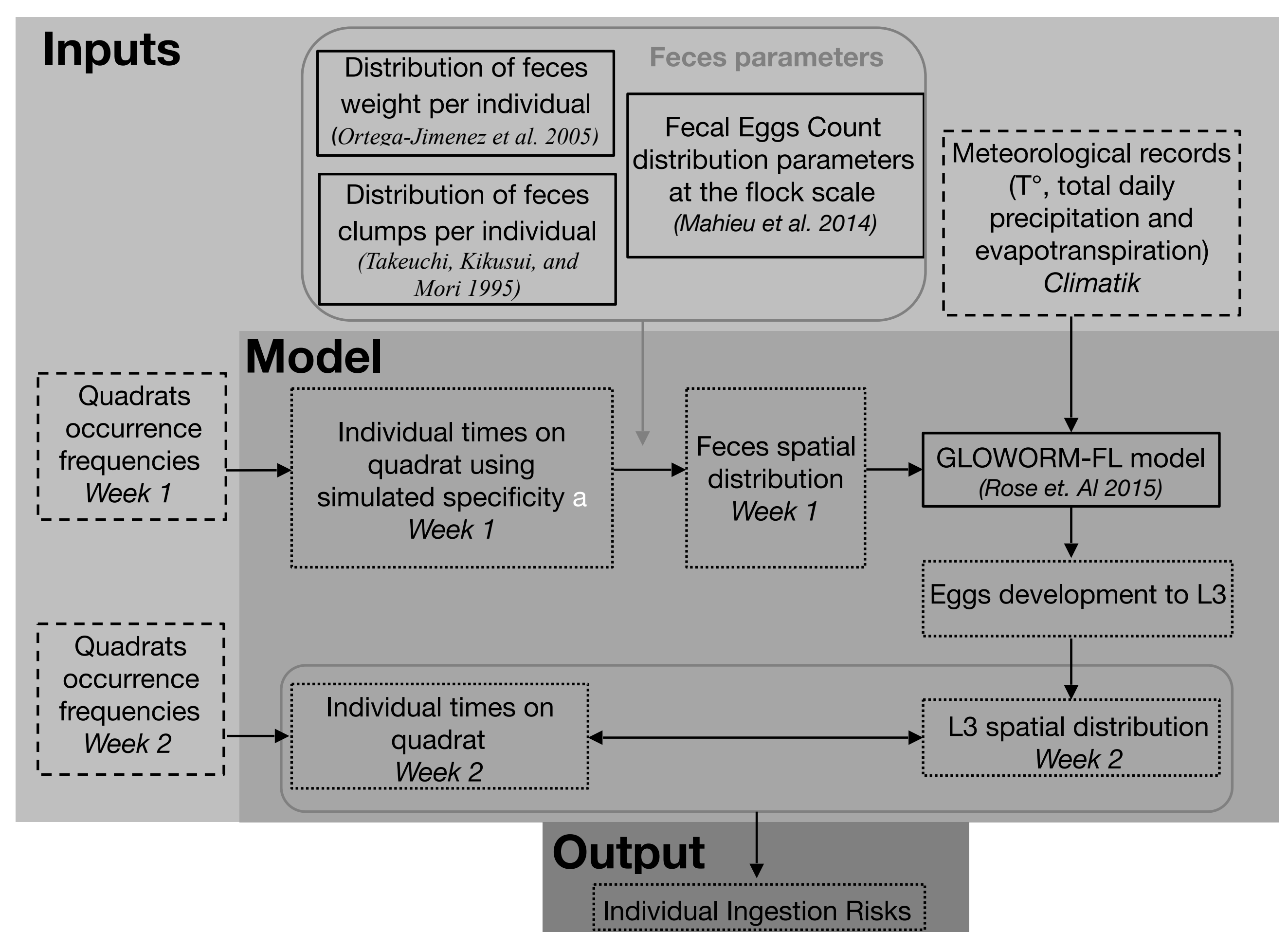
### Collecting Data



- Monitoring **two flocks** managed under **rotational grazing**.
- Drone pictures of the flock every ~20 minutes during 4 consecutive days (**week 1**) and 4 more days when they come back in the pasture (**week 2**).
- Georeferencing the images.
- Extract the spatial coordinates of each goat.
- Deduce the **quadrat (1m by 1m) occurrence frequencies**.



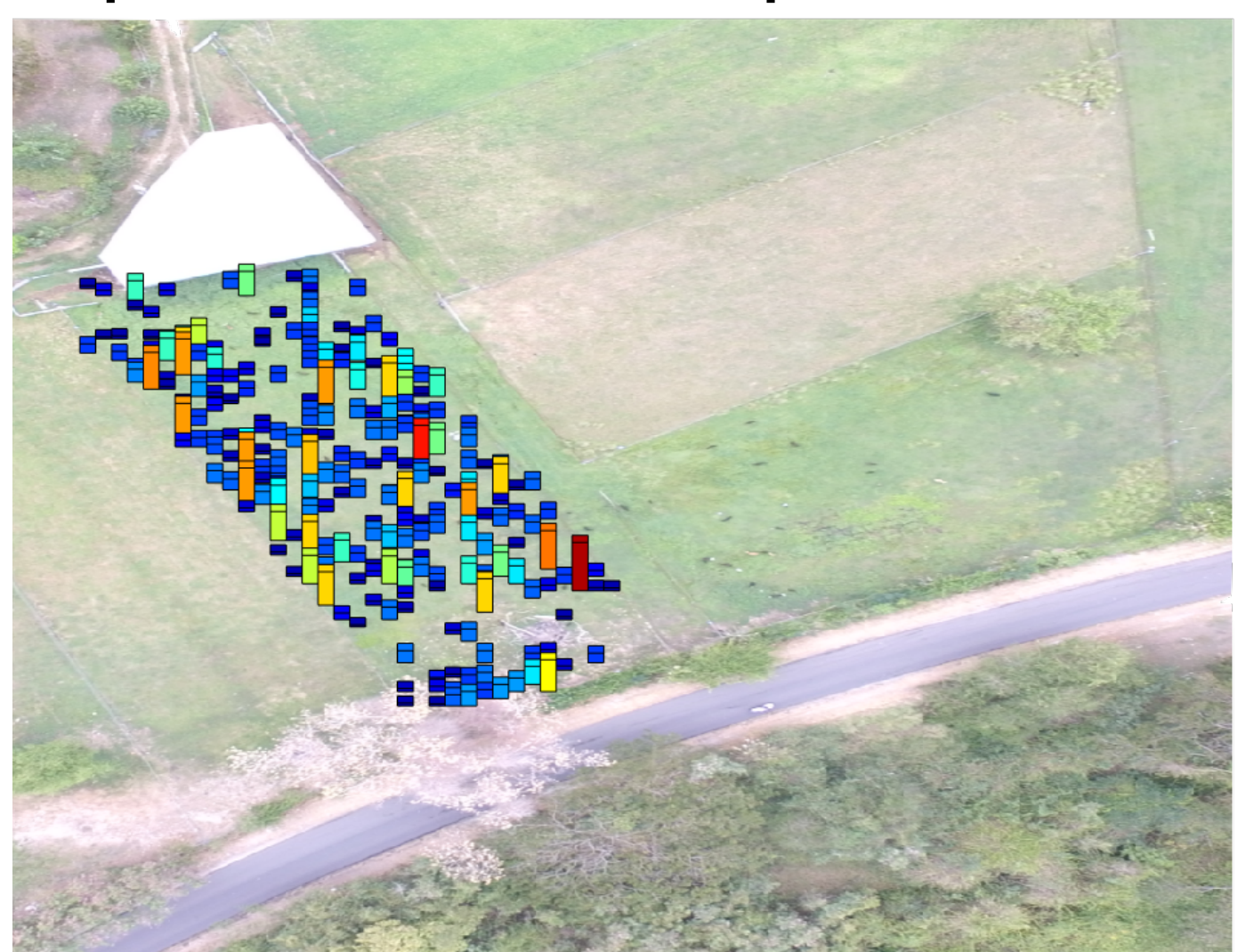
### Simulation Model



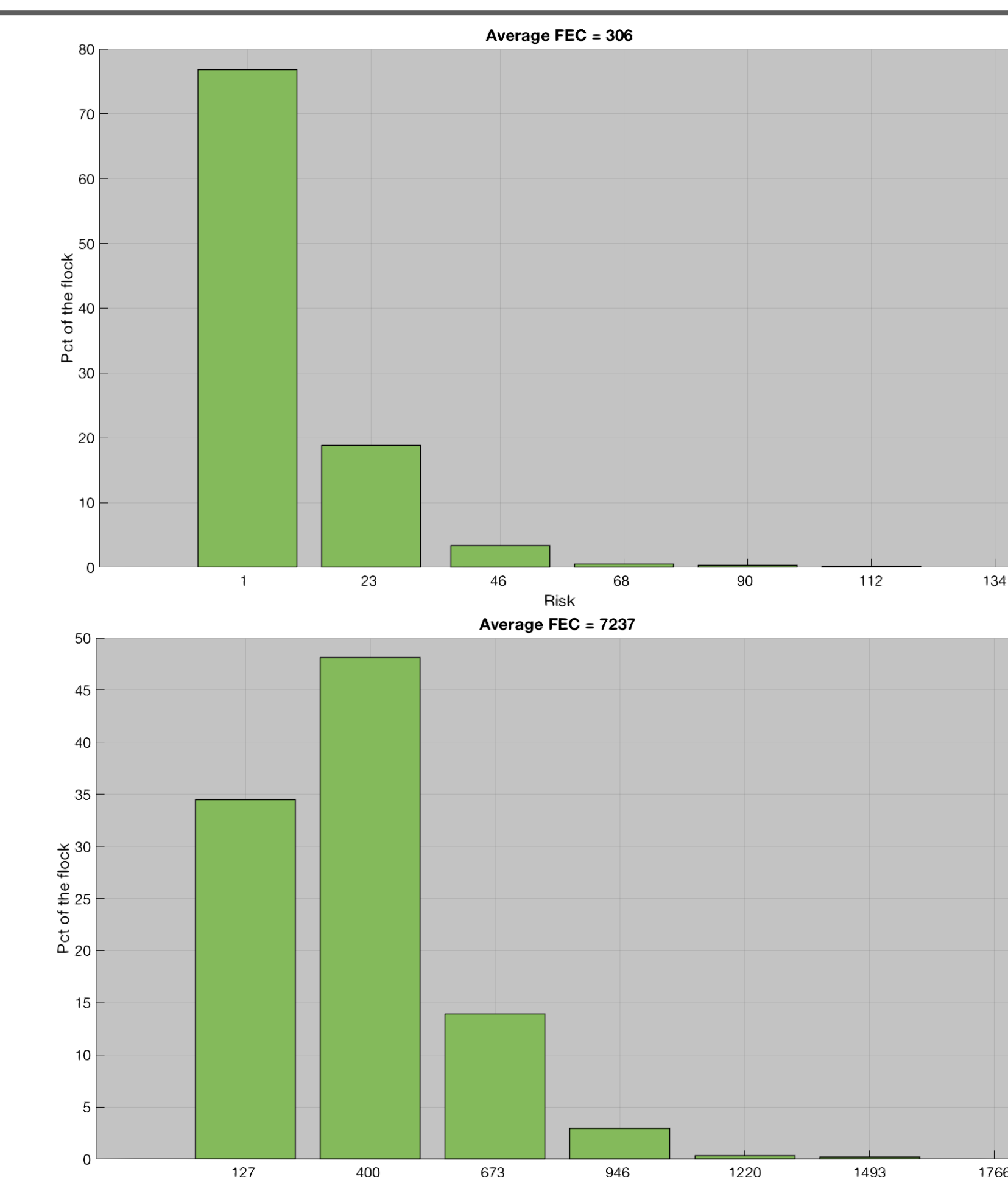
Schematic representation of the model inputs and output. Boxes with solid lines indicates data or model from the literature. Boxes with dashed lines indicate data recorded during the experimentation. Boxes with dotted lines indicate data simulated with the model.

## Results and Conclusions

### Example of simulated larvae spatial distribution



- ➔ Larvae are highly aggregated on the pasture.
- ➔ Sampling larvae on pasture to estimate contamination level is **extremely complicated**.



Examples of ingestion risk distribution among the flock

- ➔ Larval ingestion risk is right-skewed and non homogeneous .... such as the flock's FEC!
- ➔ Larval ingestion risk increases with the initial flock's FEC and the number of animals present on the pasture.
- ✓ Not new, but newly brings quantitative evidences.
- ✓ For modelers, hypothesis of an homogeneous larval ingestion among the individuals might not be adapted.



What is the influence of this non-homogeneous larval intake on the flock infection dynamic?

Run the model with better estimate of the goats spatial dynamic.





