Acoustic Description of Bird Broiler Vocalisations in a Real-Life Intensive Farm and Its Impact on Animal Welfare: A Comparative Analysis of Recordings

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CEALVET

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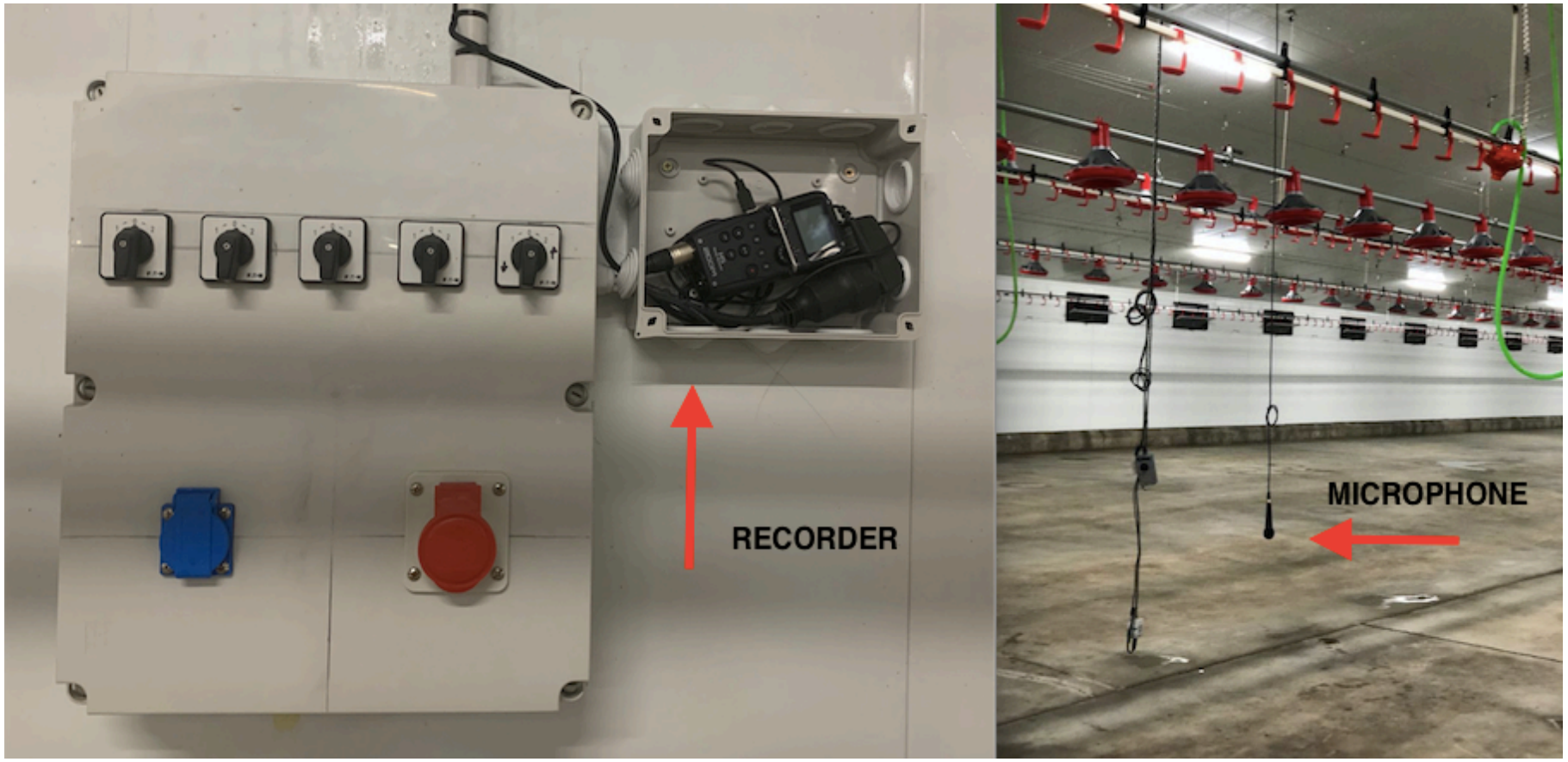
OBJECTIVES

Capture two entire production cycle of intensive broiler Ross 308 poultry farm in a Mediterranean farm.

Study the variations and stability of $L_{eq,}$ PF, ΔPF, ΔL_{eq} between two opposite climate seasons where the animal lot is the only parameter changed.

MATERIAL & METHODS



Ginovart-Panisello, G. J., Alsina-Pagès, R. M., Sanz, I. I., Monjo, T. P., & Prat, M. C. (2020). Acoustic Description of the Soundscape of a Real-Life Intensive Farm and Its Impact on Animal Welfare: A Preliminary Analysis of Farm Sounds and Bird Vocalisations. Sensors, 20(17), 4732.

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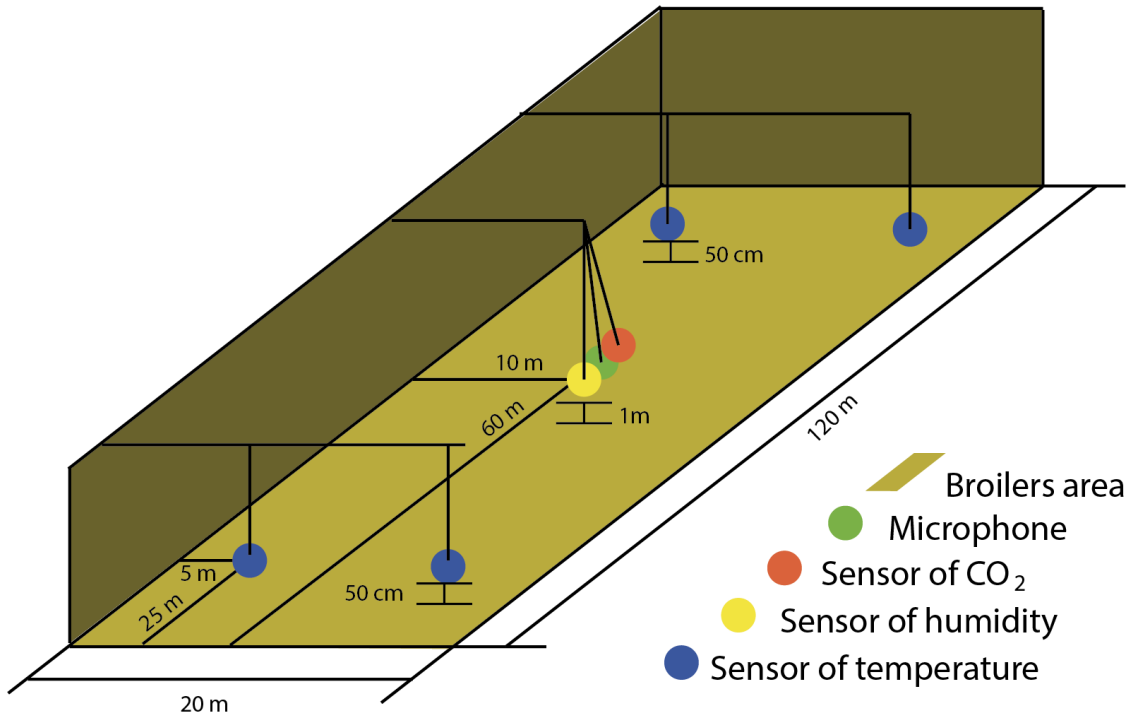
MATERIAL & METHODS

Capture two entire production cycle of intensive broiler Ross 308 poultry farm in a Mediterranean farm.



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MATERIAL & METHODS

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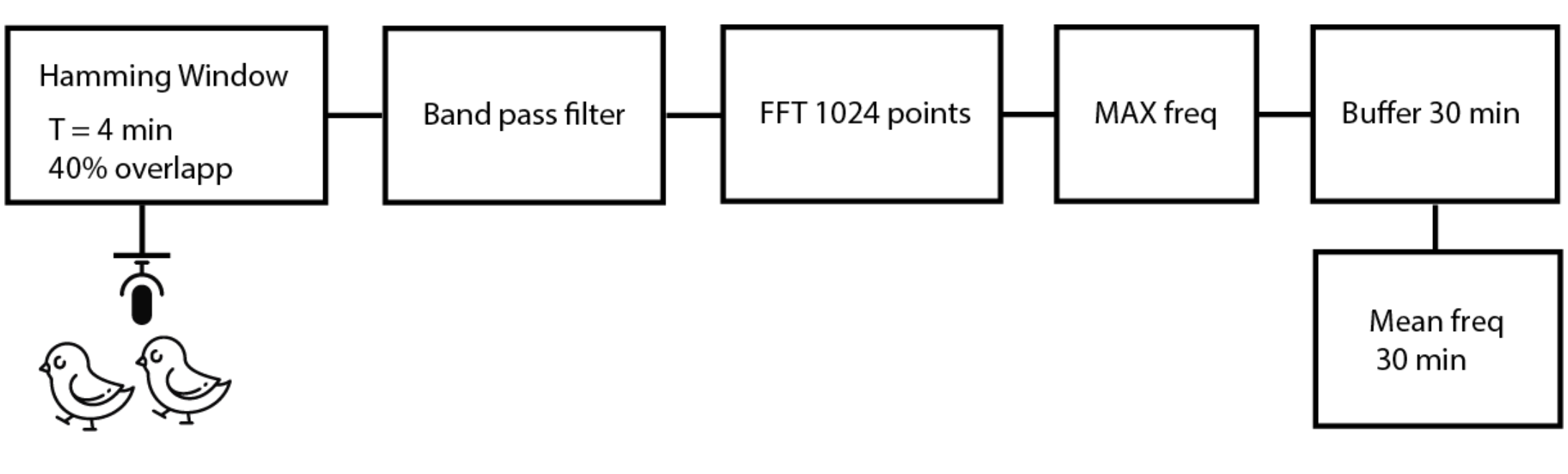
L_{eq}

$$L_{eq} = 10log\left(\frac{1}{T}\int_0^T \frac{P_i(t)^2}{P_{ref}^2}dt\right)$$

Frequency



TIME SCHEDULED

POULTRY VOCALISATIONS
AND WELFARE.

First Campaign (C1)

13º-1ºC External temperature

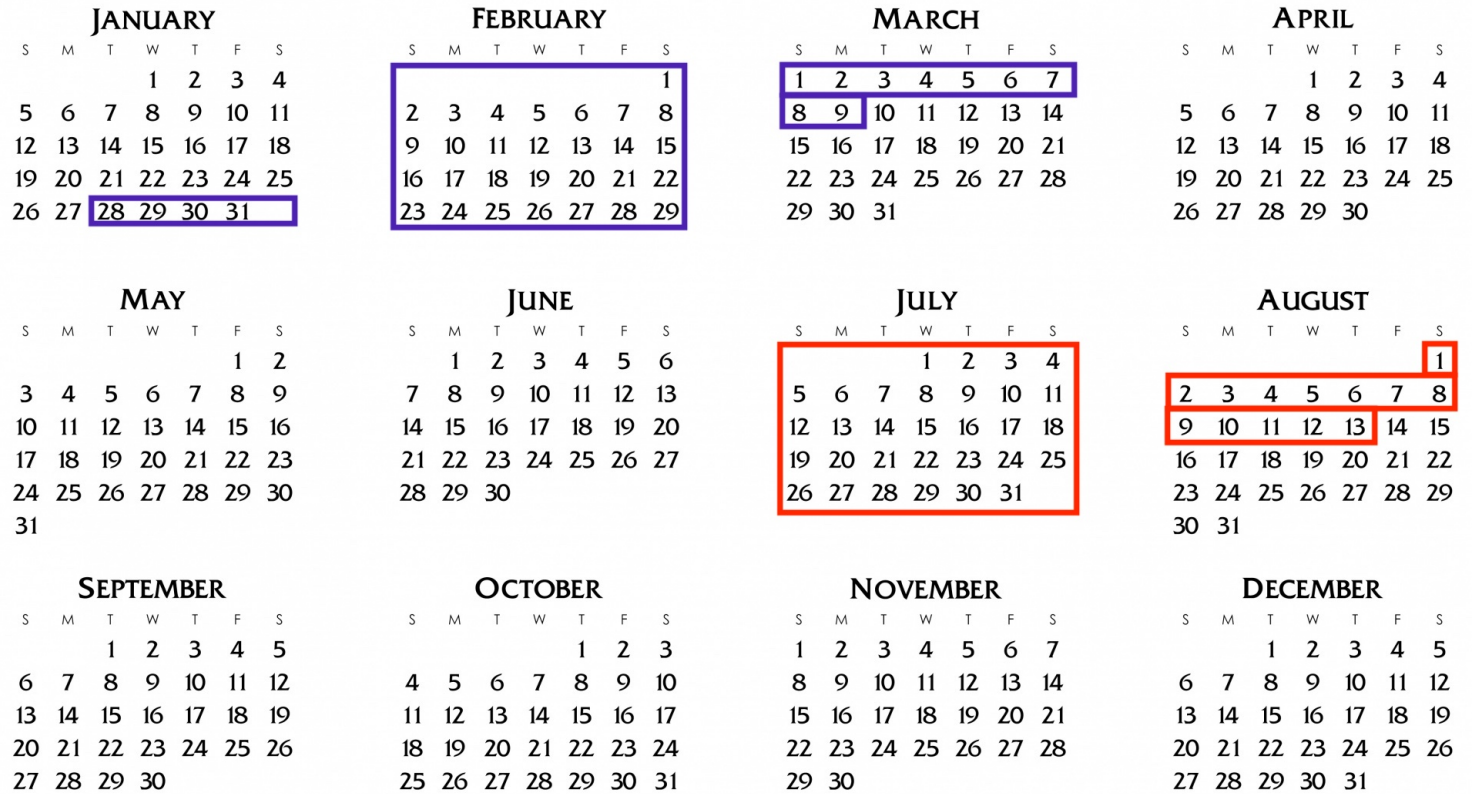
0% External humidity

Second Campaign (C2)

14º-31ºC External temperature

4 - 55% External humidity

2020

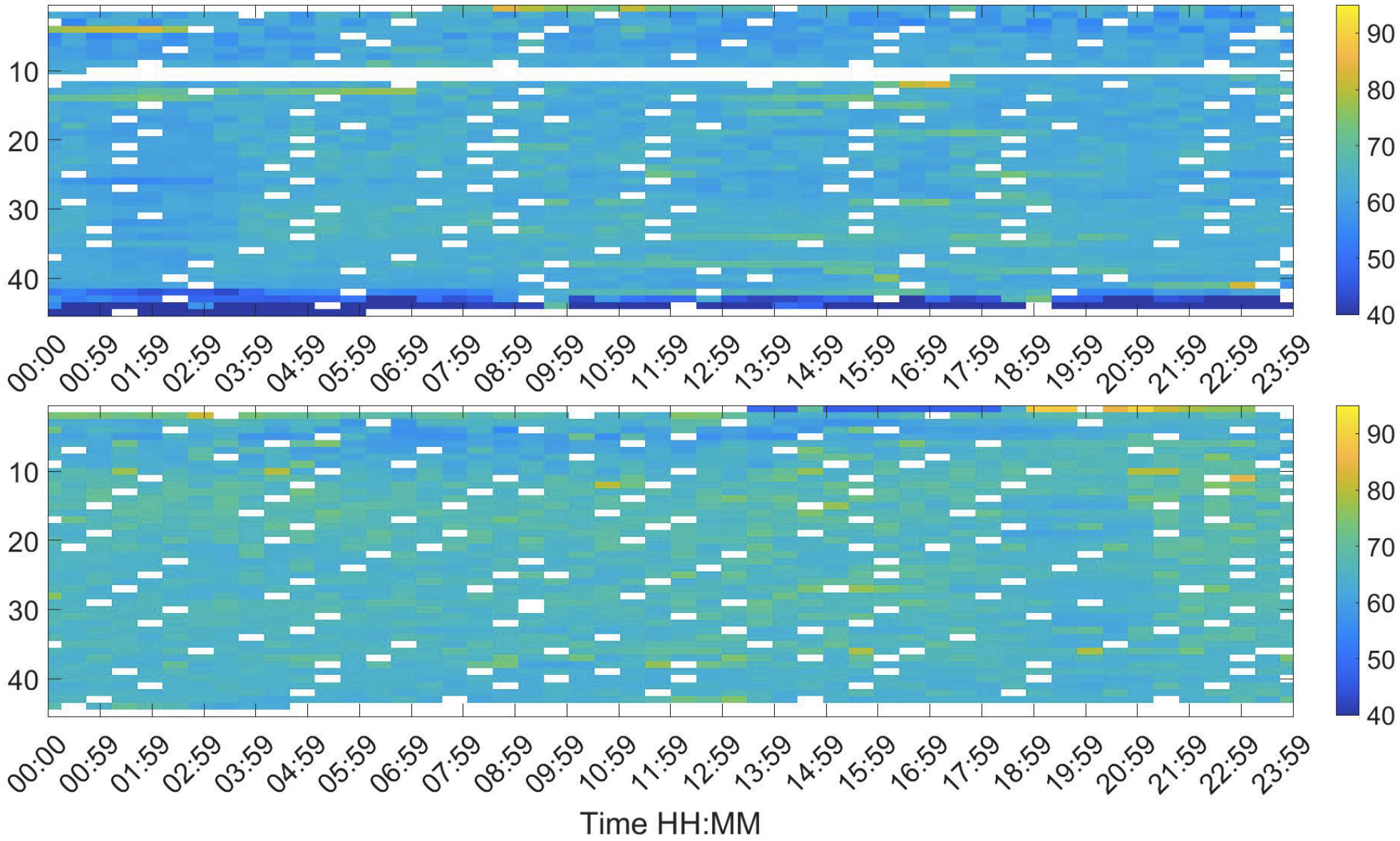


RESULTS

POULTRY VOCALISATIONS
AND WELFARE.

L_{eq}
C1

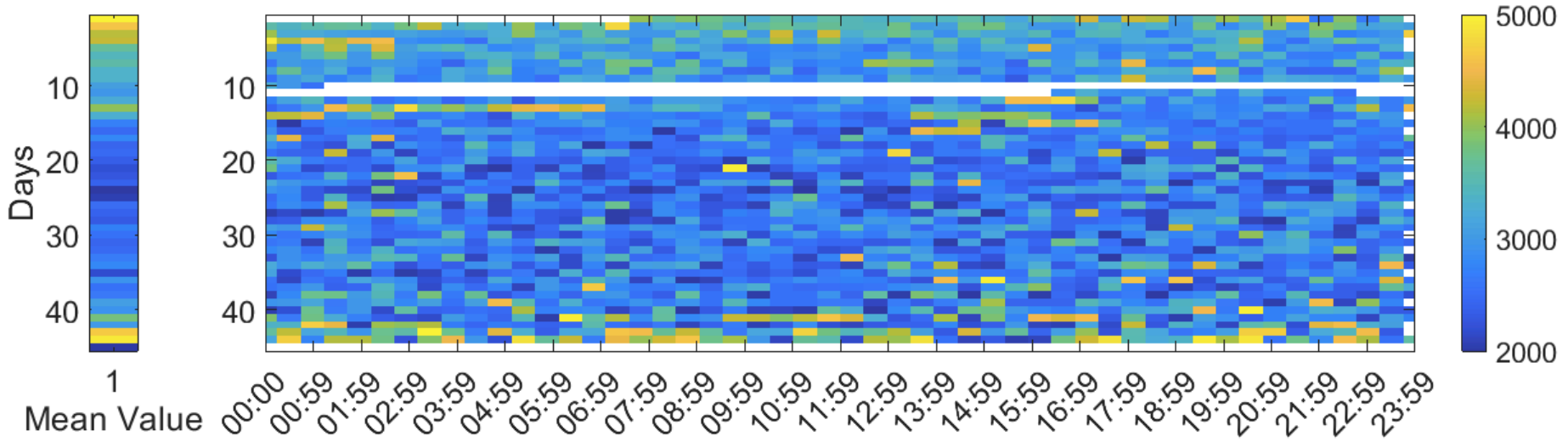
L_{eq}
C2



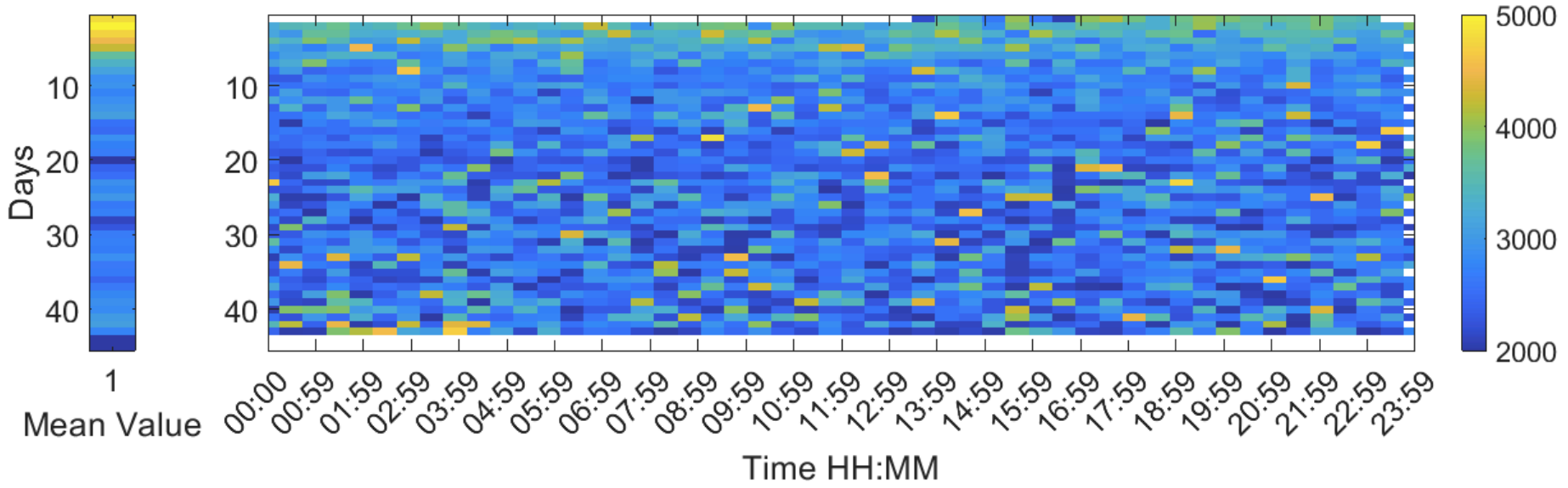
RESULTS

POULTRY VOCALISATIONS
AND WELFARE.

PF
C1



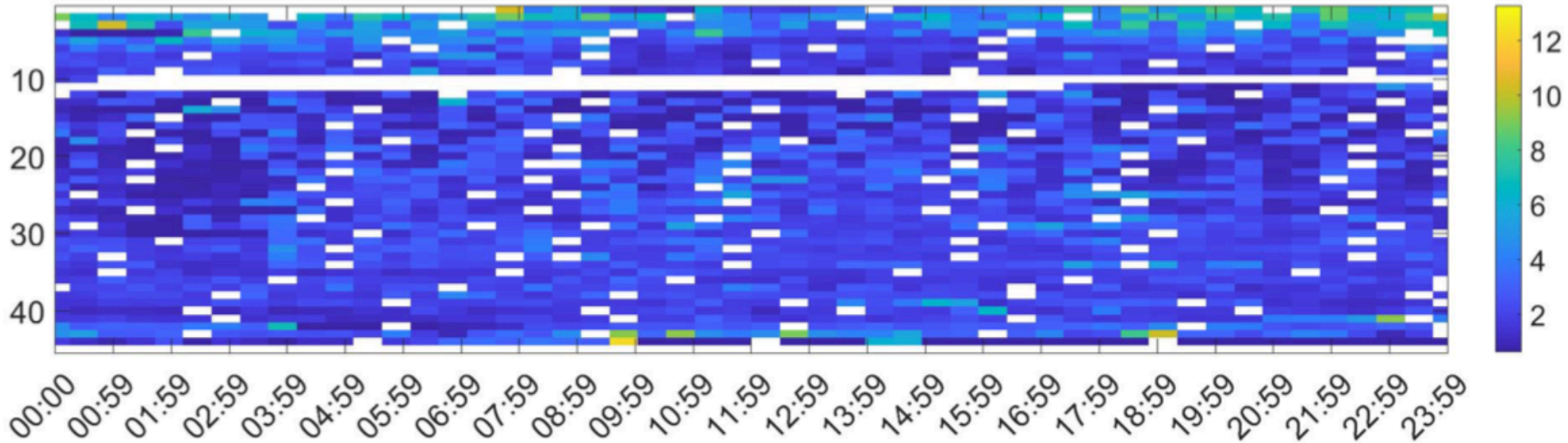
PF
C2



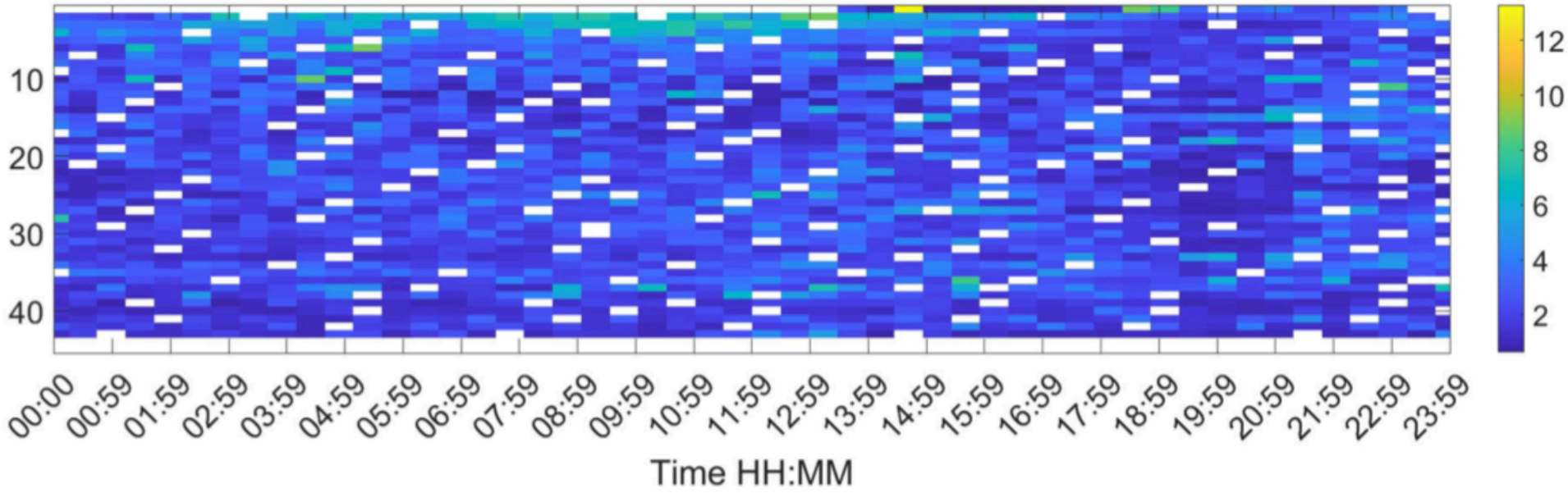
RESULTS

POULTRY VOCALISATIONS
AND WELFARE.

ΔL_{eq}
C1



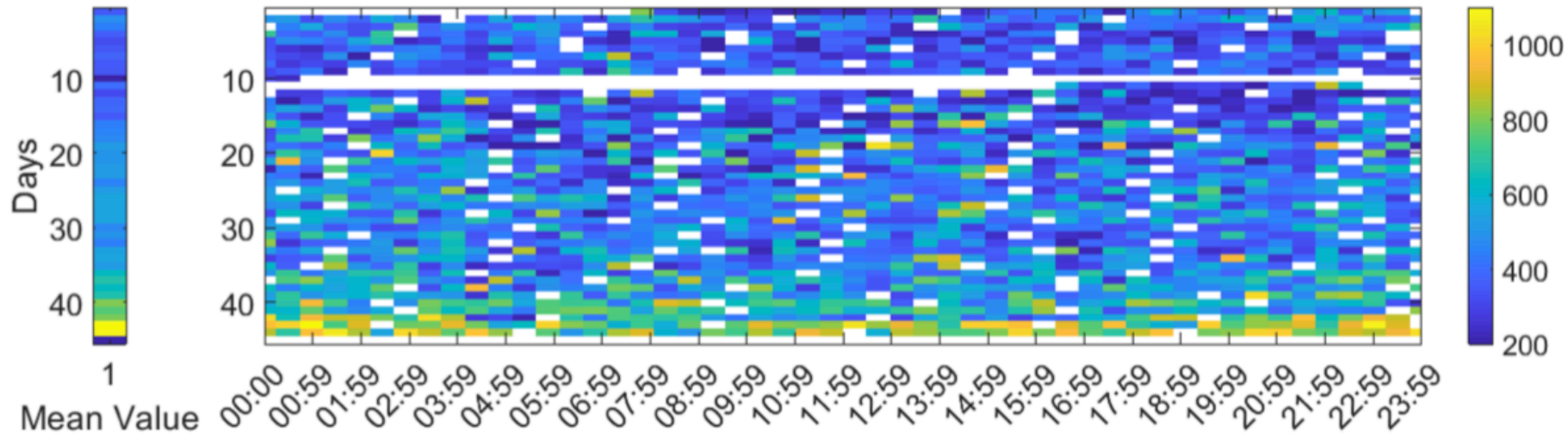
ΔL_{eq}
C2



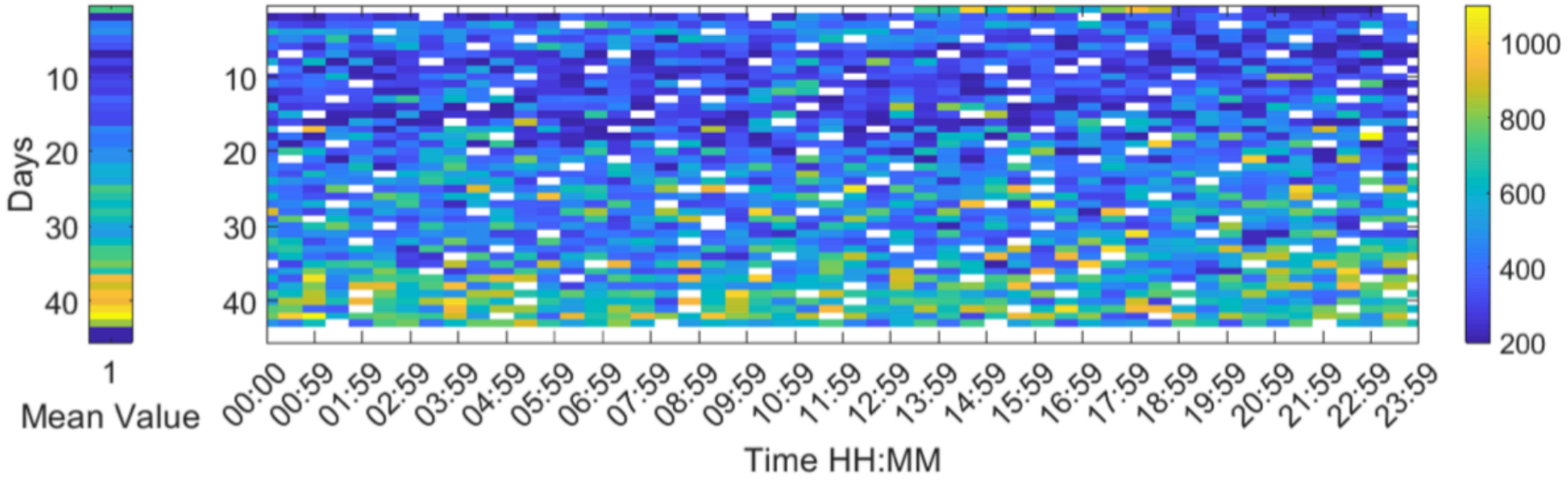
RESULTS

POULTRY VOCALISATIONS
AND WELFARE.

ΔPF
C1



ΔPF
C2



The inter season acoustic shows:

Invariant:

The L_{eq} captured at the arrival of the birds is the highest and long-lasting (around 5 h) period of the analysis and has the same pattern in both campaigns.

The PF captured the first fourth days of life indicates high values of frequency vocalisations in newborns.

The ΔPF has the major increase the last three days of the production cycle. ΔPF increases in function of the age of the animal.

ΔL_{eq} it also has the highest and long-lasting variations during the first two days of birds' life.

Variant:

L_{eq} in winter there is an increase of the metrics during the daylight, the summer season do not show this pattern metric and more peaks are detected without any rule.

The PF is in average lower during the winter campaign than in the summer. Also the C2 have more sporadic peaks of high frequencies than in winter.

FUTURE WORK

- More comparative of inter seasons recording campaign will be performed to ensure data stability.
- Find non-linear dependencies, using artificial intelligence algorithm, Neural Network.
- Multi-point recordings for having more spatially mapped levels (3 sensors).
- ISO 1996-2:2017 standard for environmental noise recording.
- EuroStars project E114423 - ITAM during 2020 - 2023.

Find more information in our publication

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