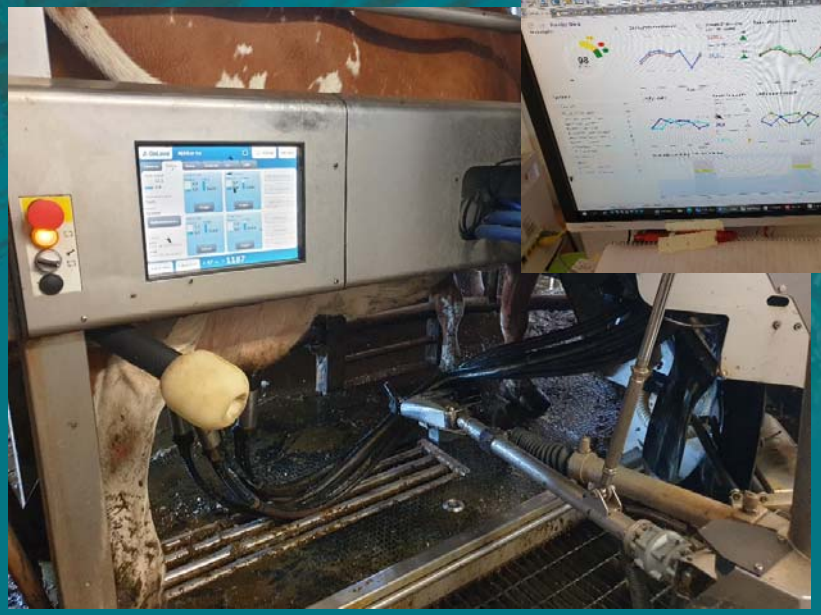
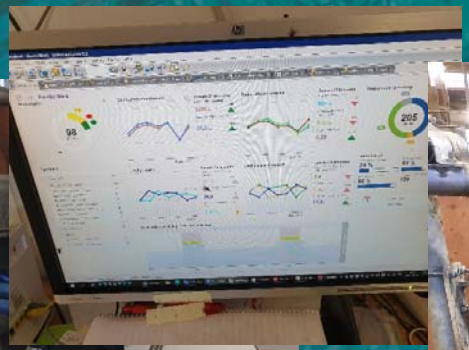
SLU
SCIENCE AND EDUCATION FOR SUSTAINABLE LIFE





Gigacow, automated data recording

Tomas Klingström, coordinator for SLU Gigacow.
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Gigacow

VÄXA

Farm data Genotypes Kokontrollen (advisory database)

Other data

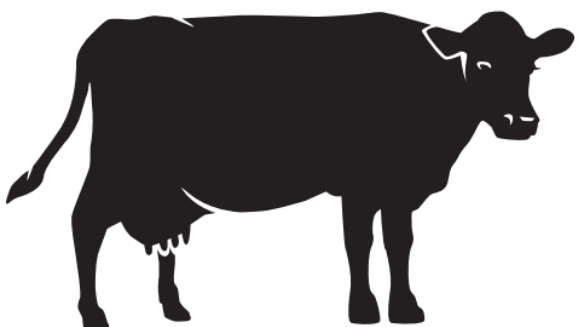


Bild Fredrik Saarkoppel

- Research
- Advice
- Digitalisation and technology experts

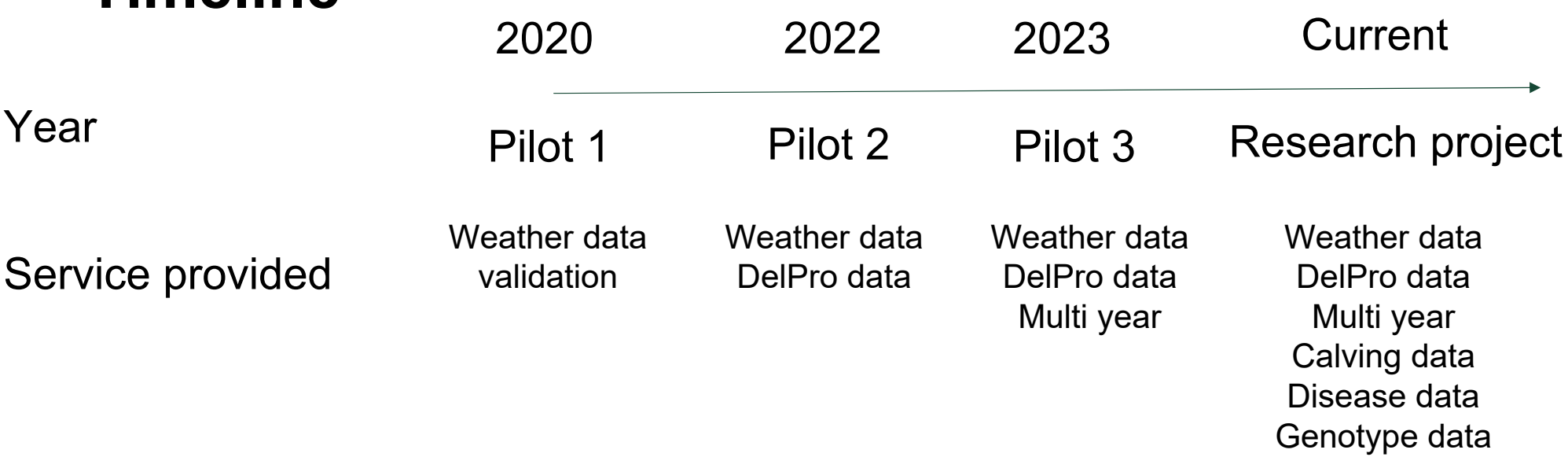
Summary stats SLU Gigacow

	2023-05-03	2024-04-29	Increase	# Animals	# Animals	Increase
Total				17 214	19 673	14 %
Milking events	3 589 973	5 164 866	44 %	2 706	3 105	38 %
Robot milkings	1 338 560	2 059 780	54%	1 088	1 523	40 %
Activity data	431 577	620 524	44 %	2 165	2 357	25 %
Feed days	2 907 939	5 011 588	72 %	3 170	4 211	77 %

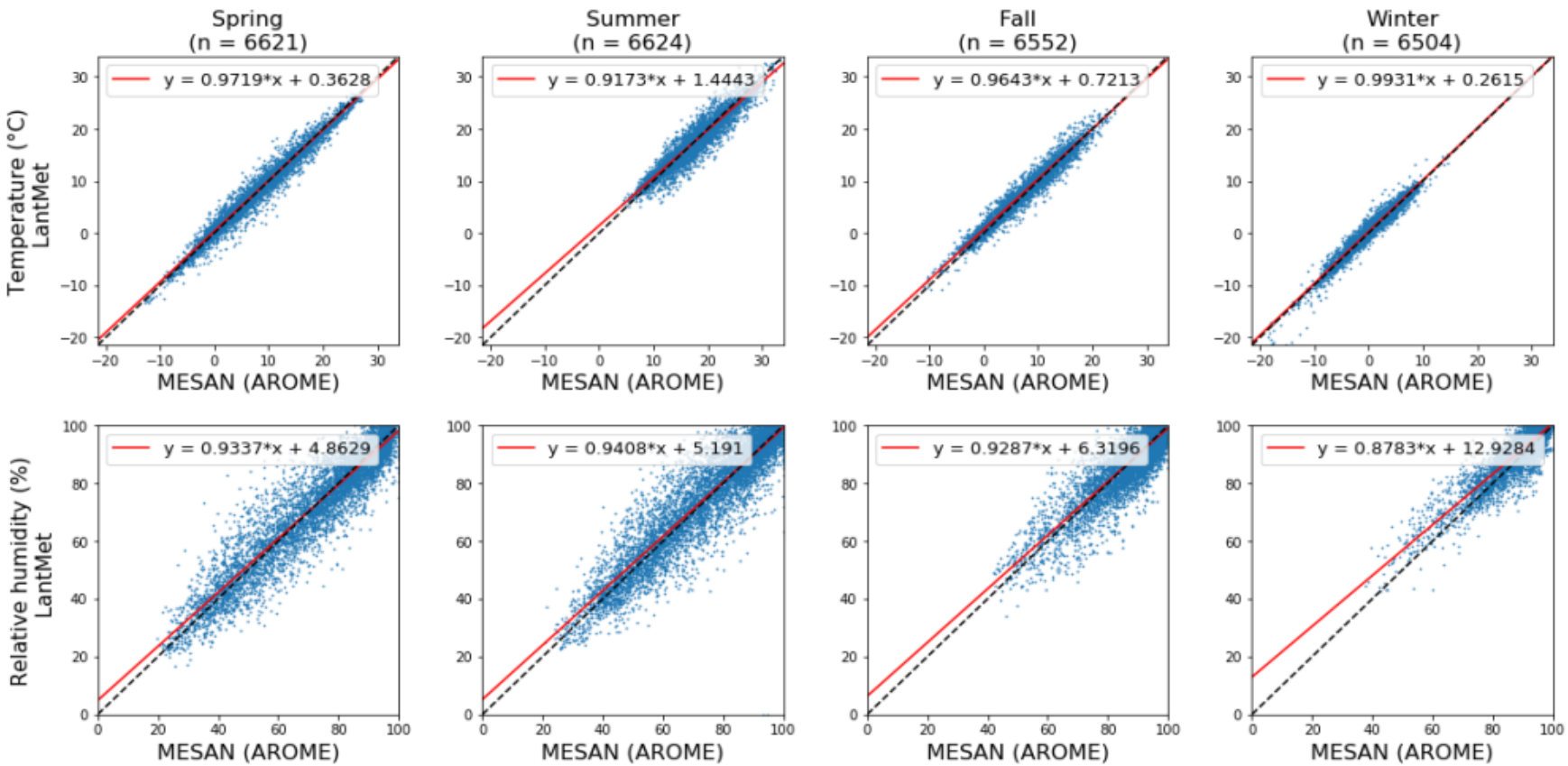
From sensitive to robust athlete

The project is using variation observed among high producing individuals to identify successful strategies of coping with heat stress and evaluate the possibilities for including these traits in a breeding program.

Timeline

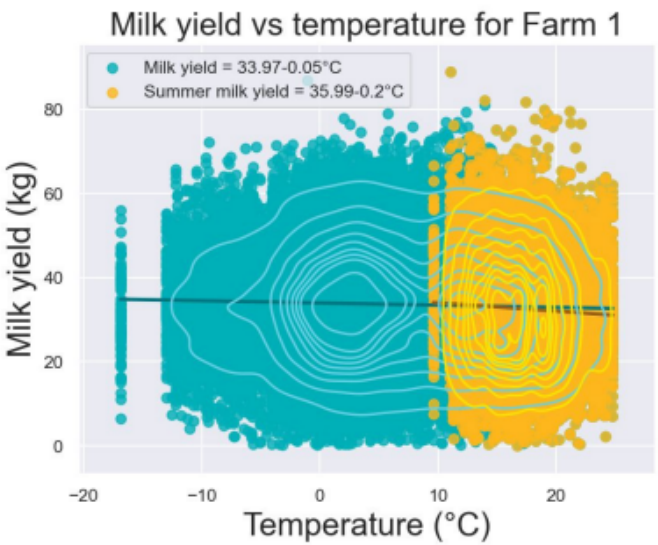

2020
2022
2023
Current
Year
Pilot 1
Pilot 2
Pilot 3
Research project
Service provided
Weather data
validation
Weather data
DelPro data
Weather data
DelPro data
Multi year
Weather data
DelPro data
Multi year
Calving data
Disease data
Genotype data

Weather data validation (pilot 1)



Impact of heat stress at a Swedish dairy farm (pilot 2)

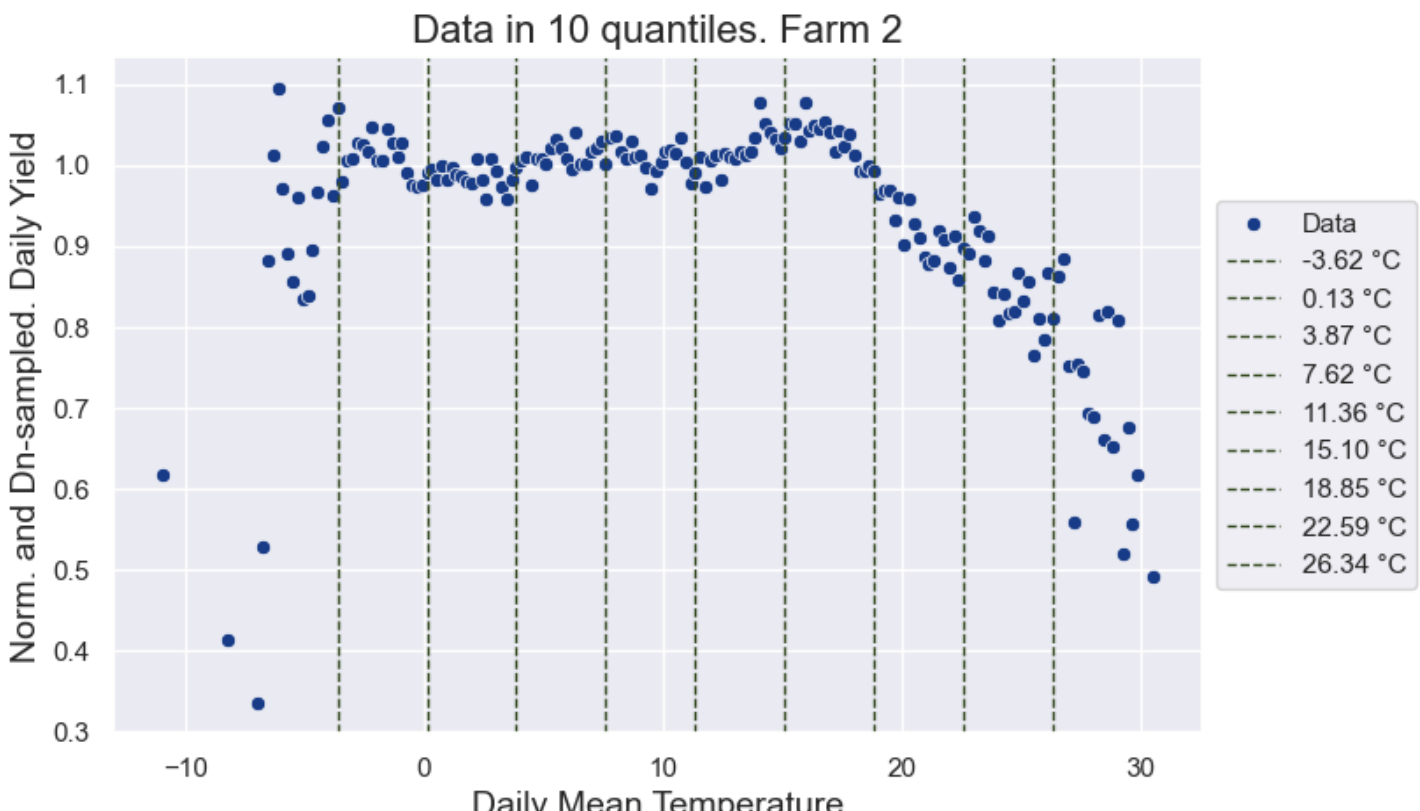
Regression Analysis



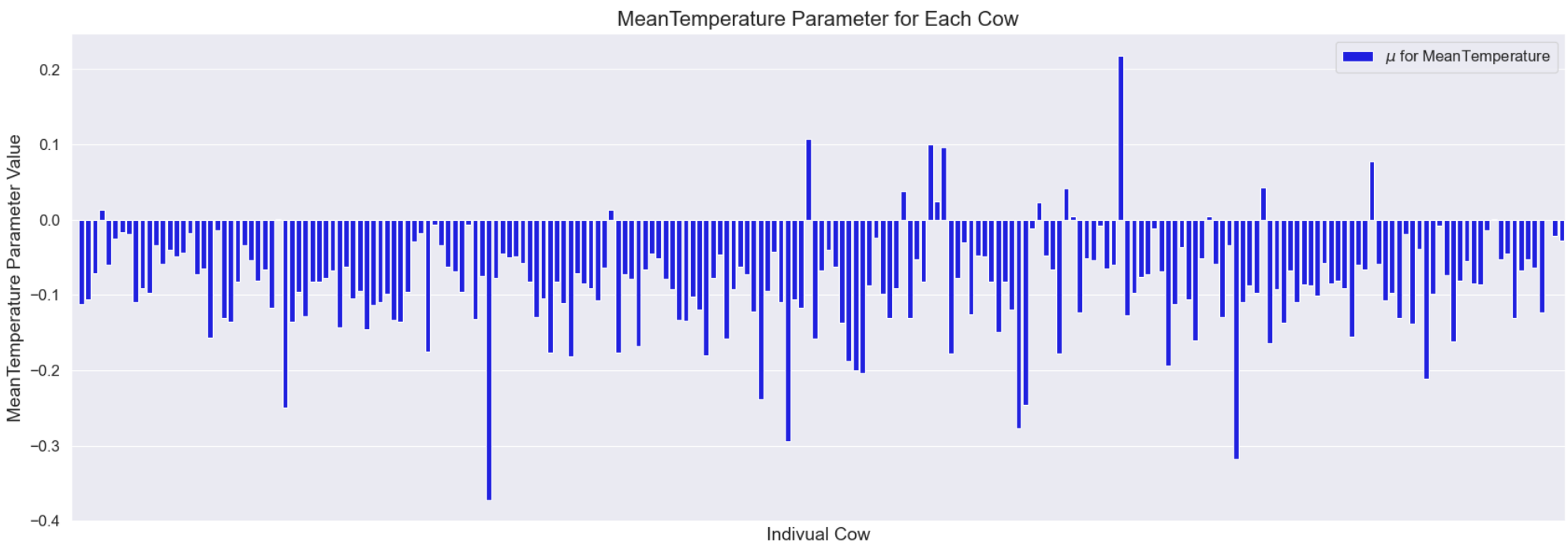
First order linear regression indicates how milk yield (kg) is affected by an increase in temperature (°C).

Farm name	All data		Summer		Top producers	
	kg	kg/°C	kg	kg/°C	kg	kg/°C
Farm 1	33.97	-0.05	35.99	-0.20	39.32	+0.04
Farm 2	33.94	-0.16	36.50	-0.15	43.17	-0.24
Farm 3	37.66	-0.03	37.58	-0.05	43.88	+0.07
Farm 5	37.00	+0.02	41.13	-0.21	45.47	-0.10
Farm 7	40.09	-0.01	39.55	+0.03	47.82	-0.05
Farm 8	33.09	-0.11	36.01	-0.31	39.39	-0.21
Farm 9	29.26	-0.02	32.72	-0.20	37.83	-0.06

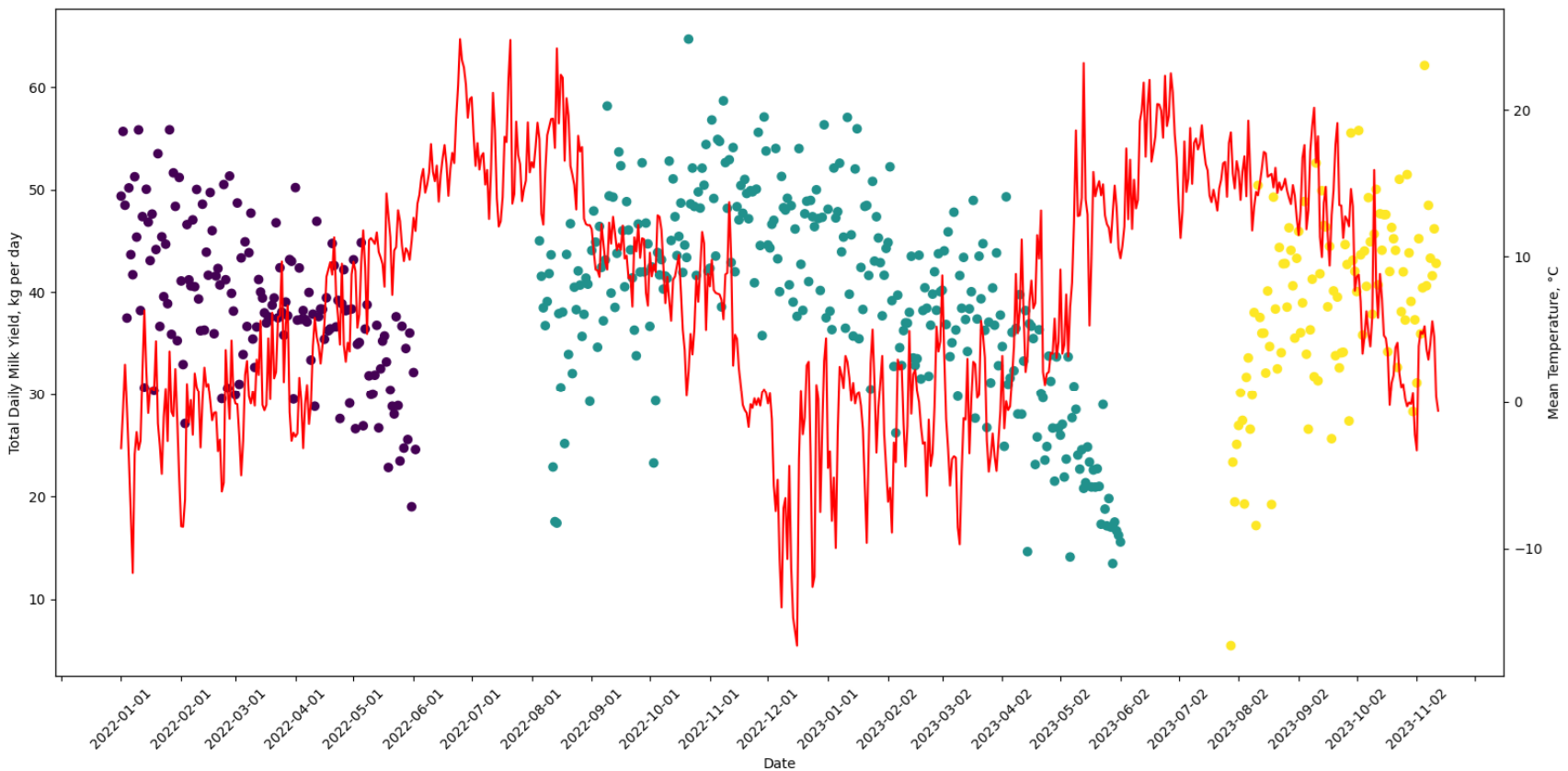
Capturing heat stress at a Swedish dairy farm (pilot 3)



Individual impact (pilot 3)

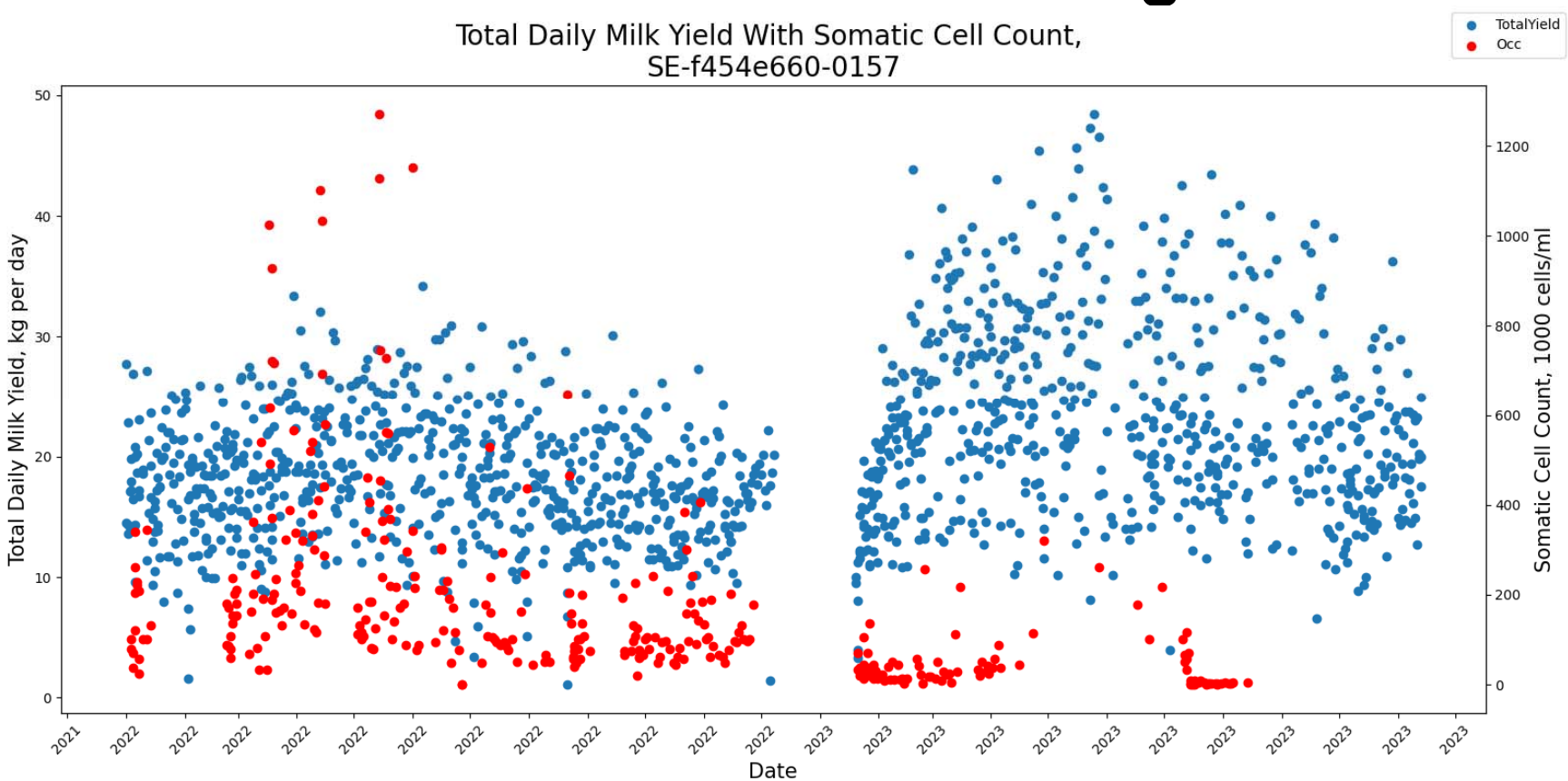


Confounding factors!



Health events (integrating a separate database)

Heat stress vs mastitis vs something?



One project contribute to many others

This project

- Phenotype – Heat tolerance
- Phenotype – Pregnancy loss
- Between farm variation

Impact of mastitis

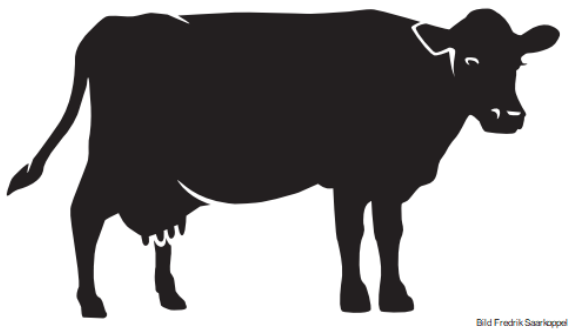
Resilience indicators

Microbiome variation

Lactation length adjustments

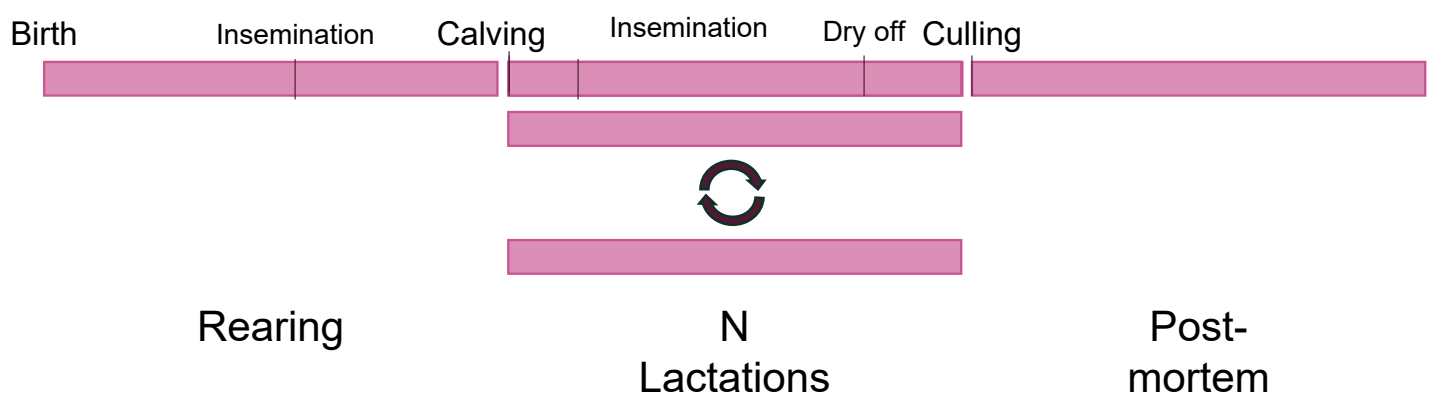
iDDEN integration

Short-term aim – Integrative cow data model

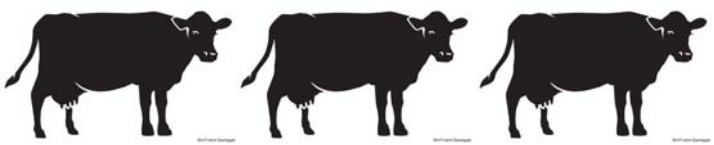


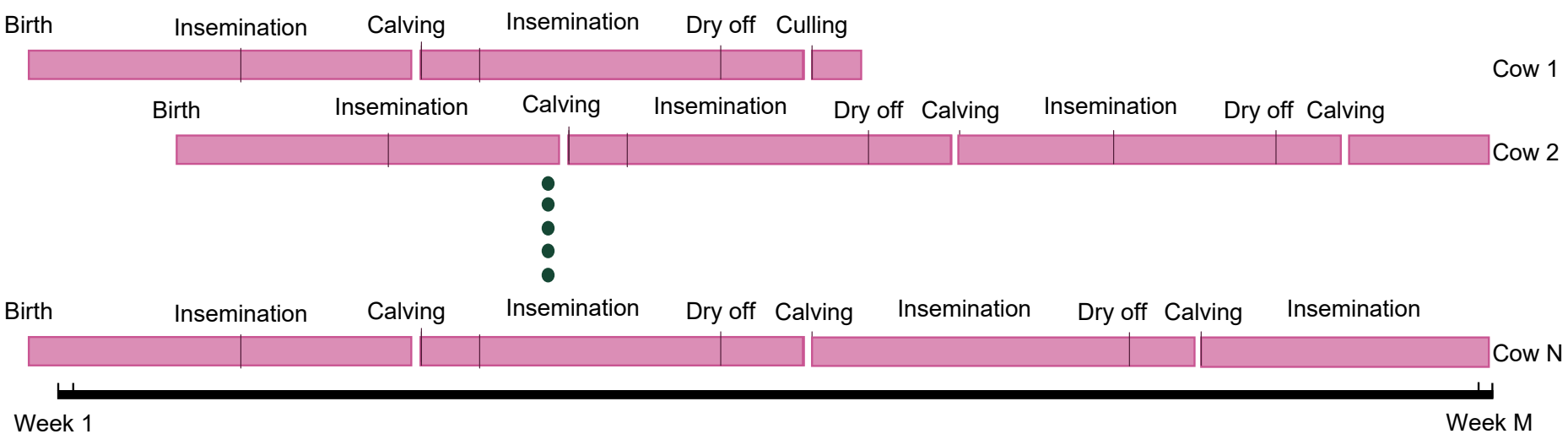
Repeated recordings

- Milkings
- Activity
- Feed
- Health
- Events recording



Long-term aim - Westworld for cows





Current organisation

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Research partner

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Researcher/ Programmer

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P.I

Ivan Clegg
Database developer

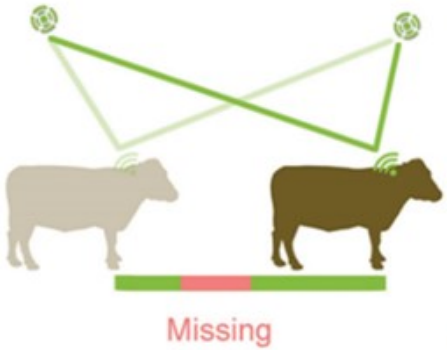
Patricia Gullstrand
Researcher

Marcus Pedersen
Sysadmin (Interbull)

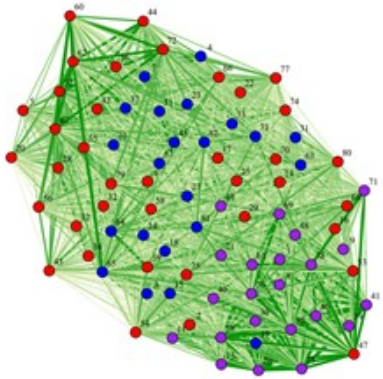
Great thanks to Freddy Fikse, Karl-Johan Petersson, Natalie von der Lehr, Hans Persson, all our farmers and collaborators at SLU, Växa and NAV

Deparment of Animal Biosciences

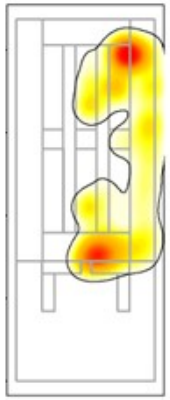
Ultra-wideband system



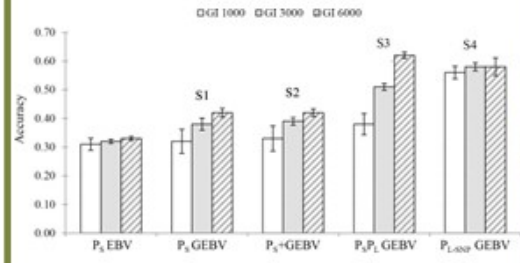
Modelling social networks



Modelling area utilization



Breeding evaluations



CSI:DT website

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Sreten Andonov