



GPS TRACKING: OPPORTUNITIES FOR A BETTER UNDERSTANDING OF THE INTERACTIONS BETWEEN PASTORALISM AND VEGETATION IN HIGH ALTITUDE PASTURES

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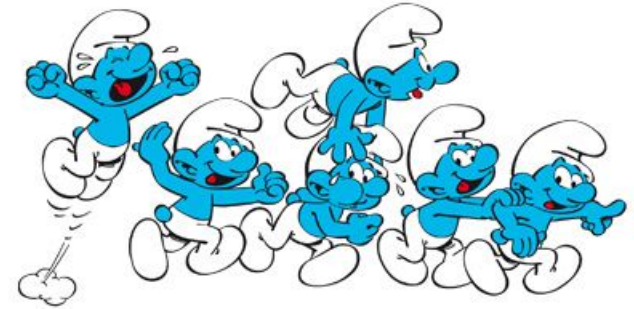


ZAA FUNDING - SUIVI DES
TROUPEAUX DE MOUTONS
PÂTURANT EN HAUTE-MONTAGNE



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STrouMPH



ZA Zones
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STROUMPH - OBJECTIVES

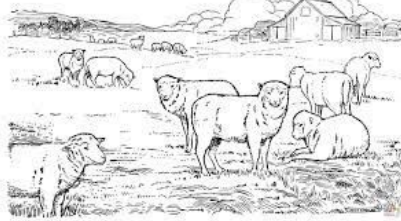
What is the impact of pastoralism on the evolution of alpine pastures habitats?

- Understand the uses of the pasture habitats by the {shepherd + flock} system
- Understand the impact of the flock on the phytomass of habitats
- Compare uses and impacts with habitat phenologies
- Understand the practice adaptations to constraints (meteorological conditions, tourism, predation...)

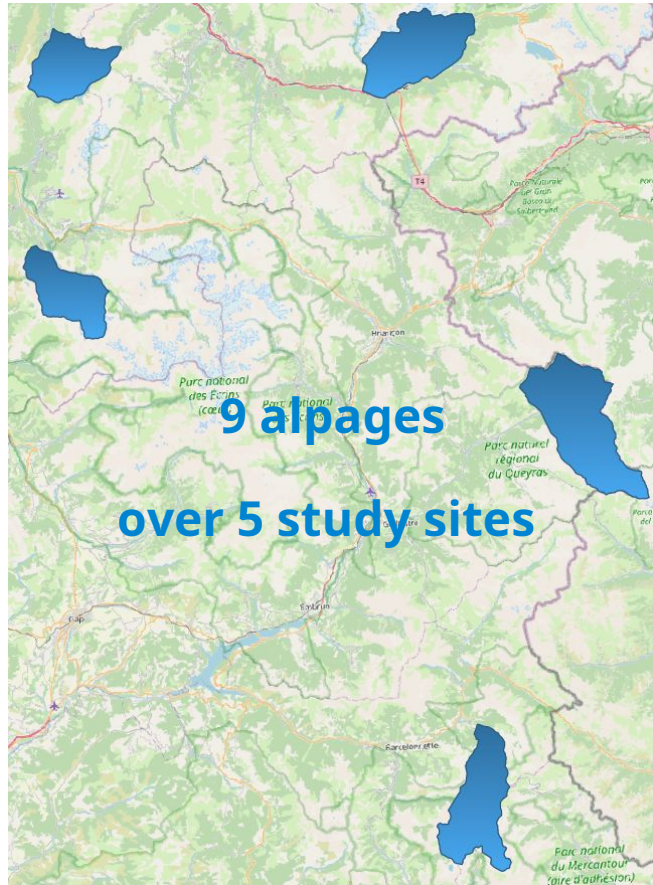


STROUMPH – FIELD WORK

8 **GPS collars** per flock

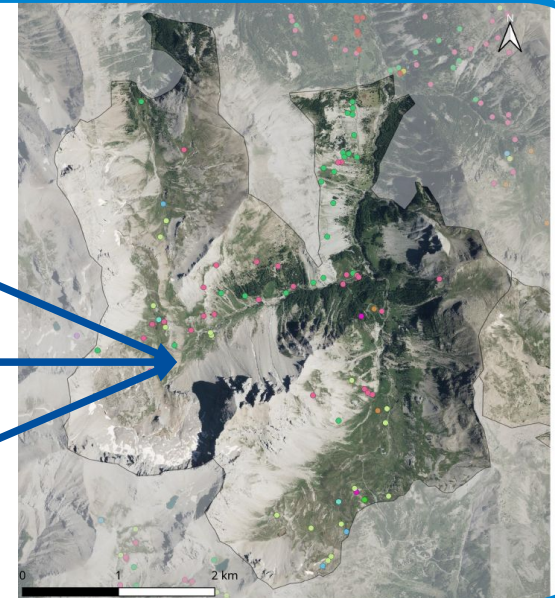


Surveys of **farmers and shepherds**



On 40 points, **before and after the use** by the flock

- Soil covering by functional classes of vegetation
- NDVI
- Presence of species indicating eutrophication, erosion, trampling
- Grass height



GPS POSITION LOGGING



Catlog Gen2 GPS loggers

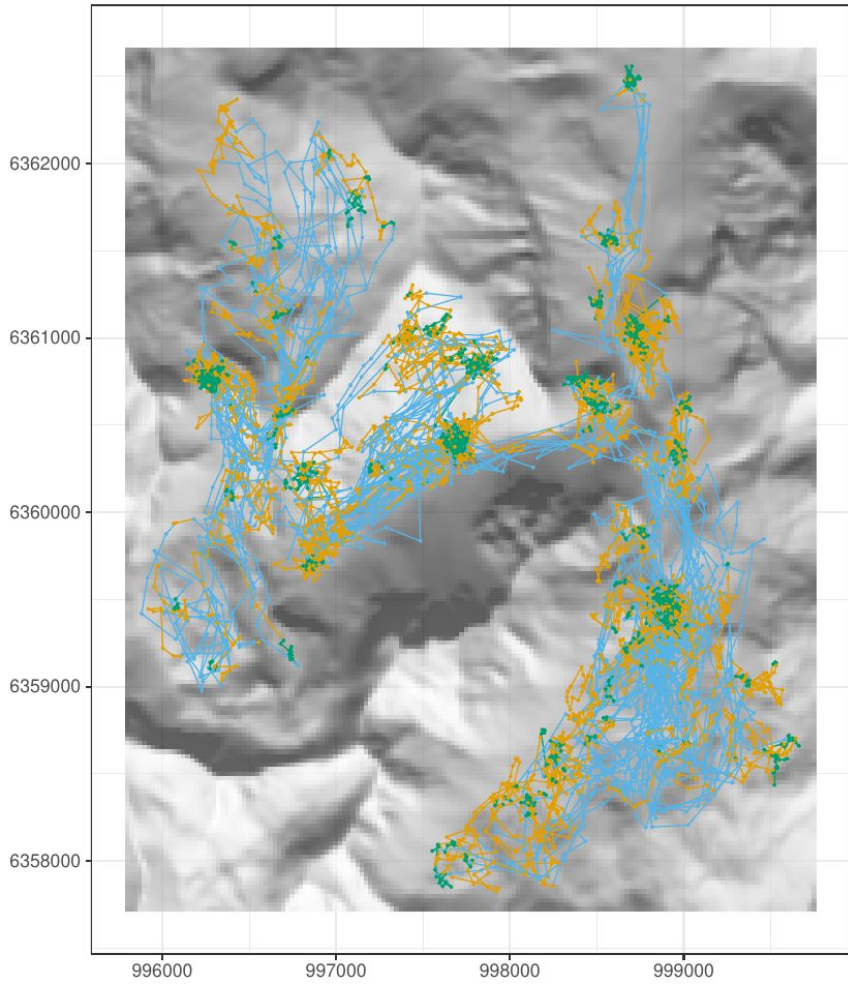
- ~ \$100 per collar
- About 400g each
- One relocation every 2 minutes
- No transmission

Pasture	Number of collars	Functionning collars	Relocation rate	Erroneous relocations
Âne-et-Buyant	3	3	71,7 %	5,1 %
Cayolle	4	4	95,1 %	7,1 %
Combe-Madame	3	3	93,1 %	9,7 %
Grande-Fesse	6	4	98,9 %	5,1 %
Jas-des-Lièvres	3	3	66,4 %	6,3 %
Lanchâtra	8	6	87,4 %	9,6 %
Pelvas	8	5	88,3 %	6,7 %
Sanguinière	6	6	97,0 %	7,6 %
Viso	8	5	99,4 %	7,0 %

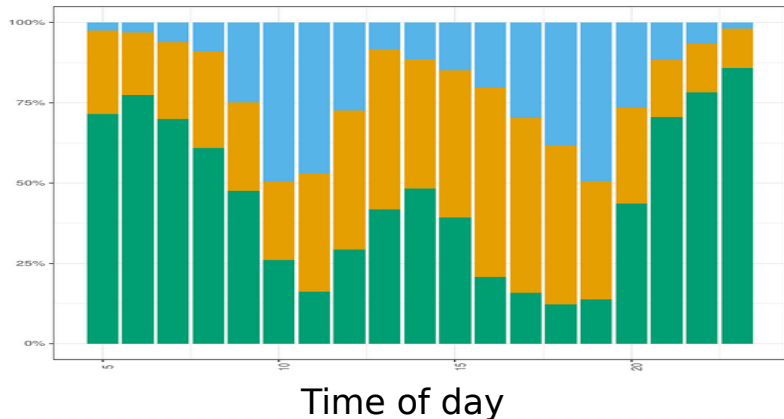
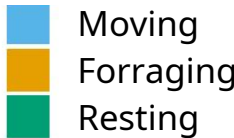
ANALYSES

COL DE LA CAYOLLE MOUNTAIN PASTURE

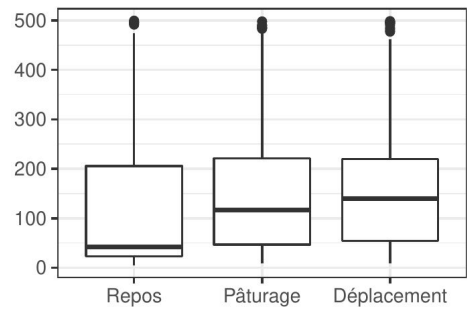
BEHAVIOURAL CATEGORISATION – HIDDEN MARKOV MODELS



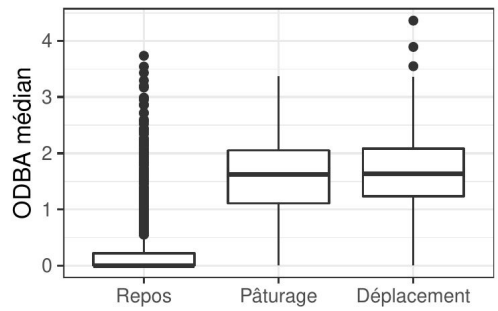
One sheep during the whole summer



Distance between sheep

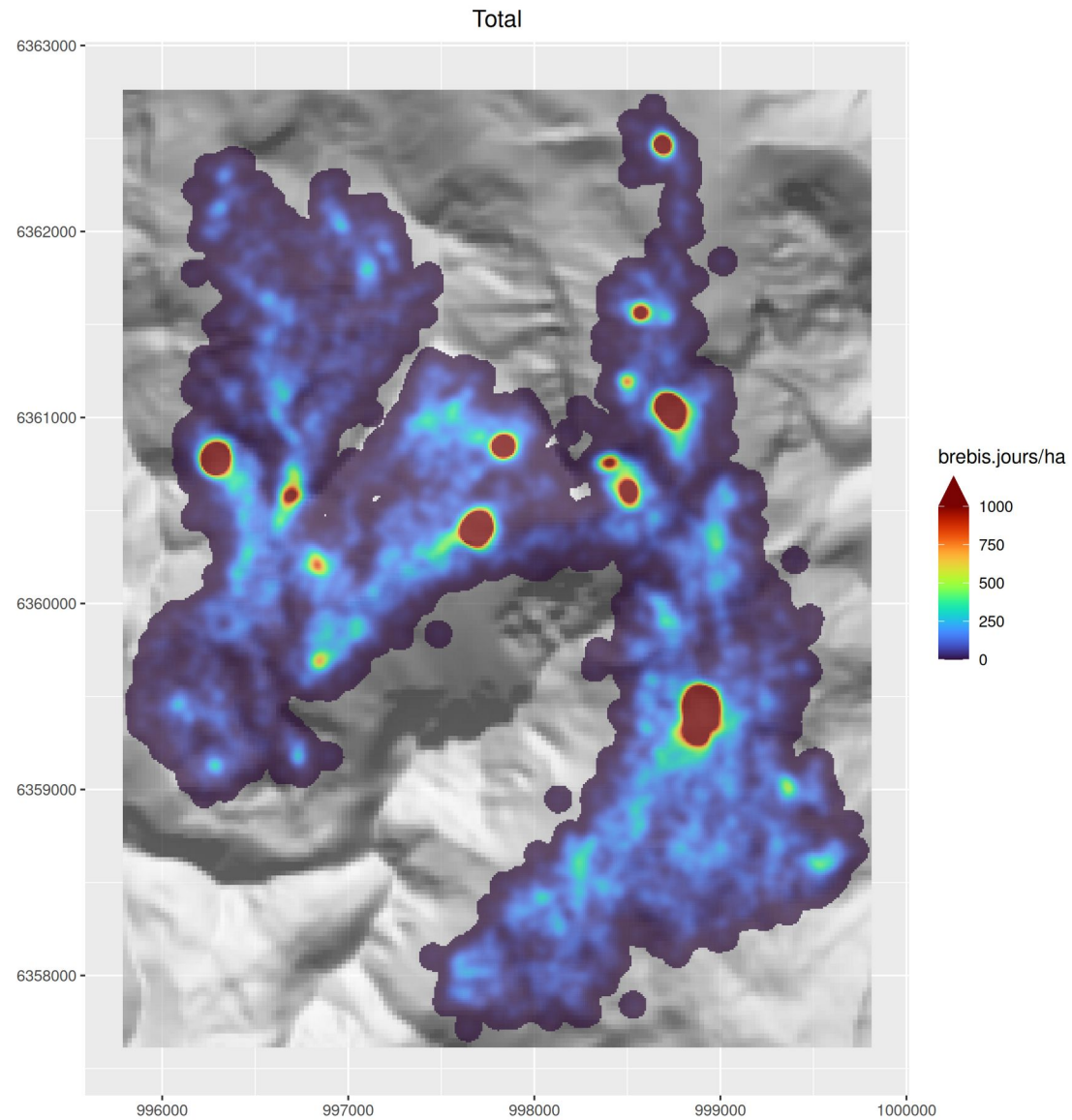


Activity

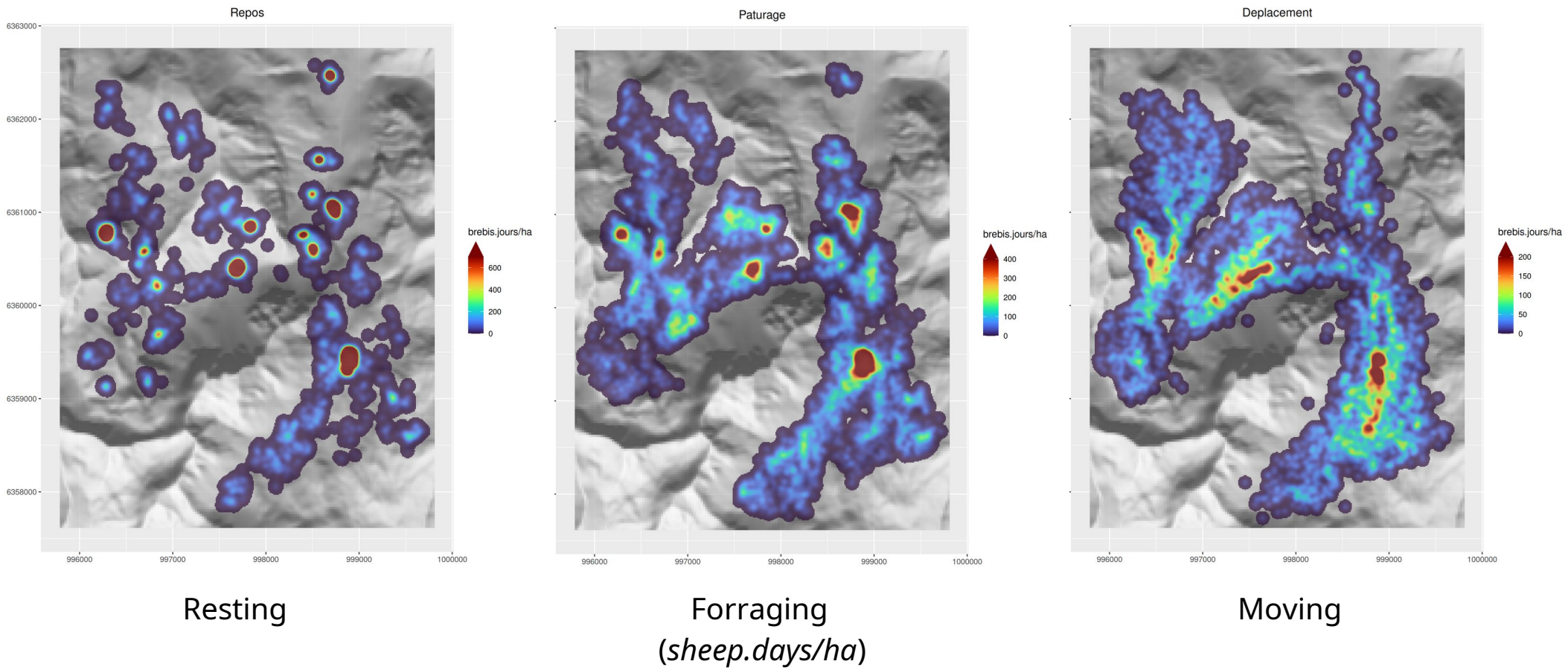


FLOCK STOCKING RATE ON THE PASTURE

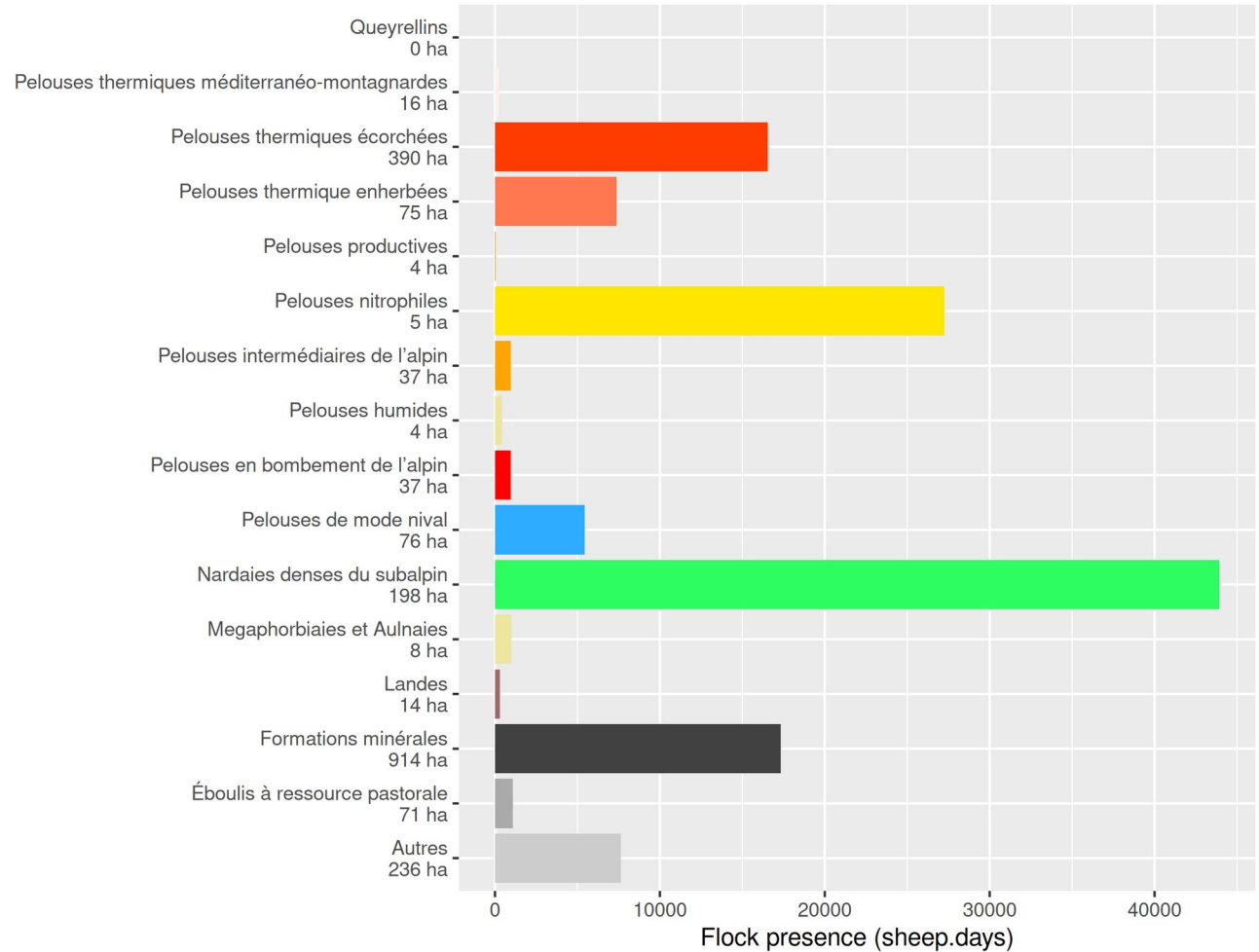
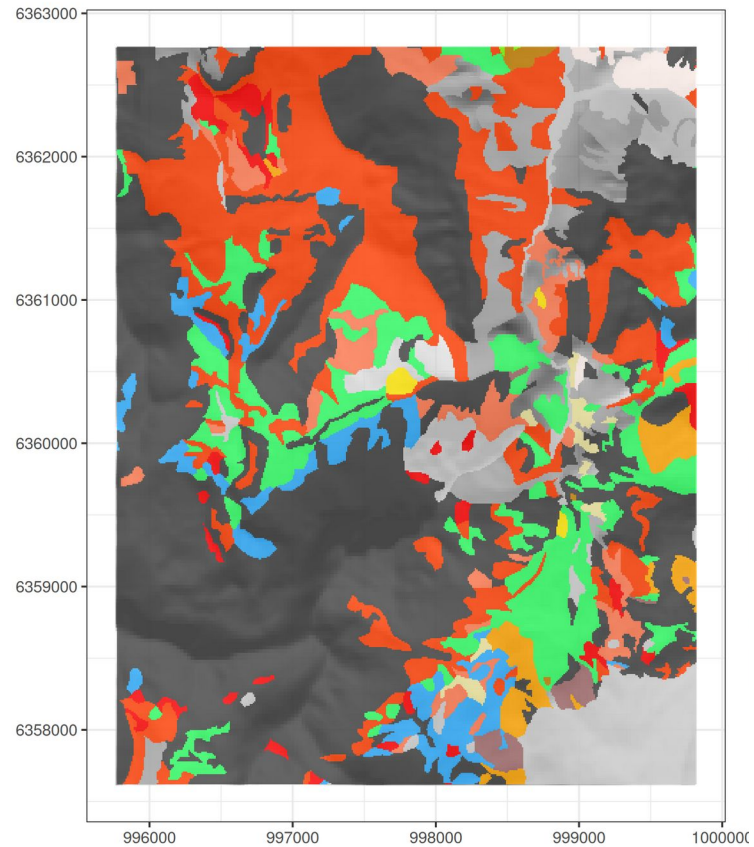
- First link with the impacts
- Night and day resting areas are particularly noticeable



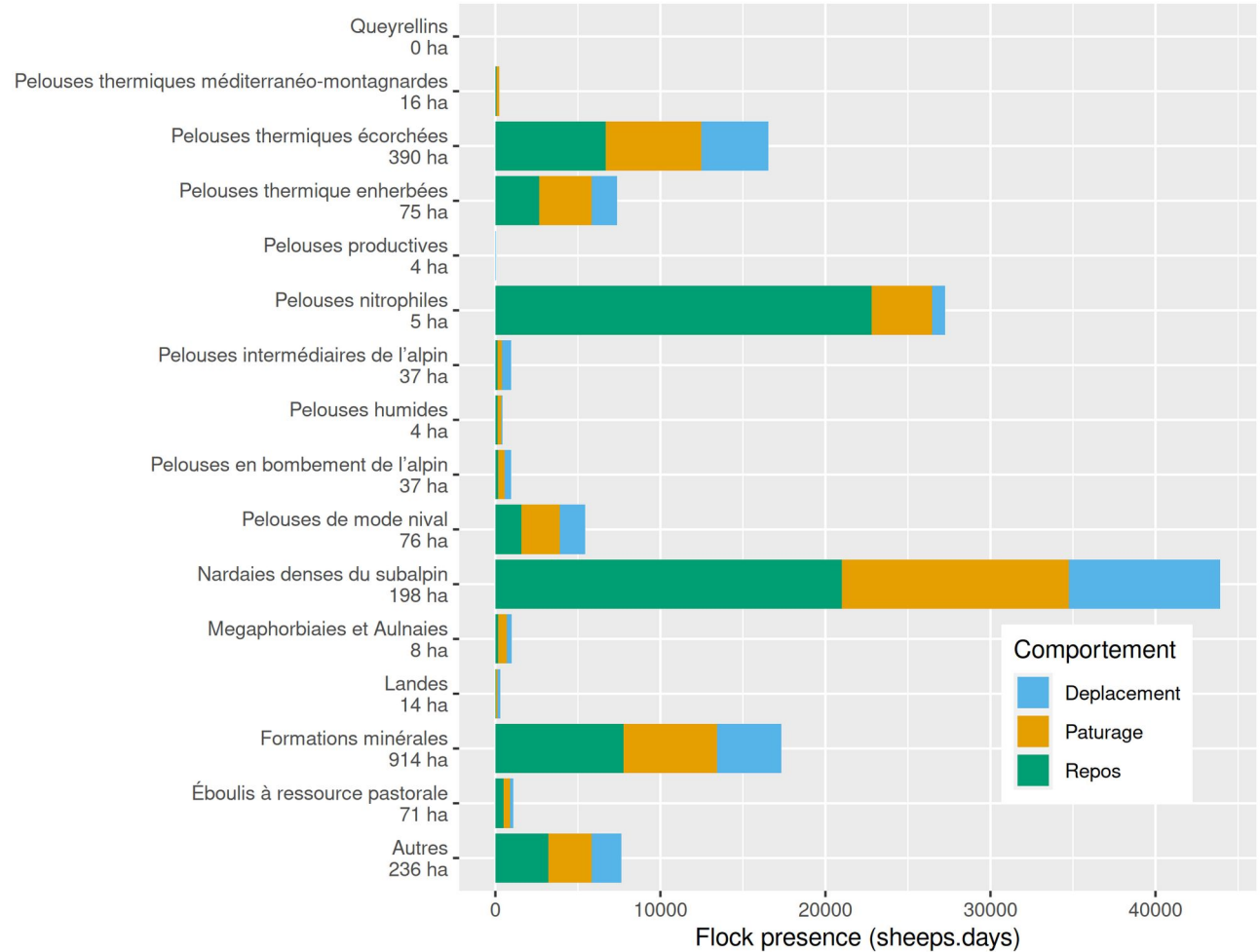
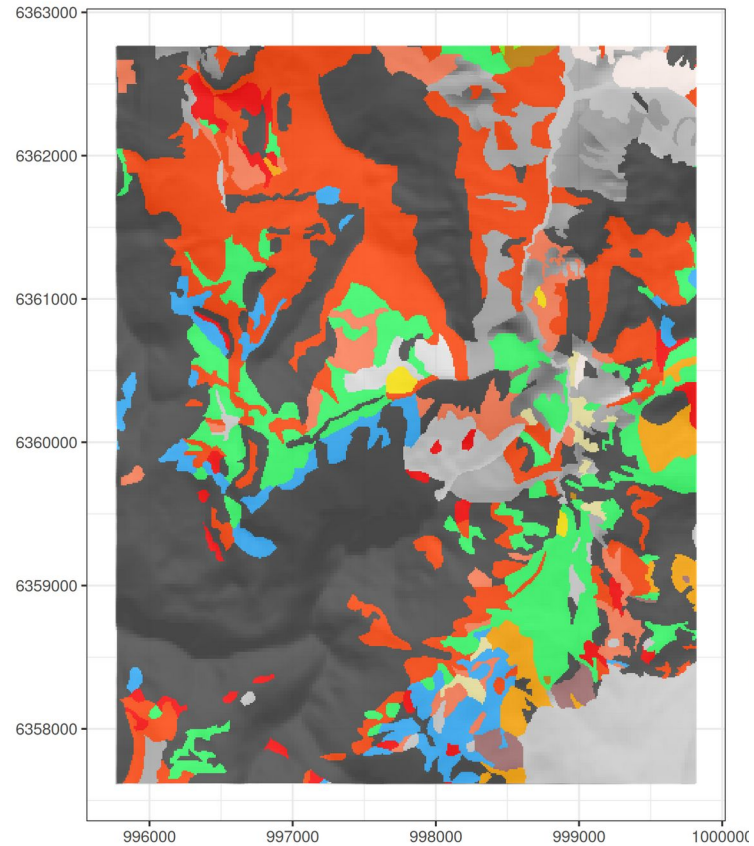
SPATIALISATION OF BEHAVIOURS ON THE PASTURE



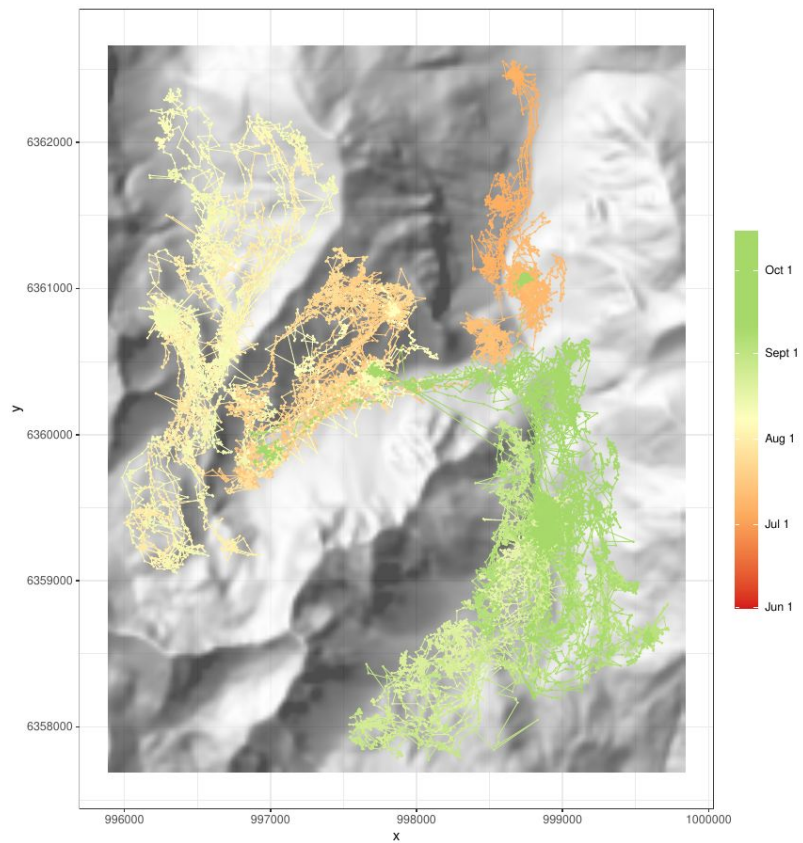
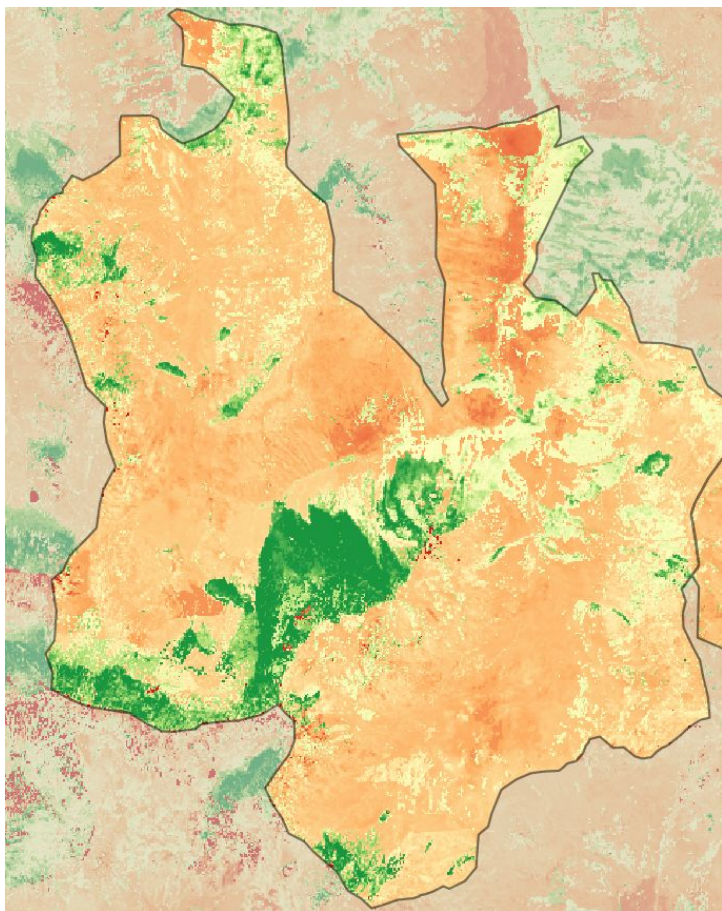
PASTURE HABITATS' USES



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LINK TO PHENOLOGY

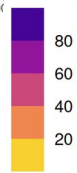
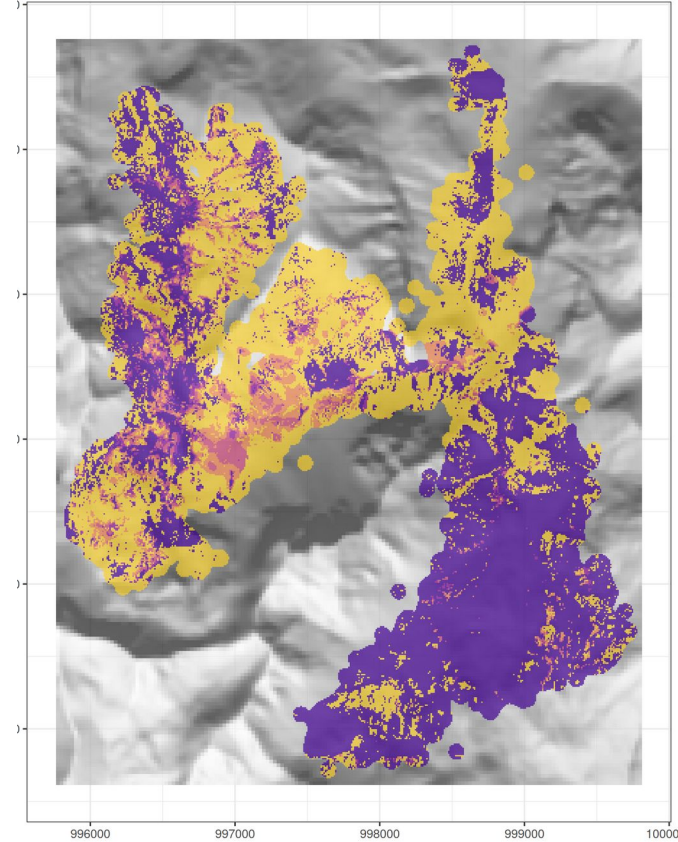
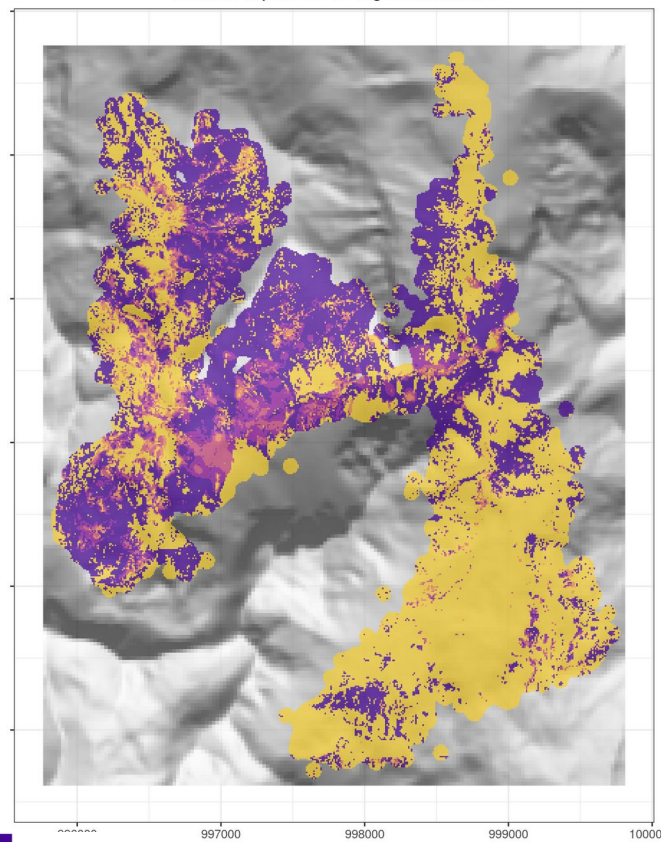
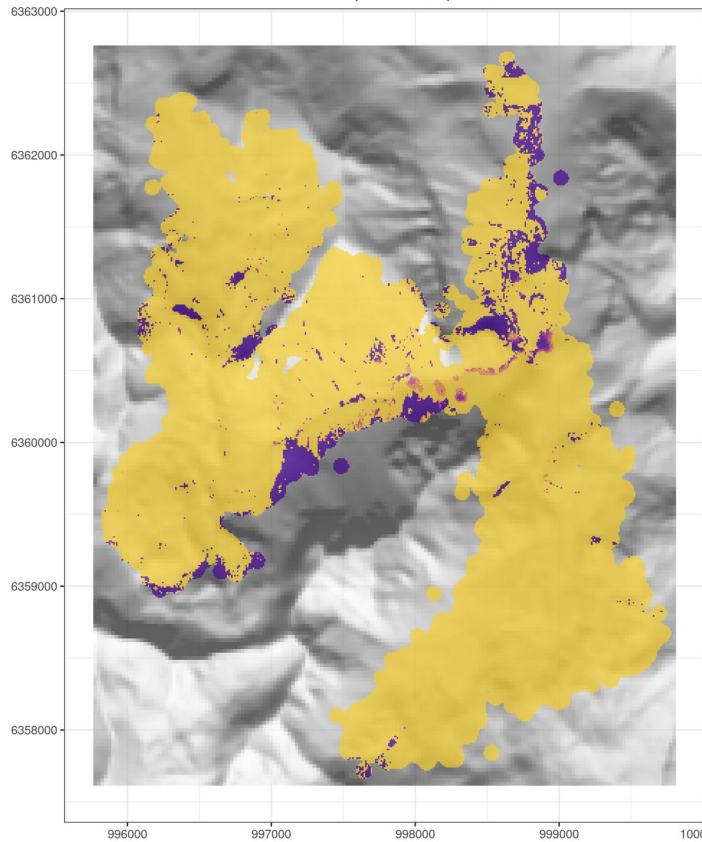


LINK TO PHENOLOGY – GREENUP WAVE

Growing season

Vegetation plateau

Senescence period



80
60
40
20
Percentage of flock
presence during the period

CONCLUSIONS

- Low-cost option for efficient bio-logging of pastoral activities
- Opportunities to link high resolution flock activity data and remote sensing
- Importance of discussion with the shepherds to understand both practice choices and constraints

FLOCK LOAD ON THE PASTURE HABITATS

