

# **Collective summer mountain pastures: A source of flexibility for livestock farms faced with climate variability**



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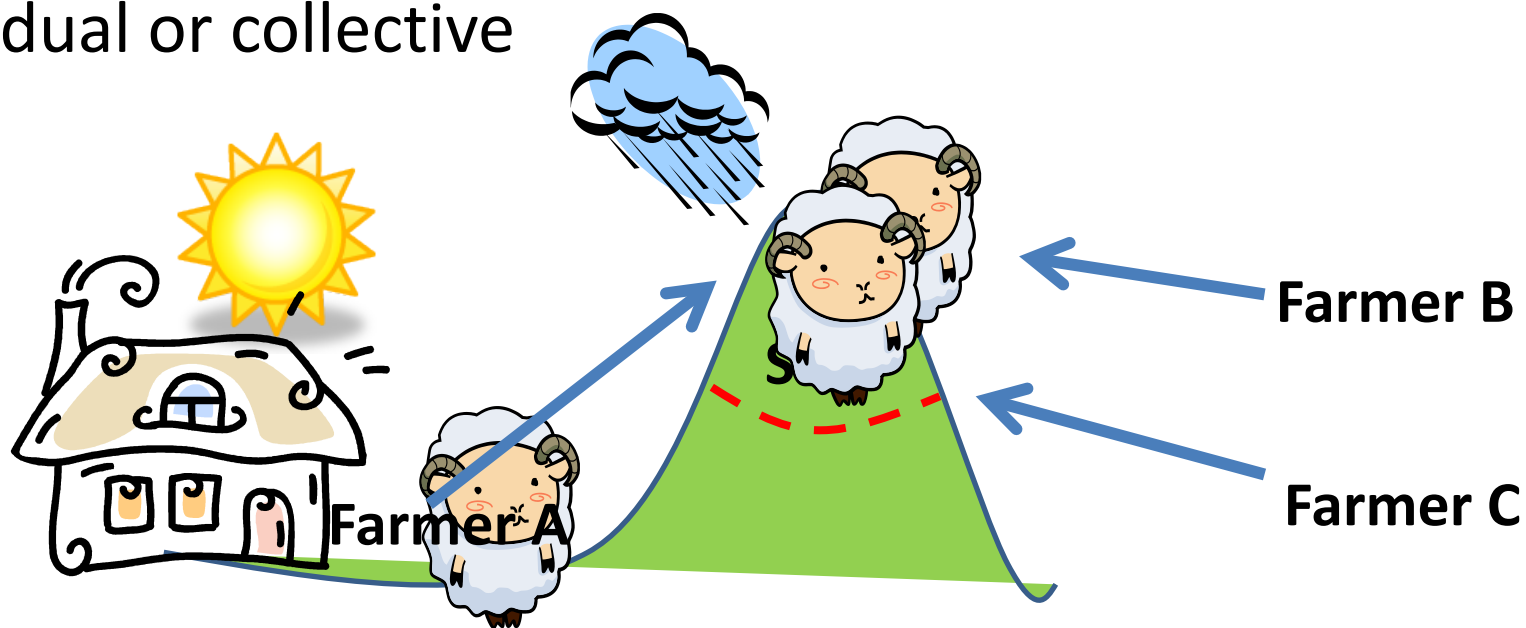
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# In mountain grassland areas

- Livestock Farming Systems (LFS) are sensitive to climate variability (*Baumont, 2008, Bernues 2011*)
- Droughts expected to increase in frequency and intensity due to climate change (*IPCC, 2007*)
- The ability of LFS to respond is referred as flexibility (*Dedieu et al., 2009, Darnhofer et al., 2012*)

# Summer Mountain Pastures (SMP)

- High altitude areas dedicated to summer grazing of the herd (*Flament et al., 1999*)
- Exposed to a fresher and rainier climate
- Individual or collective



- Individual SMP can contribute to the flexibility of LFS (*Martin et al., 2009*)

# Contribution of collective SMPs to the flexibility of LFS

- In the long run, how the evolution of animal numbers is it related to droughts ?
  - How beginning and ending dates, and animal flows between, can they be adjusted to cope with forage availability on farms and the SMP ?
- Effects of collective rules and organisation ?



# A survey in Auvergne in 2012

Regional statistics  
and technico-  
economic reports

Semi directive  
interviews

7 collective SMPs managers



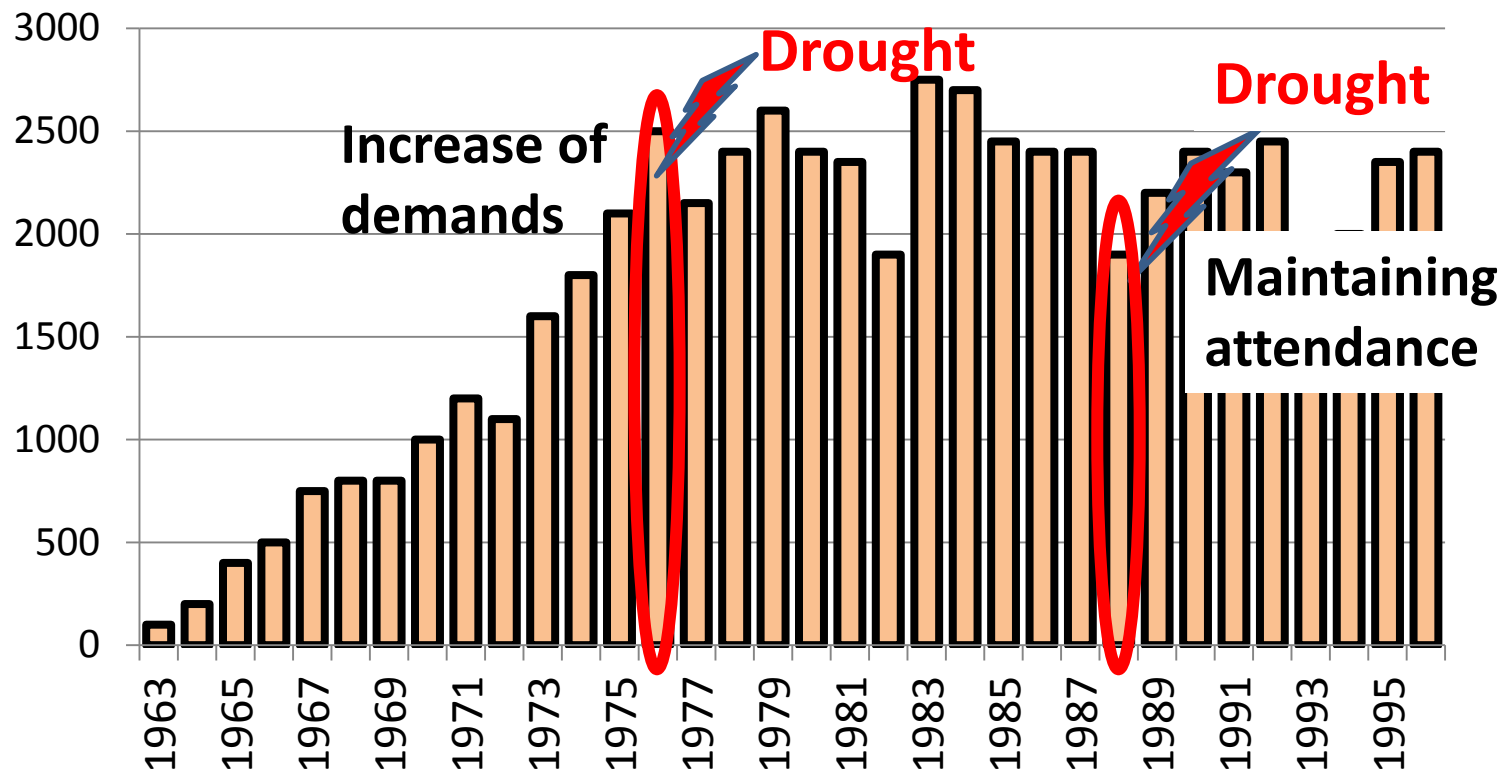
15 users (6 cattle/ 9 sheep farmers)

Detailed analysis of  
a shepherd record

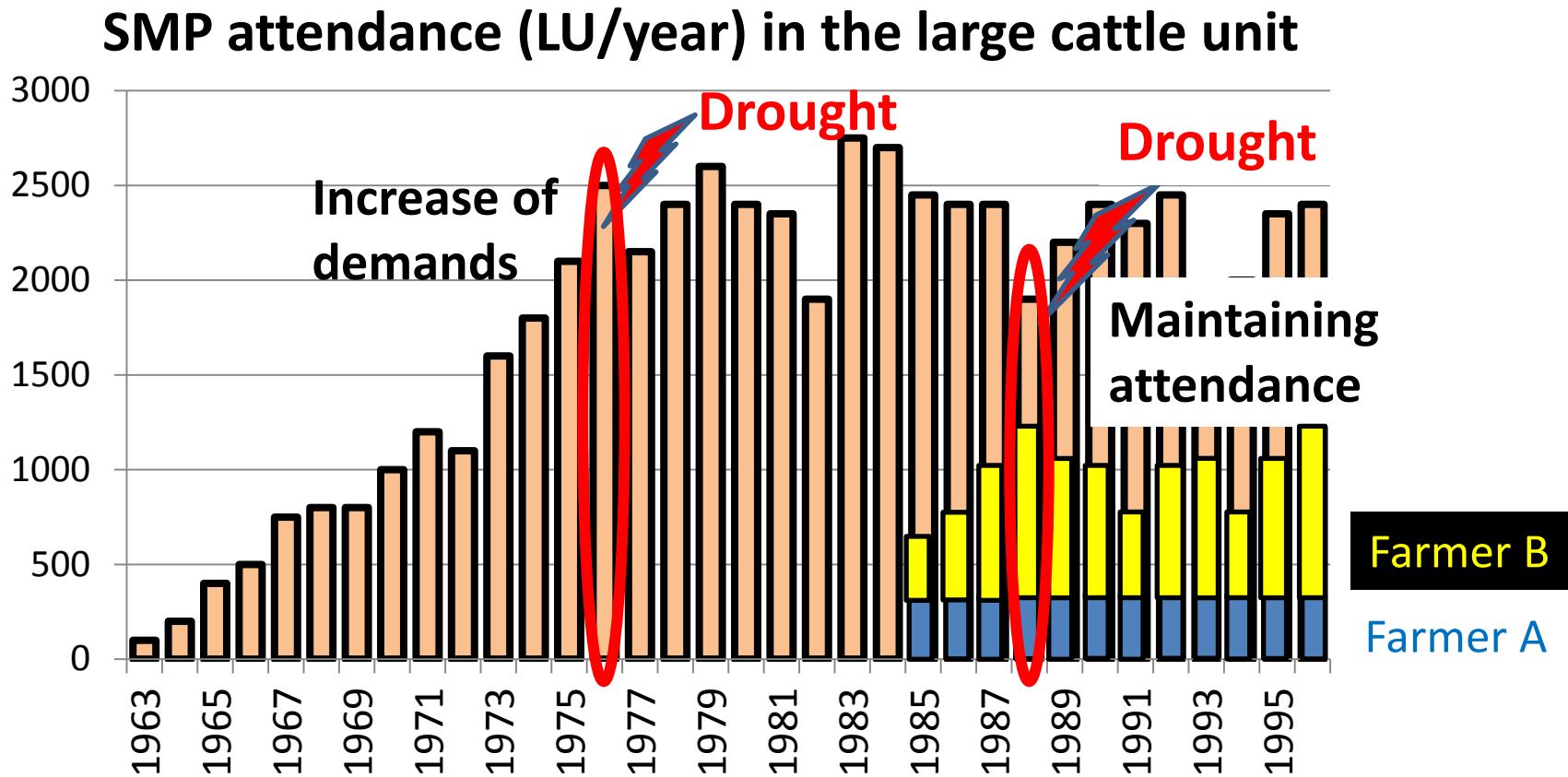
# Drought: a factor of SMP evolution interacting with many drivers

Farmer's demography, land availability, new environmental policy... *(Mottet et al., 2006)*

SMP attendance (LU/year) in the large cattle unit



# Drought: a factor of SMP evolution +/- interacting with trajectory of use





# Link between the beginning and ending of SMP season and forage availability

- Room for manoeuvre in autumn (not in spring due to grass growth dynamic)
- Different ways to exploit room for manoeuvre



**Two ending dates :**

- The main decided in March
- The leaving of animal keepers

**One date collectively negotiated, taking into account forage availability**



# Animal flows during the SMP season

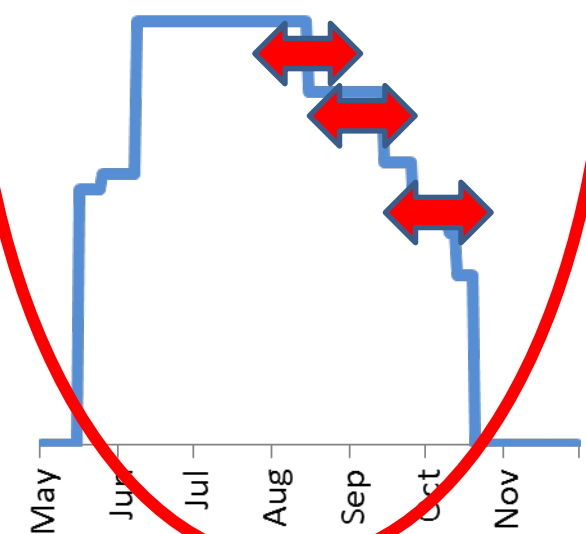
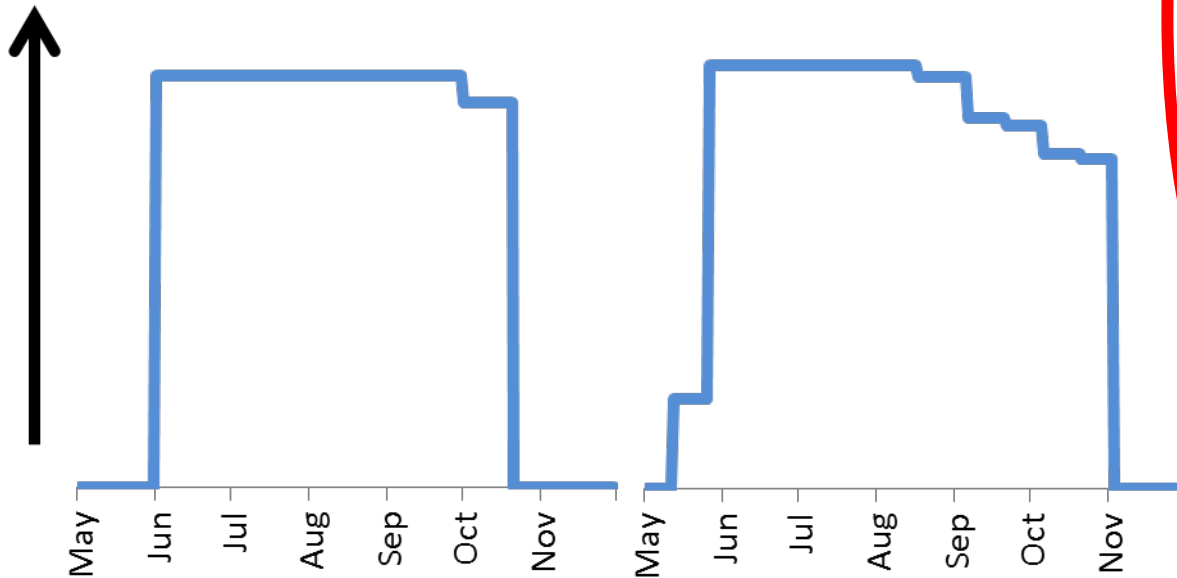
Narrow



Important



Stocking rate  
in the SMP



# Individual uses of a same collective unit are contrasted

Stocking rate  
in the SMP



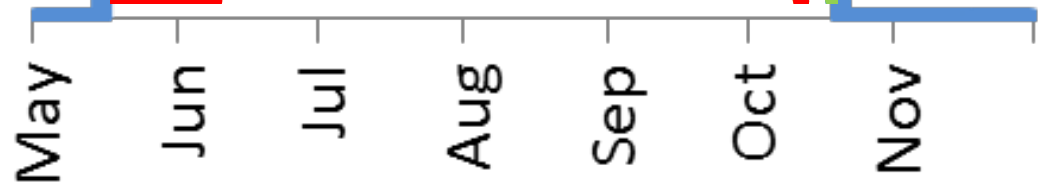
Individual  
contributions

Farmer A

...

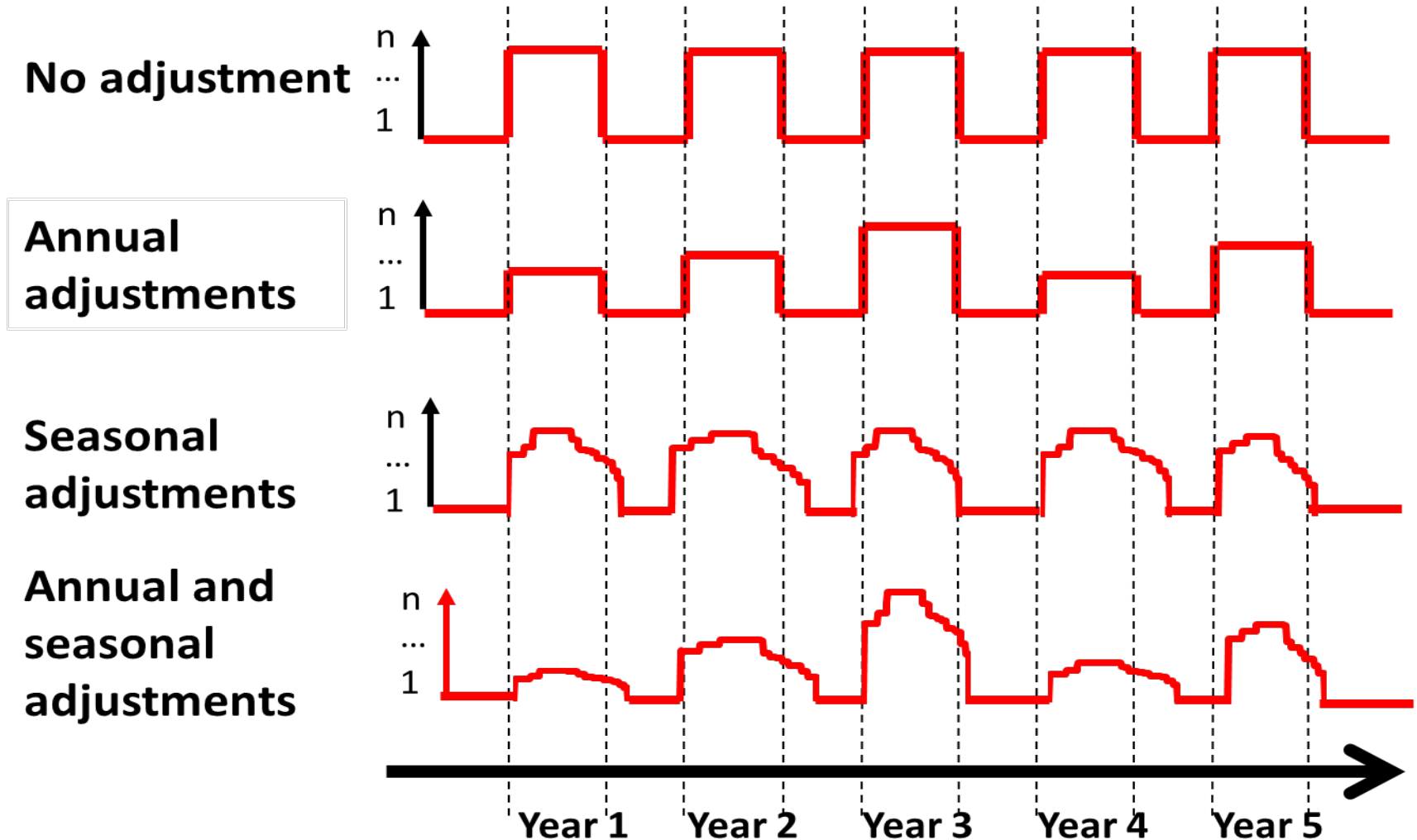
Farmer B

Farmer C



# Profiles of SMPs' contribution to the flexibility of LFS

Number of animals sent by one farmer to SMP



# Implications

- **Trade-offs between flexibility and performances** (*Astigarraga and Ingrand, 2011*)
  - **Quality of trade-offs depends on key factors :**
    - **Animal keeper skills**
    - **Collective management rules**
    - **Networking**
- **Understanding of farmer's strategies**



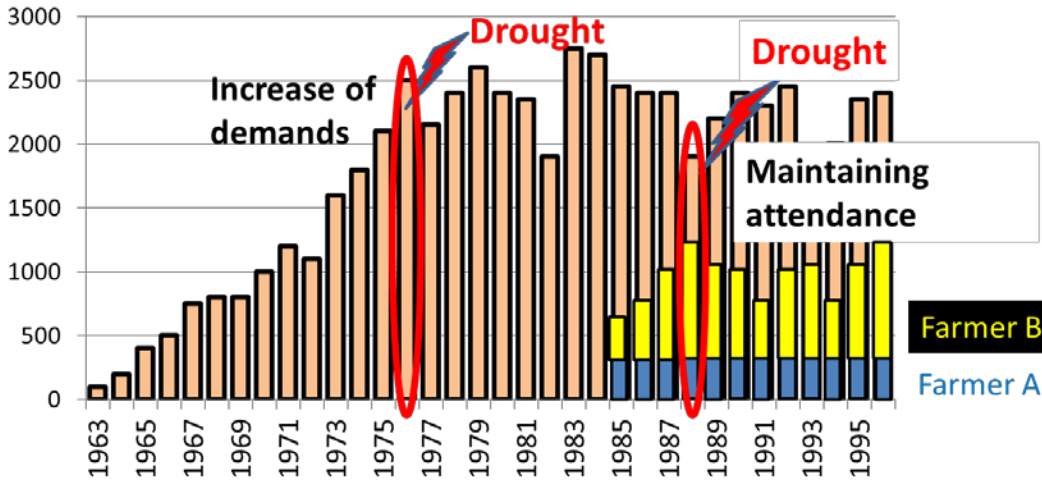
**Thanks: Farmers, Experts  
(Inra, PNR VA, CA, DDT)**

**Thank you**

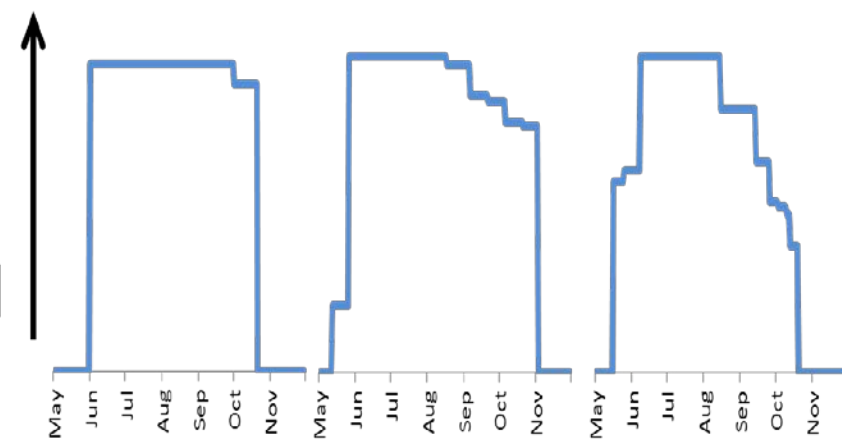


# Questions ?

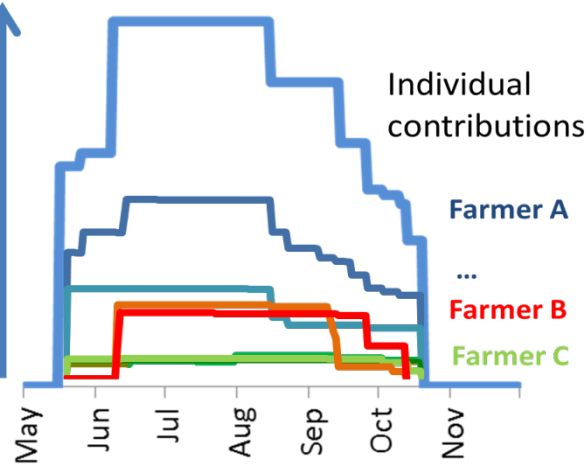
SMP attendance (LU/year) in the large cattle unit



Stocking rate in the SMP



Stocking rate in the SMP

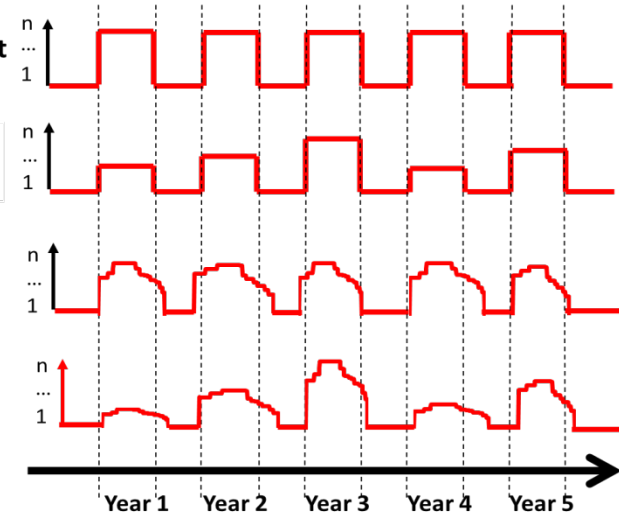


No adjustment

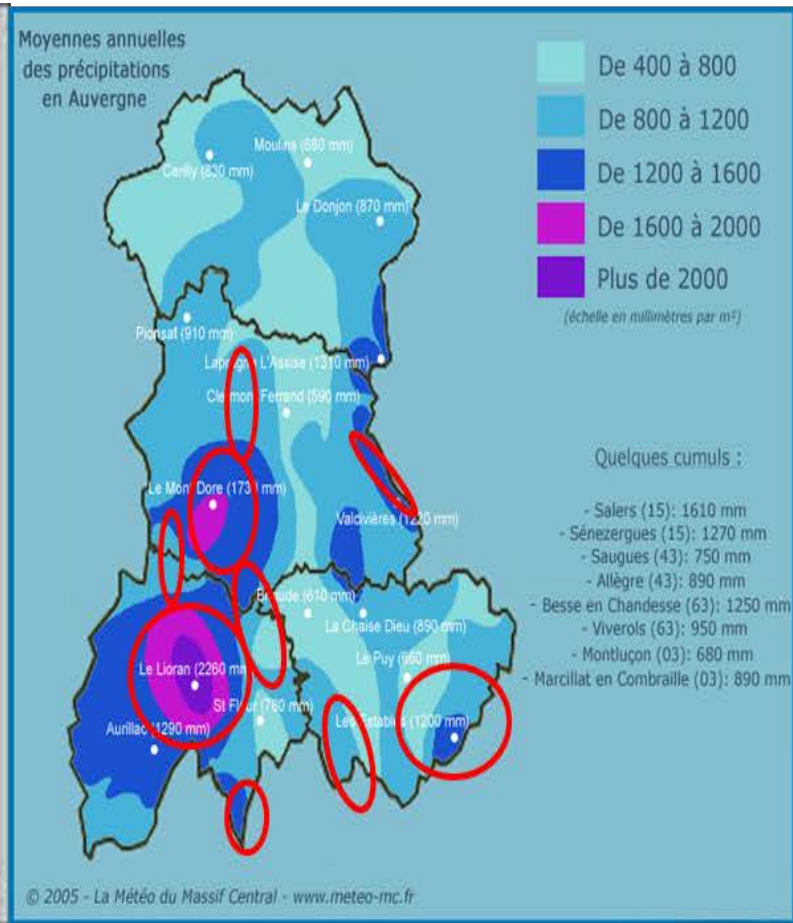
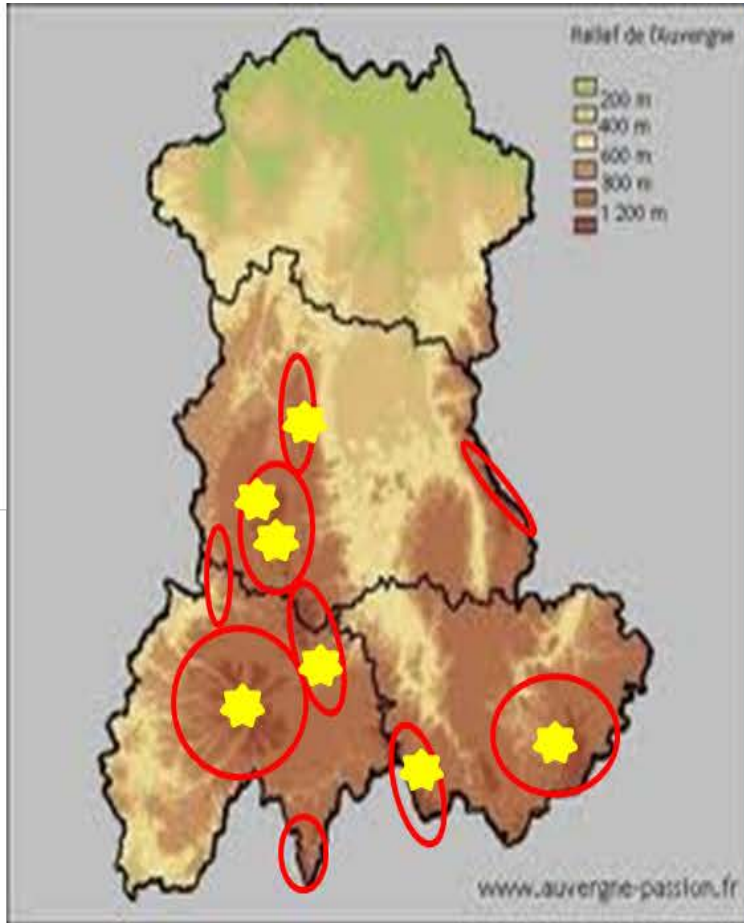
Annual adjustments

Intraannual adjustments

Annual and Intraannual adjustments









<b>SMP type</b>	<b>Large cattle unit</b>	<b>Small cattle unit</b>			<b>Sheep unit</b>		
Identification	<b>COP</b>	<b>Mur</b>	<b>Bre</b>	<b>Ter</b>	<b>Cro</b>	<b>Orc</b>	<b>Ban</b>
SMP area (ha)	2000	60	45	62	294	608	159
Average altitude of the SMP (m)	1350	1200	1300	1000	1400	1200	1300
Number of farmers	500	7	6	4	11	12	10
Number of animals in 2012	3000	50	57	60	2000	2000	1200