



# Geolocation and temporal distribution of equine atypical myopathy cases in Belgium and France from years 2006 to 2019

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## Introduction

Atypical myopathy (AM) is a severe and often fatal muscle disorder arising from ingestion of toxins contained in sycamore maple (*Acer pseudoplatanus*) seeds and seedlings. Progresses in research to diagnose and treat AM after intoxication are moving forward, but the acuteness of the disease with a fatality rate of ~75% reinforces the need for preventive measures. The condition is a seasonal disorder. Ingestions of Samaras (seeds) in autumn and seedlings the following spring causes two subsequent clinical case series, with a majority of cases observed in autumn.

## Causes of contamination

AM is a 'food poisoning from grazing' condition due to hypoglycin A (HGA) contained in seeds (a) and seedlings (b) of sycamore maple in Europe.

(a) Seeds



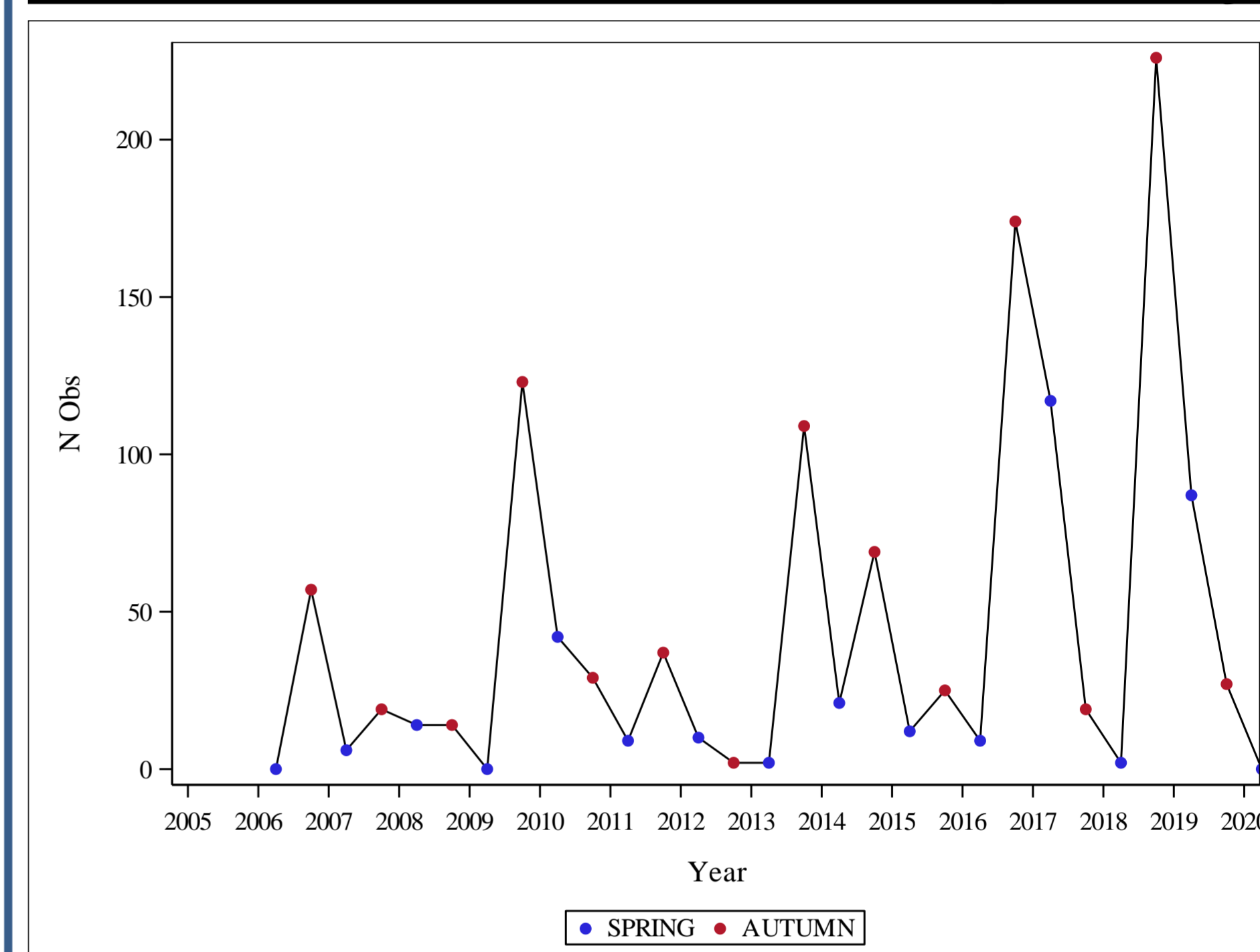
(b) Seedlings



## Objective

Our objective is to describe geographic and temporal distribution of cases in Belgium and France based on 14 years (2006-2019) of AM reporting by owners and veterinarians faced with a case via the AMAG (Atypical Myopathy Alert Group) and/or RESPE (Réseau d'épidémiologie-surveillance en pathologie équine) websites.

## Evolution of cases frequency



Since 2006, according to masting (the production of many seeds by a plant every two or more years) of sycamore maple, a temporal series is observed. Years with many declared cases are interspersed with years with less declared cases. A tendency for increase cases over the years is observed since 2006

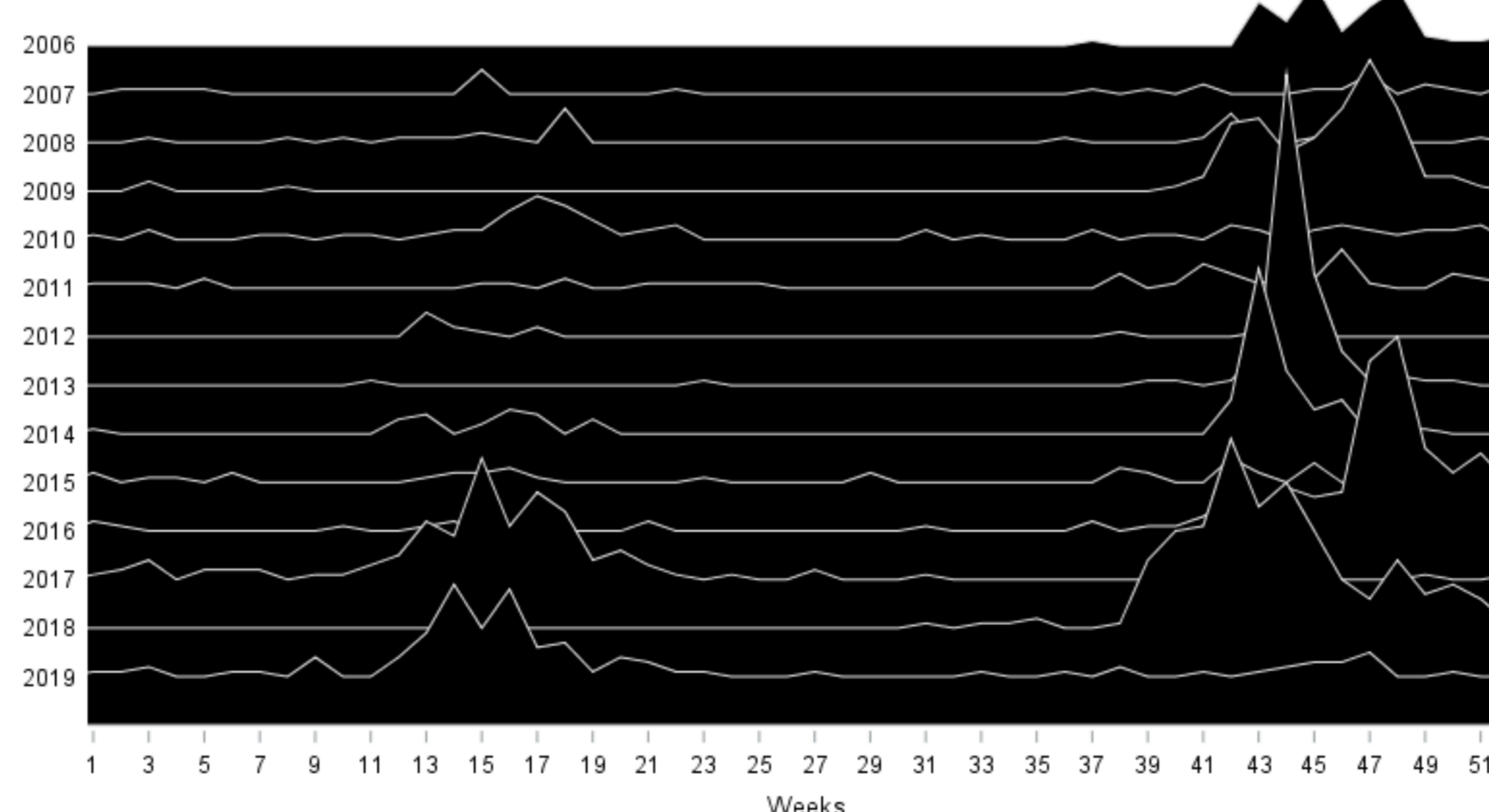
## Frequency of declarations in Belgium and France (2006-2019)

Country	Season	Number of declared cases	Number of geo-located cases	Number of temporally identified cases
Belgium	Autumn	614	294	432
Belgium	Spring	116	71	89
<b>Total Bel</b>		<b>730</b>	<b>365 (50%)</b>	<b>521 (71,4%)</b>
France	Autumn	759	403	499
France	Spring	415	236	242
<b>Total FR</b>		<b>1174</b>	<b>639 (54,4%)</b>	<b>741 (63,1%)</b>
<b>TOTAL</b>		<b>1904</b>	<b>1004 (52,3%)</b>	<b>1262 (66,3%)</b>

## Frequency of declaration per week

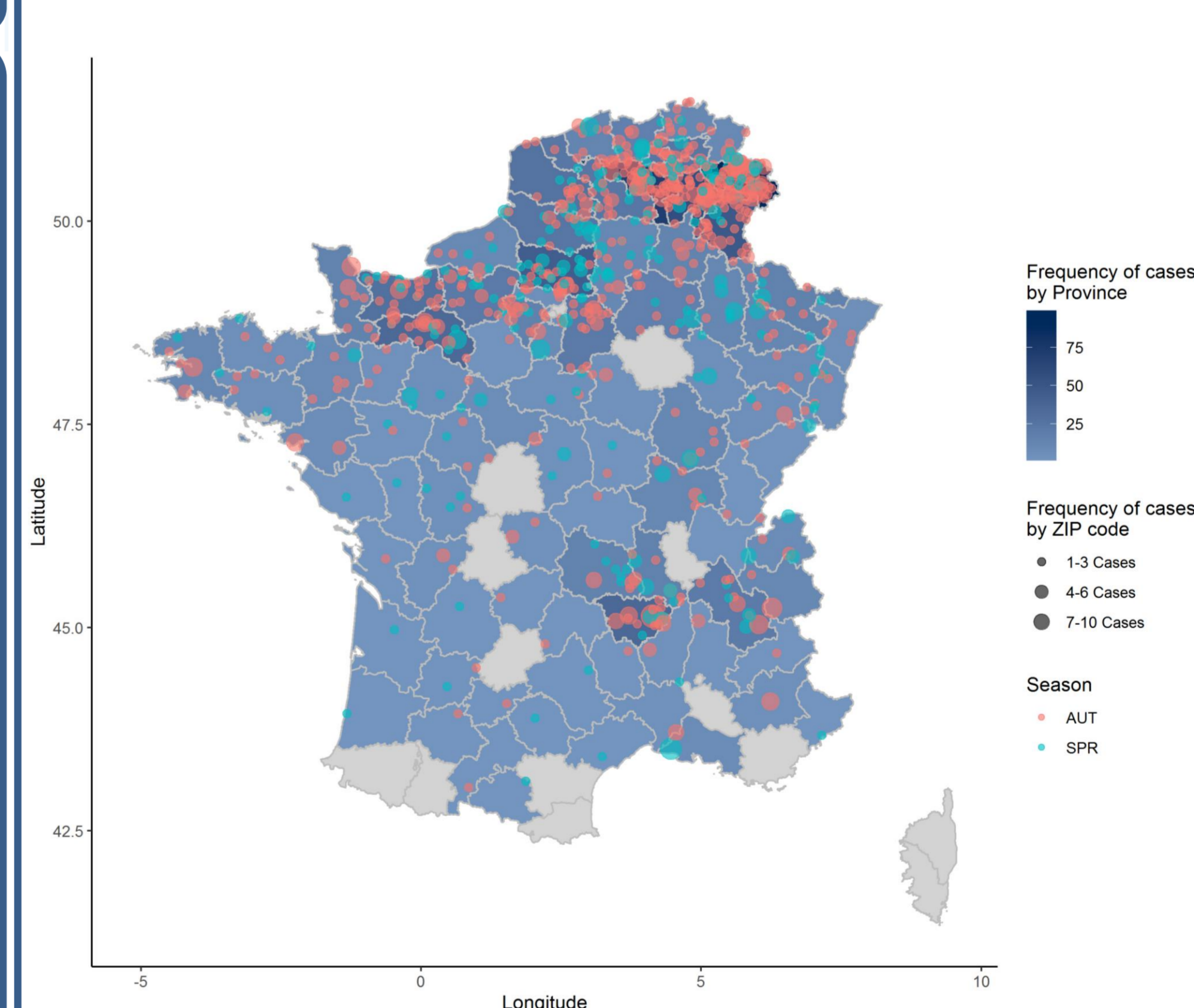
Two clinical case series are observed per year, corresponding to seedling and seeds ingestion in spring and autumn, respectively. Regarding the year, the temporal distribution of declared cases is slightly shifted in weeks, especially in autumn (weeks 39-52)

Frequency of declaration per week by year  
Curves are densities fit to weekly observations for each year



Note: A shift in weeks for maximum declared cases is observed, especially in autumn (weeks 38-52)

## Geolocated declared cases



## Conclusion

Climate factors are essential for trees and plant cycle, sycamore maple is no exception. Based on geographic/temporal distribution of AM cases, next step will be to identify the relation between the number of cases declared, by year and region, and climate anomalies.