



Ile de France : Assessment of the representativeness of pollen traps installed in the region



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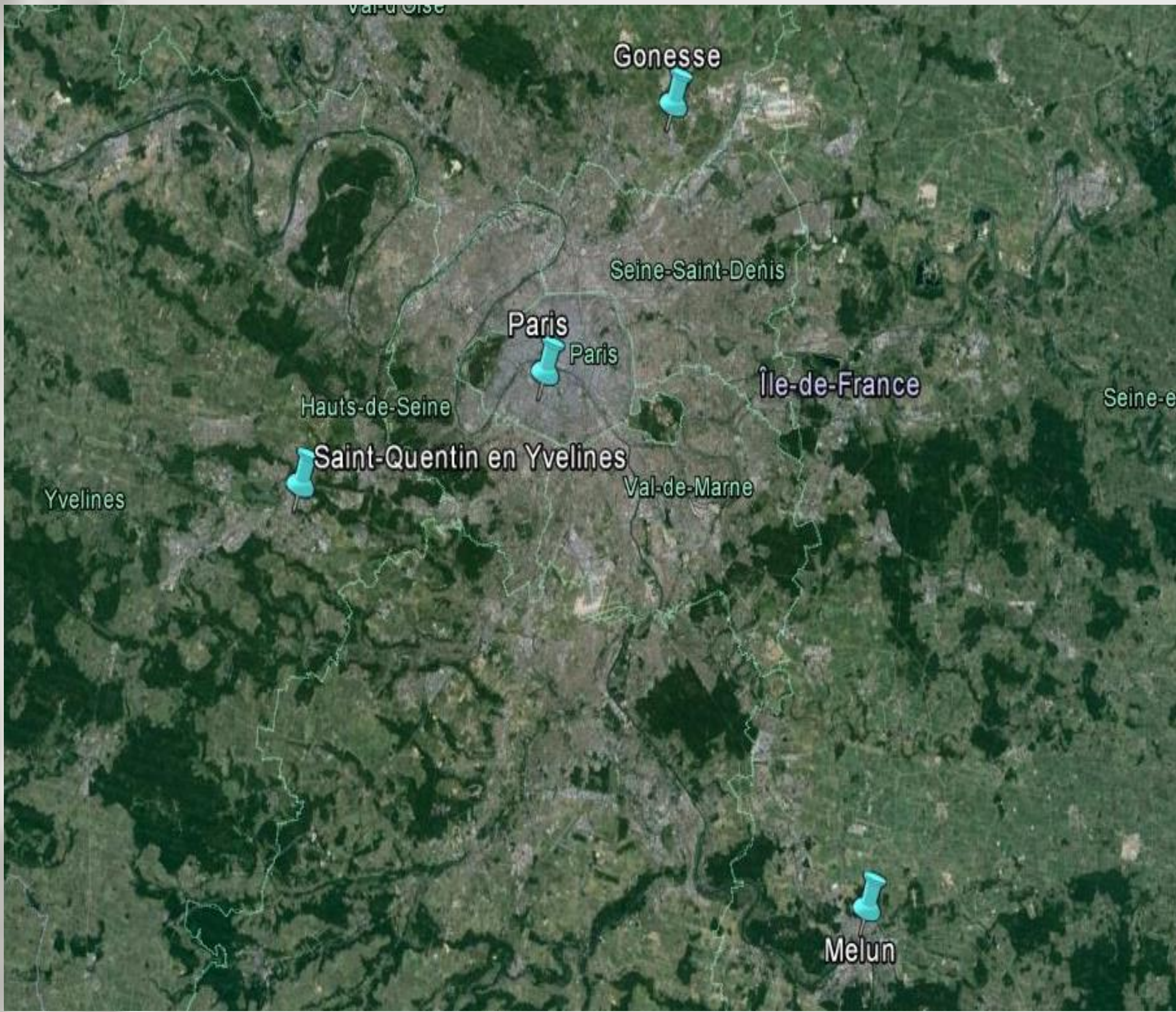
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Introduction :

In Ile de France, the monitoring of pollens and molds in the air and their impact on health is realized only with the pollen trap located in Paris 15th district on the roof of the Institut Pasteur. A study led between 2003 and 2007 validated that the pollen trap allows a sufficient coverage of Paris and a part of the small crown surrounding the city.

The aim of the present study is to verify that the informations provided by this pollen trap allow to cover the whole Ile de France region, by comparing the results of the monitoring obtained from the pollen trap of Paris with the results of the monitoring of the three other pollen traps installed in this region : in Gonesse (95), Melun (77), and Saint-Quentin-en-Yvelines (78).

Materials et methods :



○ Hirst pollen trap : volumetric spore trap with continuous aspiration

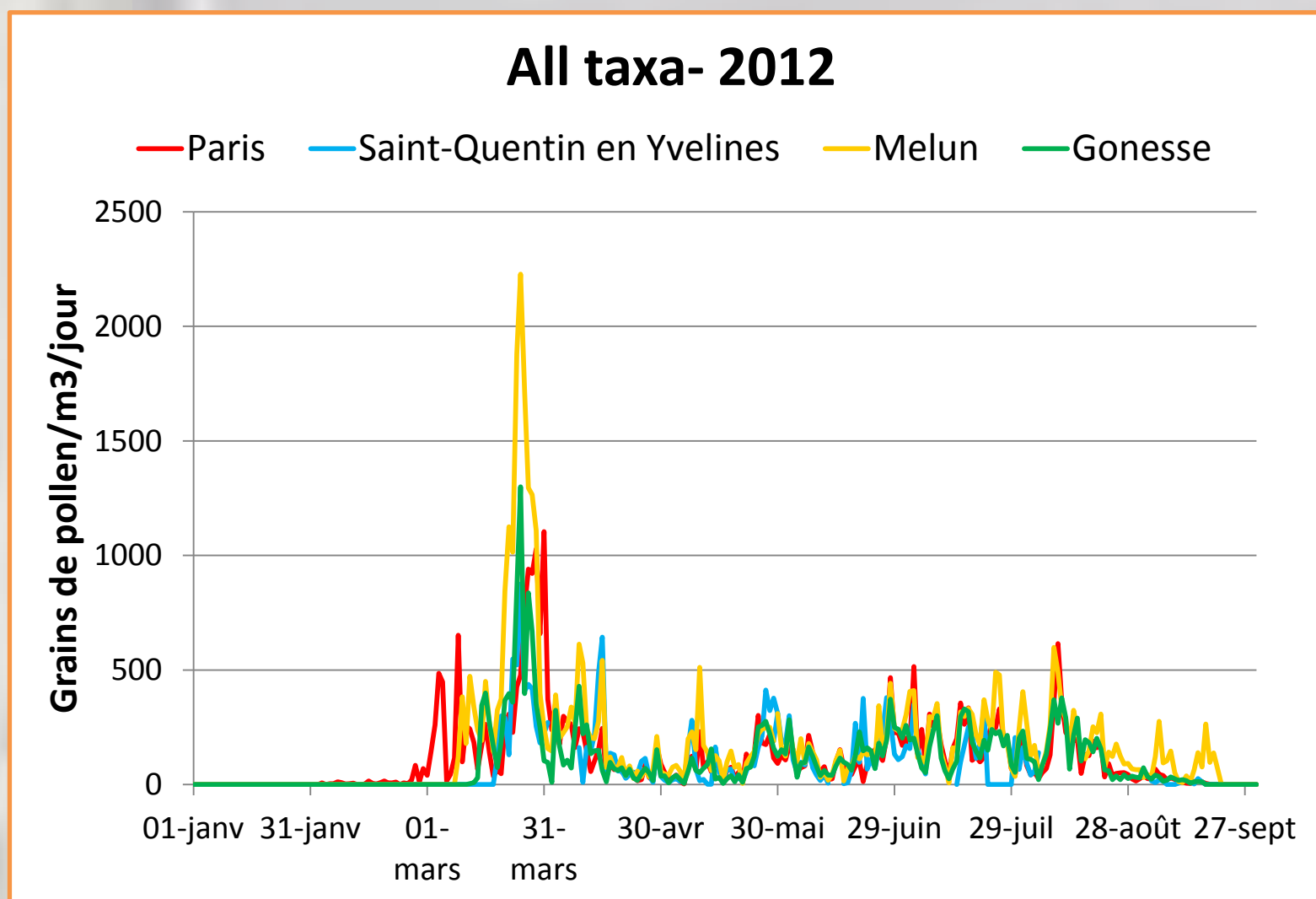


- The ambient air is aspirated with a flow rate of 10l/min. Particules are deposited by impaction on coated tape moving in front of the orifice of the trap (2mm/hour) in a continuous way.
- The tape is cut into 24h sections and prepared for microscopic observation.
- The sampling surface is examined by optical microscopy with a x400 magnification, by following the determination key of pollens established by the RNSA, and provide qualitative and quantitative data (grains per m³ of air by time unit).

○ Data analysis

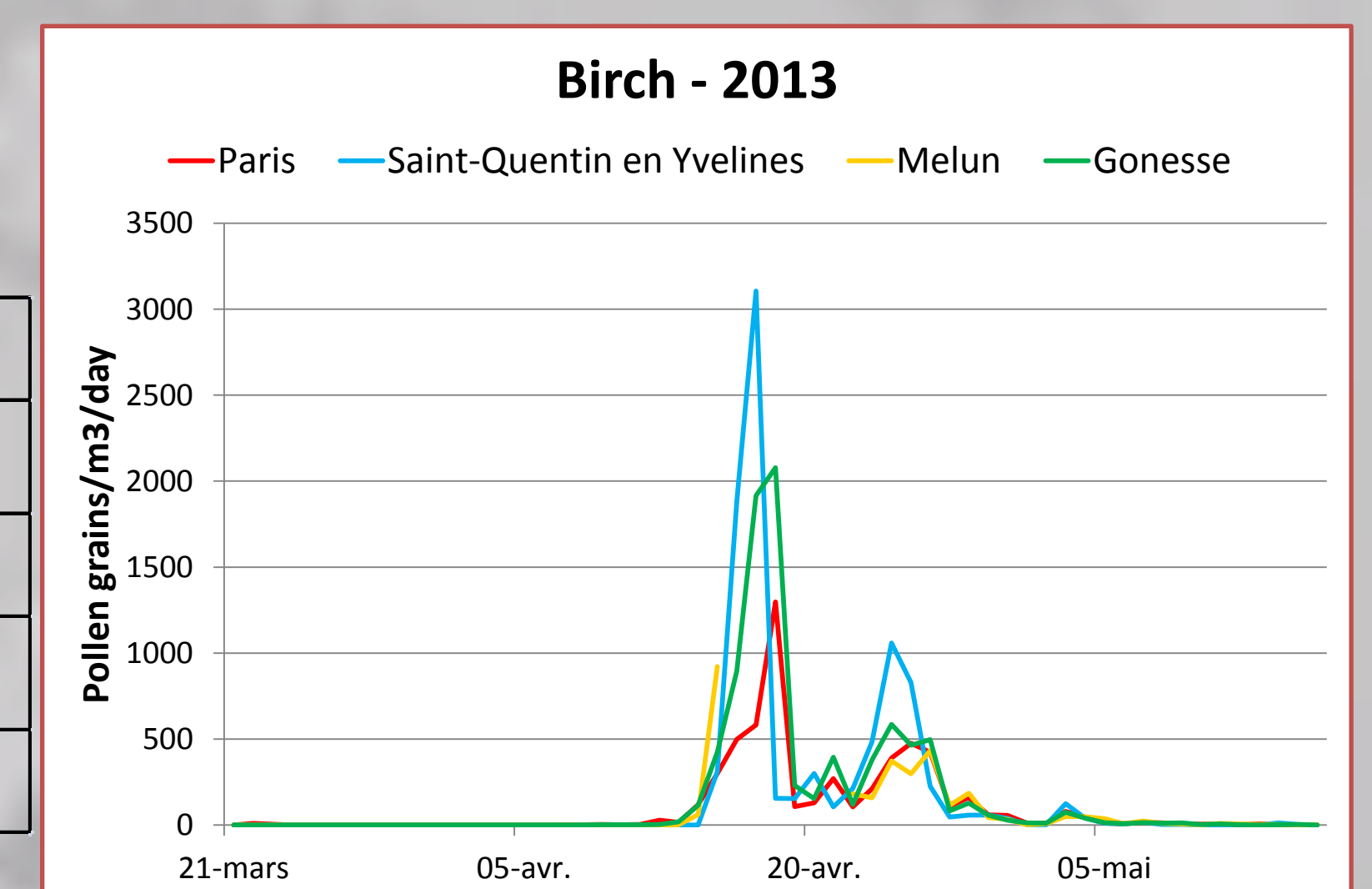
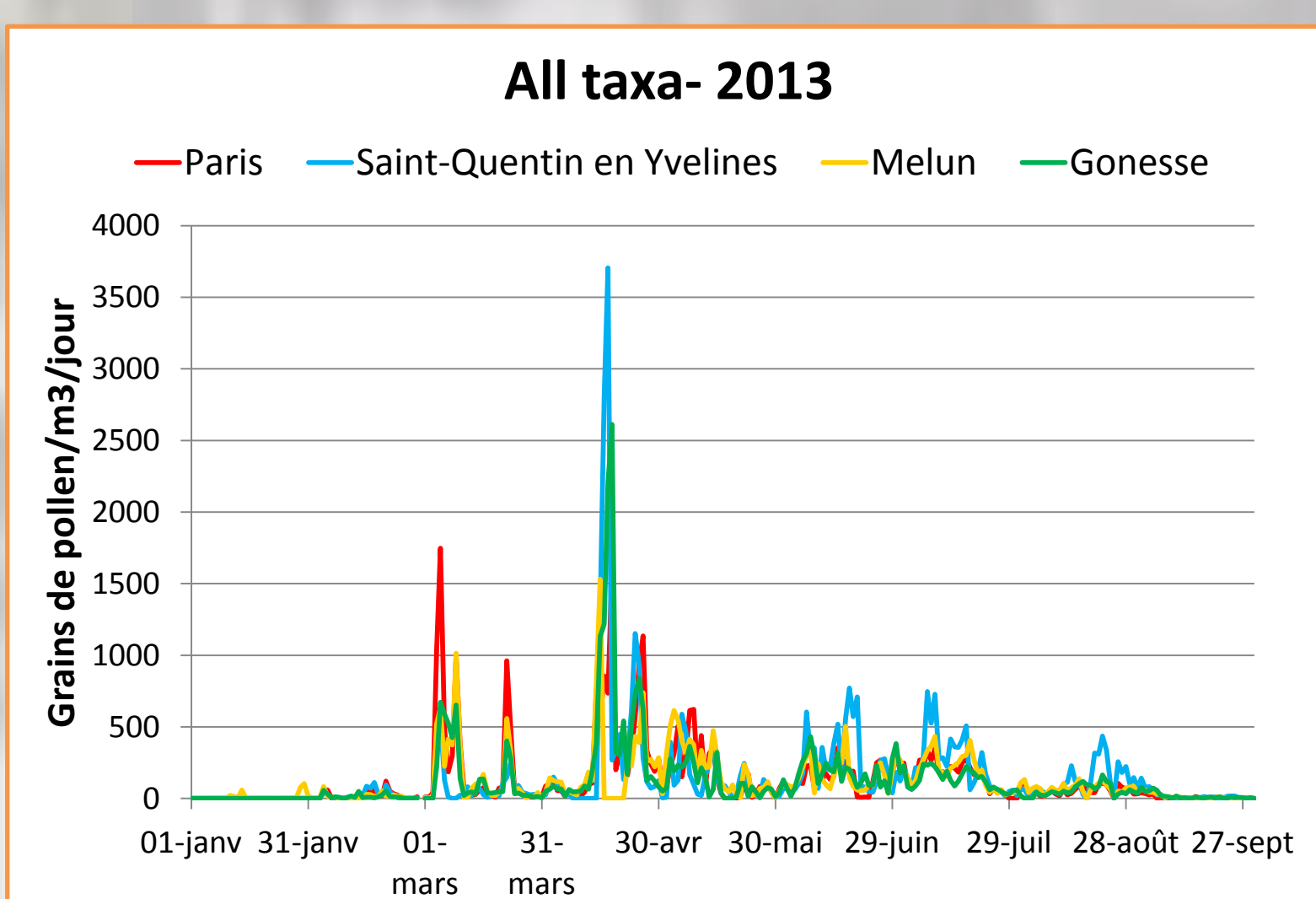
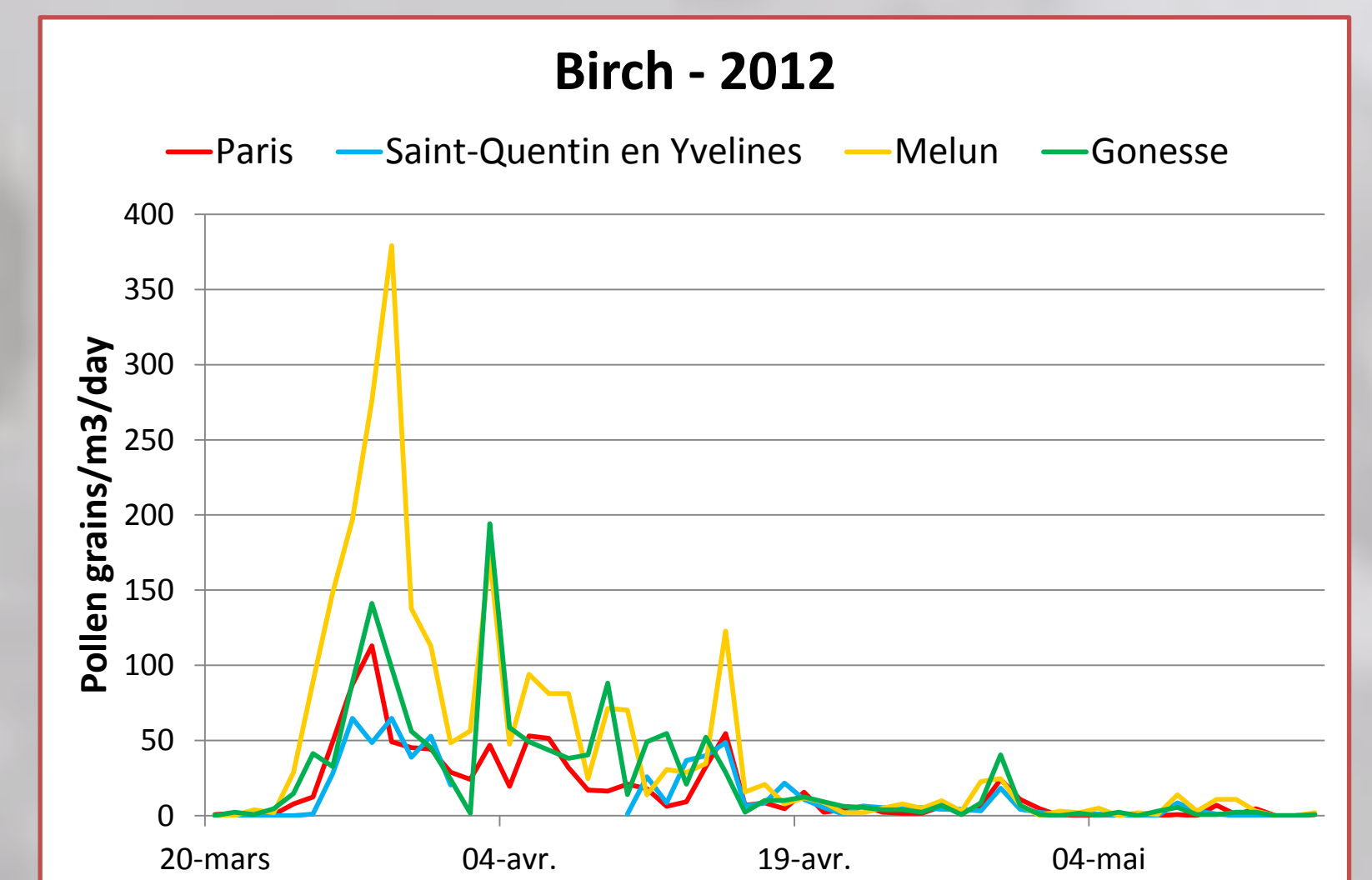
- A graphic analysis was realized between the data from each pollen trap.
- A statistical analysis was performed between the paired data sets (Wilcoxon test was used).

Results :



For the 4 sites studied, a concomitance is visible between all the sites for the peaks of pollination, for both all taxa data and all data by species. The big difference we can see on these graphs is the amount of pollens measured by the 4 pollen traps...

The comparison of the daily concentrations for all taxa combined for each of the three sites of Ile de France with the results obtained for Paris (Wilcoxon matched pairs) shows that there is, for two years, a significant difference between Saint-Quentin and Paris, as well as between Melun and Paris. However, the results of Paris and Gonesse are not significantly different.



Comparison of total daily pollen counts of Ile de France pollen traps compared to Paris

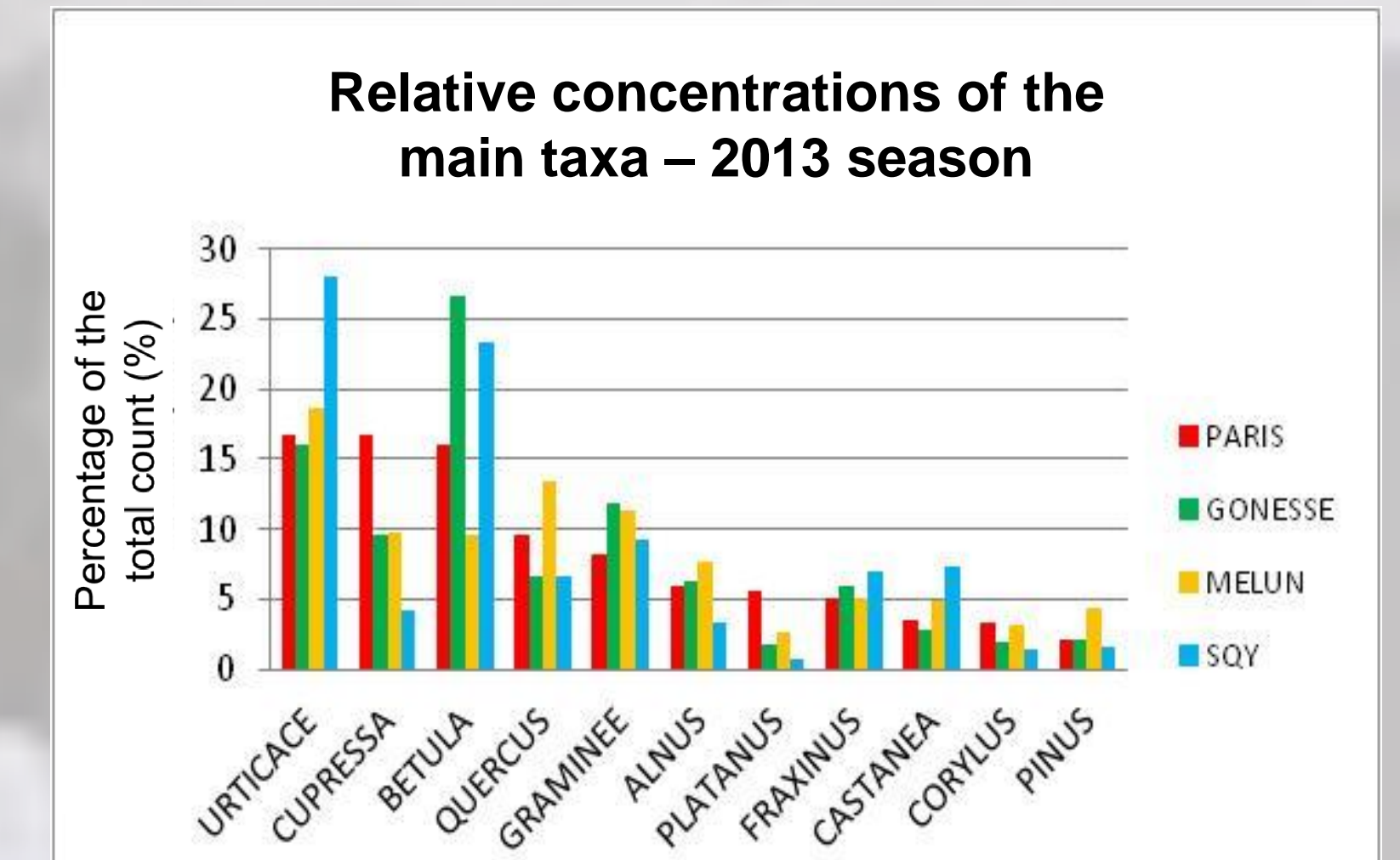
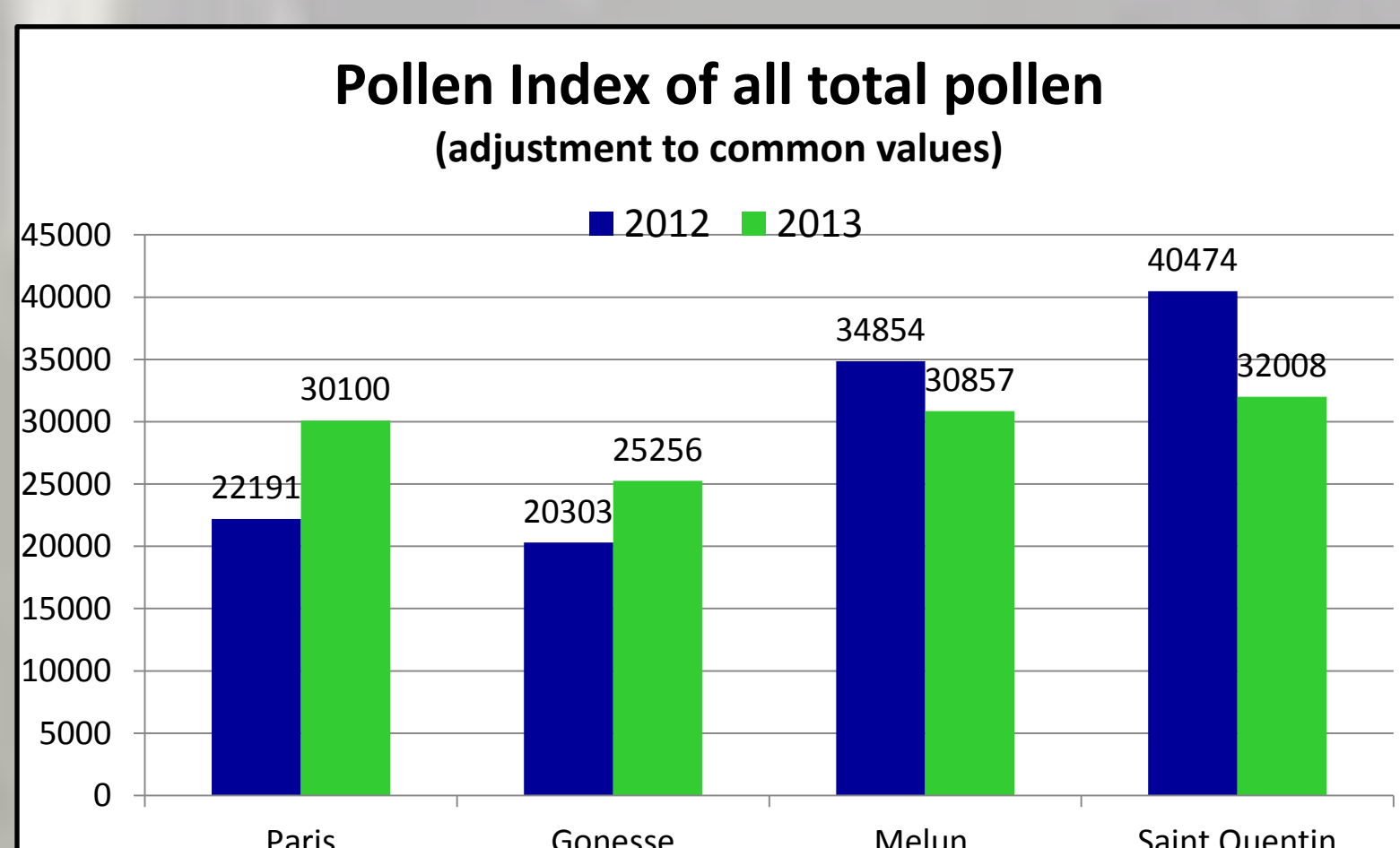
	Paris / Gonesse		Paris / Melun		Paris / SQY	
	Total pollen 2012	Total pollen 2013	Total pollen 2012	Total pollen 2013	Total pollen 2012	Total pollen 2013
nb paired measurements	189	231	195	216	140	213
p-value (wilcoxon test on paired series)	9,5E-01	2,0E-01	0,0E+00	3,0E-03	8,0E-11	4,7E-04
conclusion	not different	not different	different	different	different	différent

If the comparison concerns the pollen indexes and not the daily counts, the results are different.

In 2012, the pollen indexes (IP) of Melun and Saint-Quentin are significantly higher than the IP of Paris. In 2013, the IP of the three pollen traps of Ile de France are not significantly different from the Paris one.

Comparison of IP from Ile de France pollen traps to the pollen trap of Paris (Wilcoxon test)

p-value	Gonesse	Melun	SQY
2012	5,95E-01	2,52E-05	4,70E-06
2013	6,29E-01	2,39E-01	4,80E-01



The taxa the most represented on each of the 4 pollen traps are basically the same but their relative importances vary according to the trap that is considered.

Conclusion :

The comparison of results obtained for the main taxa in 2012 and 2013 shows that, even if the profiles of daily concentrations are broadly similar, there are significant differences between the historical pollen trap of Paris and the three other pollen traps installed in Ile de France, for several taxa of interest. Otherwise, significant differences were observed between the two seasons.

This study is actually continued to confirm the utility of these additional pollen traps, for which, until now, only the pollen trap of Gonesse remains statistically very close to the pollen trap of Paris.

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In relation to this presentation, I declare that there are no conflicts of interest.