

# DATA QUALITY IN AEROBIOLOGY: THE IMPORTANCE OF SAMPLING

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### **AIM OF THE STUDY** How pollen grains To investigate critical points of the sampling and to understand their relative contribution to the total impact on the Sampling devices uncertainty associated with daily pollen concentration data. (pollen traps) monitoring tape (drift effect) Sampling surfaces Position of the Variability of the Pollen (adhesive tape) sampling devices aspiration flow concentration **MATERIALS AND METHODS** RESULTS **Steps in aerobiology Our research**



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Tape bought already made (type **«B**»)

Two sampling devices (Hirst

volumetric pollen traps «VPPS

2000» or «**S1**» and « VPPS

2010» or «**S2**»)



7 days of monitoring



Preparation of the monitoring slides

Aerobiological

sampling



0\*\* 221 48,87 -0,82\* Same site 48,87 2,26 31 59 0,75 (0,045\*) Different 58 86,21 12,07 1,72 32,44 48 **0,9** (0,057 NS) -5,78 38 heights Different 243 18,93 76,13 4,94 0,49 (0,056 NS) 10,20 83,64 28 48 sites Different 192 42,19 53,13 1,92\* 2,41\*\* 4,69 71 0,93 (0,027\*) 52 tapes 1 Different 313 30,03 65,81 4,15 29 62 -7,24 41,81 0,82 (0,033\*) tapes<sup>2</sup> 1 (S1+ A and S2 + B) 2 (S1 + B and S2 + A) \*p < 0,05; NS non-significant; Acceptability -1,96<Z<sub>w</sub><1,96; \*\*No difference if < 3,84

> There is a considerable part of the uncertainty that is not explained by the factors usually taken into account (UNI 11108:2004)

> > At the same position and tape



#### POSITION

Same site but different heights

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TAPE



## CONCLUSIONS

Data variability exceeds the variability associated with the technical steps of the analytical procedure (> 40%)

Importance of the suitability of the sampler location

part of the uncertainty of the results associated to the sampling?

the part of uncertainty associated to the sampling increases (> 50%) when different sites and heights are compared

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Further detailed studies:
other aspects (e.g. wind speed, wind direction and aerosol aerodynamic characteristics)
single pollen taxa
sampling surface typology



#### All pictures shown were taken in ARPA Valle d'Aosta laboratories