AutoPollen – SYLVA Training School 2026

Schedule

	Overall course plan	**Who**
30 August	Arrival	
31 August		
9:00-9:30	Welcome & practical information	**Geosphere**
9:30-10:30	Introduction to aerobiology – plant biology	**Olga Sozinova**
	Coffee break	
11:00-12:00	Introduction to aerobiology – manual measurements	**Olga Sozinova**
	Lunch	
13:00-14:00	Automatic measurement systems – BAA500 & Poleno	**Samer Alashhab / M-P Meurville**
14:00-15:00	Introduction to the EBAS database	**Paul Eckhardt**
	Coffee break	
15:30-18:00	Selection of mini-project topics & data exploration	
18:00-19:00	Ice breaker	
1 September		
9:00-10:45	Software workflows	**Samer Alashhab / M-P Meurville**
	Coffee break	
11:15-12:15	Introduction to SYLVA infrastructure	**Samer Alashhab**
	Lunch	
13:15-16:15	Mini-project	
	Coffee break	
16:45-19:00	Mini-project	
2 September	**Visit to the Sonnblick Observatory**	
3 September		
9:00-10:00	Introduction to fungal spores	**Nicolas Bruffaerts**

10:00-11:00	Calibration of measurement systems	**Fiona Tummon**
	Coffee break	
11:30-12:00	Quality assurance & quality control	**Fiona Tummon**
	Lunch	
13:00-15:00	Mini-project	
	Coffee break	
15:30-19:00	Mini-project	
19:30	**Social event – Dinner**	
4 September		
9:00-10:00	Introduction to eDNA	**Svetlana Sofieva-Rios**
10:00-11:00	Bioaerosol forecasting with numerical models	**Yuliia Palamarchuk**
	Coffee break	
11:30-12:30	Perspectives: bioaerosols & cloud formation	**Julia Burkart**
	Lunch	
13:30-15:00	Mini-project – Results presentation	
15:00-16:00	Wrap up	

Topic details

Introduction to aerobiology – plant biology

- What are bioaerosols?
- What is pollen? What are fungal spores?
- Pollen/spores morphology overview
- What are pollen/spore allergies?

Introduction to aerobiology – manual measurements

- History of manual measurements
- Advantages / limitations of manual measurements
- What plants/fungi are a problem where?

Automatic measurement systems – BAA500 & Poleno

- Overview of the automatic devices commercially available
- Description of BAA500 & Poleno measurement principles

- What are the devices' outputs?

Introduction to EBAS database

- What is EBAS?
- How to put bioaerosol data on EBAS ? What are data levels?
- How to access data from EBAS:
    - EBAS / ACTRIS data portals, metadata APIs
    - File formats, tools
    - SYLVA restful API for bioaerosols
- Understanding variables, flags, metadata for bioaerosols?

Software workflows

- Introduction to bioaerosol classification algorithms
- How to train an algorithm?
- Selecting training data
- Automatic and manual dataset curation
- Algorithm architecture
- Algorithm output
- Applying algorithms to operational data: pre and post filtering
- Device-specific workflows

Introduction to SYLVA infrastructure

- What is the infrastructure?
- How is it built, and how can it be accessed?
- What can be used, how, and for what?

Introduction to fungal spores

- What are the challenges when automatically monitoring fungal spores?
- How to build a spore dataset?
- Points of attention and common pitfalls when monitoring fungal spores

Calibration of measurement systems

- Calibration of particle number counts (counting efficiency)
- Calibration of algorithms (classification efficiency)
- Determining uncertainty

- Introduction to data homogenisation

Quality assurance & control

- Site certification criteria and process (AutoPollen)
- Data processing checks
    - Flags
    - Metadata
    - Simple flow checks
    - KPIs

Introduction to eDNA

- What is eDNA?
- How can we measure eDNA?
    - Filter collection
    - Lab procedures: where are we at?
- Basic bioinformatics: what are the challenges?
- What future for the monitoring of bioaerosols using eDNA?

Bioaerosol forecasting with numerical models

- Brief introduction to numerical forecasting models
- What are transport processes
- Existing pollen forecast models: regional - national - international
- Data integration/assimilation
- European Pollen Reanalysis

Perspectives: Bioaerosols & Cloud formation

- Brief introduction to the formation and microphysics of clouds and their importance in the climate system
- Aerosol–cloud interactions: What are the links between bioaerosols and clouds?
- How can we measure/monitor a potential impact of bioaerosols on clouds?

Hands-on sessions

The hands-on sessions aim at familiarising students with real-time bioaerosol data, processing pipelines, and timeseries analysis. The students will be split into three group levels, based on what programming skills they have.

Each group will be given time to think about a question they would like to explore, but some topics will be proposed, either based on operational data available from EBAS, or data from the 2021 AutoPollen Intercomparison carried out in Munich.

Topics can range from comparing timeseries from several devices, to analysing seasonality across bioregions, diurnal cycles, or any other topic of interest to the students.

Visit to the Sonnblick Observatory

GeoSphere Austria runs the Sonnblick Observatory, an important high altitude research station (3106m asl) in the Austrian Alps, that will celebrate 140 years of observations this year. We will visit the observatory, where an automatic bioaerosol monitor is located, and be introduced to all the various complementary measurements made at the site.