

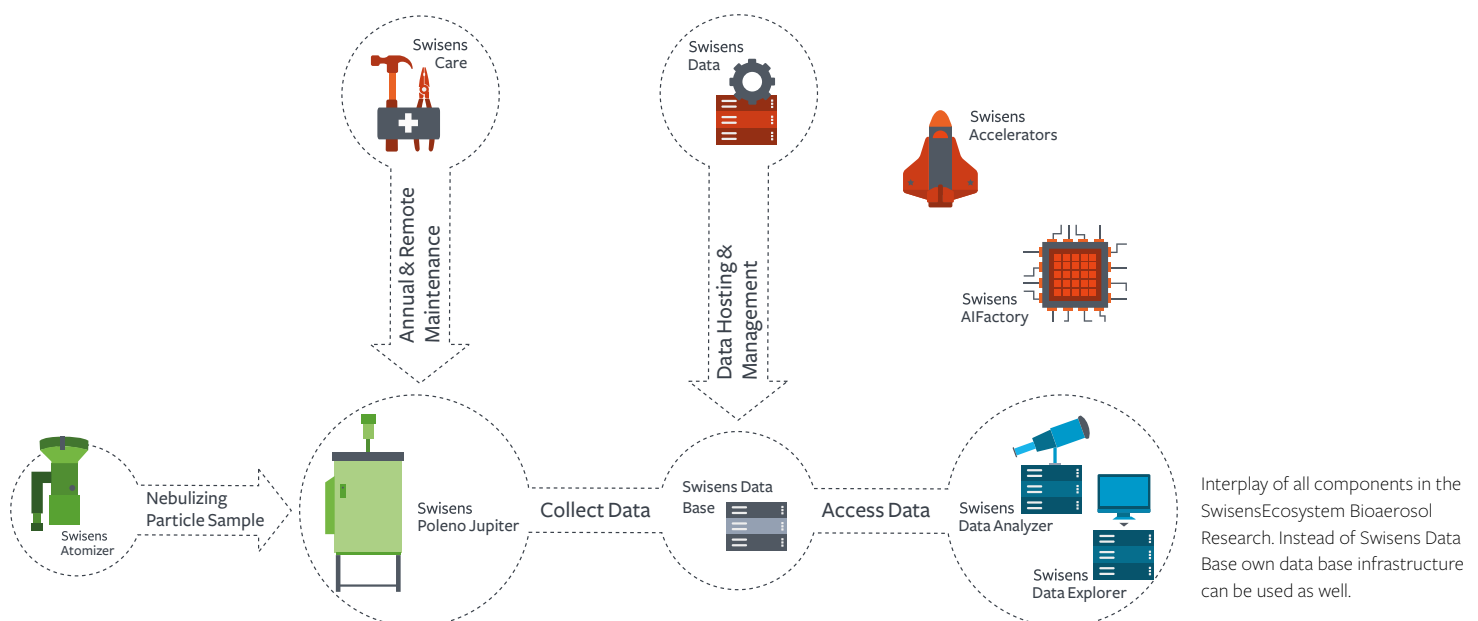
SwisensEcosystem Bioaerosol Research deals with three overarching themes of climate change, land use change, and public health. In most cases, we are concerned with finding the source and understanding how bioaerosols spread.

Field measurement in bioaerosol research

With the SwisensEcosystem components we take care of the data management and maintenance of the instruments. It provides you with software for fast and easy data access, analysis and plots. Our training program gives you a quick start to use our measurement instruments and provides necessary skills to maintain our measurement instruments during operation.

Characteristics of field based bioaerosol research:

- comprehensive particle characterization
- real-time measurement
- open data access to the measurement data
- artificial intelligence for bioaerosol identification
- extension of integrated algorithms
- comprehensive software for efficient data analysis
- integrated data management for BigData processing
- robust design for harsh field conditions

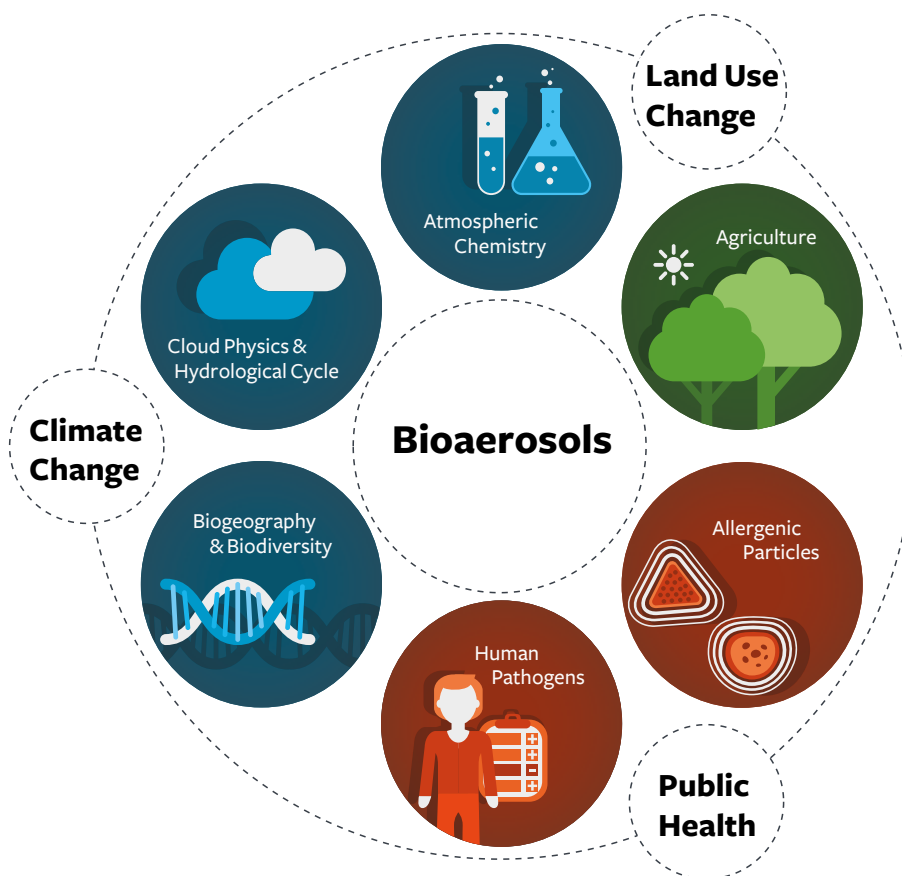


The Ecosystem for Research

For the field measurement of bioaerosols, Swisens provides new technologies that can measure morphological and/or chemical properties of bioaerosols. Modern measuring instruments are mostly automated and allow continuous measurement, so that a large number of particles can be measured.

This produces large amounts of data. The identification and categorisation of the measured particles with conventional methods are unsatisfactory so far and mean a high effort for the evaluation. Therefore, the timely observation of dynamic processes is not possible and large gaps in understanding remain. The SwisensEcosystem components allow not only high quality data.

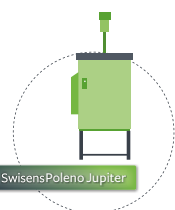
They also build a supporting workflow to extend the identification capabilities of your measurement system or network. It allows to adapt previously unknown particles by training of machine learning algorithms for all users. The tools provided by the SwisensEcosystem make the application of machine learning easy and accessible for everyone. All in constant and open scientific collaboration with Swisens.



Motivating topics of outdoor bioaerosol field measurement.

SwisensEcosystem Bioaerosol Research

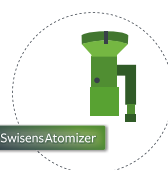
Swisens offers a unique ecosystem of harmonized hardware, software and service components for coordinated bioaerosol research.



Hardware Component

SwisensPoleno Jupiter is the latest generation of optical particle measurement

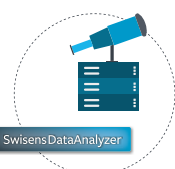
systems for real-time measurement and monitoring of bio-aerosols. SwisensPoleno Jupiter combines the latest measurement methods with artificial intelligence and transparent data evaluation to create a reliable measurement system for the autonomous measurement and identification of pollen, spores, other bioaerosols and solid particles in the air.



Add-On Component

SwisensAtomizer is a compact particle disperser for solid and dry particle samples

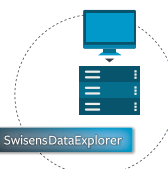
such as pollen, mineral dust and other materials. SwisensAtomizer produces stable and controllable particle concentrations for measurement campaigns, calibrations and laboratory experiments.



Software Components

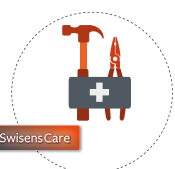
SwisensDataAnalyzer is a tool set that enables efficient analysis of large amounts

of data in the deep dive of Swisens' measurement systems. For advanced data analysis or expressive data visualisation, SwisensDataAnalyzer offers a clear and platform-independent working environment based on Docker Containers, Jupiter Notebook Containers and Python Modules.



SwisensDataExplorer is a browser-based software with helpful tools for

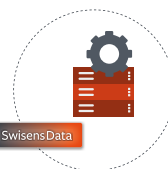
checking measurement results and monitoring hardware components in the SwisensEcosystem. Whether for a single measurement system or a network – Swisens DataExplorer ensures simple and fast analyses of measurement data and operating parameters and paves the way for the independent use of machine learning for all user classes.



Service Components

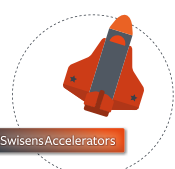
SwisensCare is a service with system-relevant software updates and manual

maintenance work for the long-term operation of our hardware components and systems in the field and laboratory.



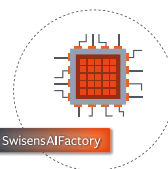
SwisensData is a service with server-integrated data management in the

SwisensEcosystem. SwisensData ensures a stable and secure data exchange between the measuring stations in the field, the database and the operators.



With **SwisensAccelerators**, we offer you a practical introduction to the operation of our measurement systems, so that you

can start monitoring and measuring right away. This training package enables you to commission our systems independently and to carry out minor maintenance work and check-ups on your own.



The **SwisensAI Factory** is a competence centre that offers and imparts practical training and knowledge to enhance auto-

matic particle identification. With the training programme you will get to know and use the individual components of the SwisensEcosystems to understand and enhance automatic particle identification.