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Zentralanstalt für Meteorologie und Geodynamik

Nature's Calendar - A new Citizen Science App for Phenology

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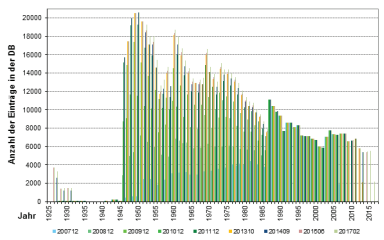
1. Status quo before we started

Since the inception of the phenological network in 1851 citizen scientists have been collecting phenological observations for the Austrian weather service. Without their efforts research would be impossible.



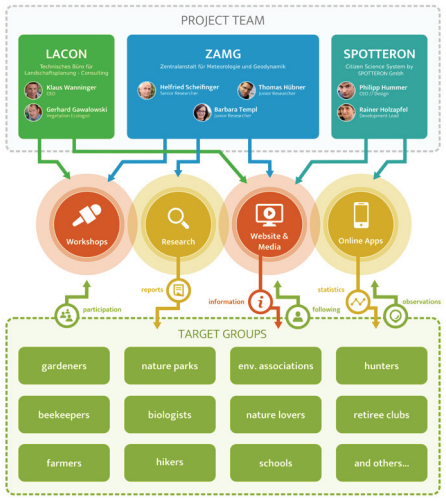
Traditionally all observational data was collected with paper and pencil, which was extended by an online submission form in the year 2006.

Unfortunately the number of reporting citizen scientists has been declining in recent years. The "Naturkalender" smartphone app is thought to address urgently needed young volunteers.

Naturkalender
www.naturkalender.at

2. New technology - new partners

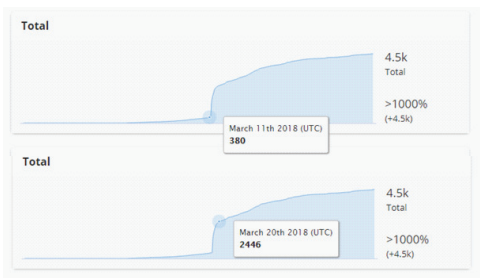
The means of choice to get in touch with new citizen scientists is a smartphone app, because smartphones are common and readily available.

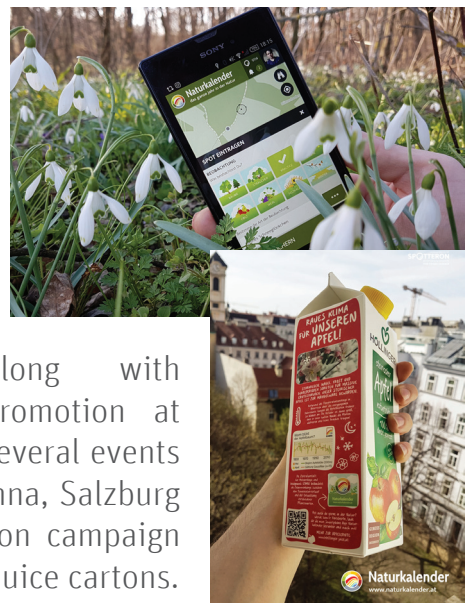


Within a cooperation between the Austrian weather service and two companies the first version of the „Naturkalender" app was designed and tested at five agricultural schools in Lower Austria. The feedback of the pupils was merciless as one could expect from teenagers, but it helped a lot to shape the app as it is today. Finally, in spring 2018, we were ready to make it accessible to the general public.

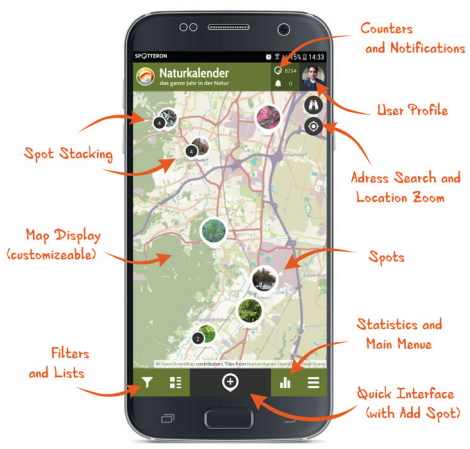
3. Heading out to the new citizen scientists

The press release to the new app in spring 2018 had a high impact and resulted in over 2000 new registrations within about a week.





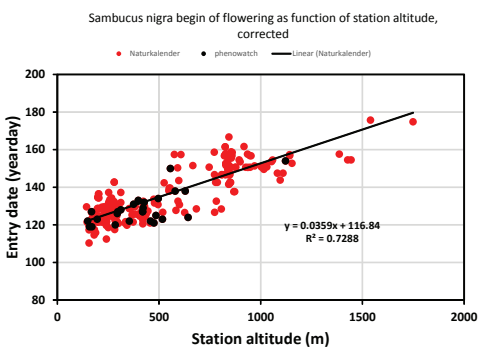
Along with promotion at several events as e.g. „Researcher's night" in Vienna, Salzburg and Graz, there was an information campaign about phenology and late frost on juice cartons.

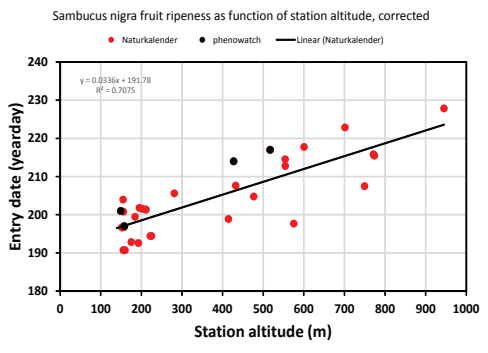


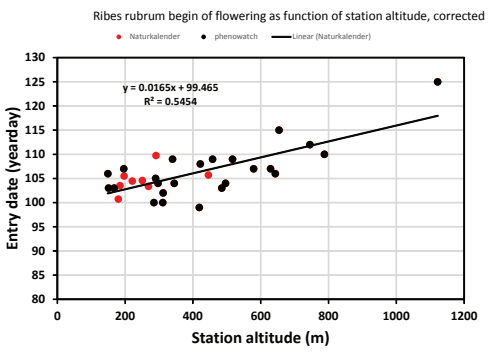
The interface of the app guides people with little knowledge about phenology to participate easily. Information about plants and phenological phases can be found in the app and on the projects website. All this, the ongoing improvement and constant communication with the citizen scientists, was vital to built up a community which contributes high quality phenological observations.

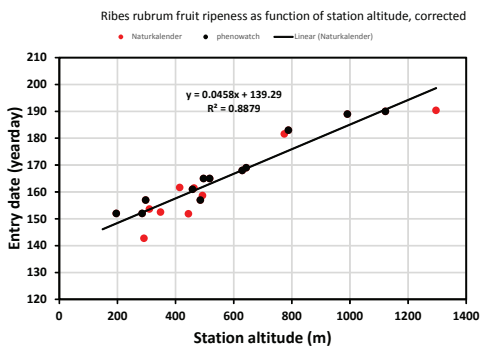
4. Does it work?

The comparison of data collected in the app (red) with data, which was collected by the existing network (black), shows two results:









The data quality was checked via the regression between entry date and station altitude. After the removal of obvious outliers, most of the observations fit well into the expected range. Start of flowering of *Sambucus nigra* with over 200 reports shows the potential of this tool. With appropriate supervision and care taking of the citizen scientists, and continuing promotion of the phenological network, the potential of this new approach will be tapped.

Zentralanstalt für Meteorologie und Geodynamik
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