Aerobiological Information Systems and allergic respiratory disease management AIS LIFE (AIS LIFE LIFE13 ENV/IT/001107)

Annual meeting

Vienna _ Austria

19th - 20th of June 2015

UNIVERSITÀ DEGLI STUDI FIRENZE
DISPAA DIPARTIMENTO DI SCIENZE DELLE PRODUZIONI AGROALIMENTARI E DELL'AMBIENTE

DIPARTIMENTO DI BIOLOGIA UNIVERSITÀ DI PISA

IFC CNR ISTITUTO DI FISIOLOGIA CLINICA CONSIGLIO NAZIONALE DELLE RICERCHE

MEDICAL UNIVERSITY OF VIENNA

RNSA RÉSEAU NATIONAL DE SURVEILLANCE AÉROBIOLOGIQUE

UPMC SORBONNE UNIVERSITÉS

Instituts thématiques Inserm Institut national de la santé et de la recherche médicale

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Aerobiological Information Systems and allergic respiratory disease management AIS LIFE
(AIS LIFE LIFE13 ENV/IT/001107)

Action B3 Progress

Case Study Italy: Mapping of urban and rural environments through land use and allergic plants data, agroclimatic indices

University of Florence

Prof. Simone Orlandini
Dott. Lorenzo Cecchi
Dott. Giovanni Argenti
Dott. Marco Napoli
Dott. Francesca Natali

Vienna _ Austria
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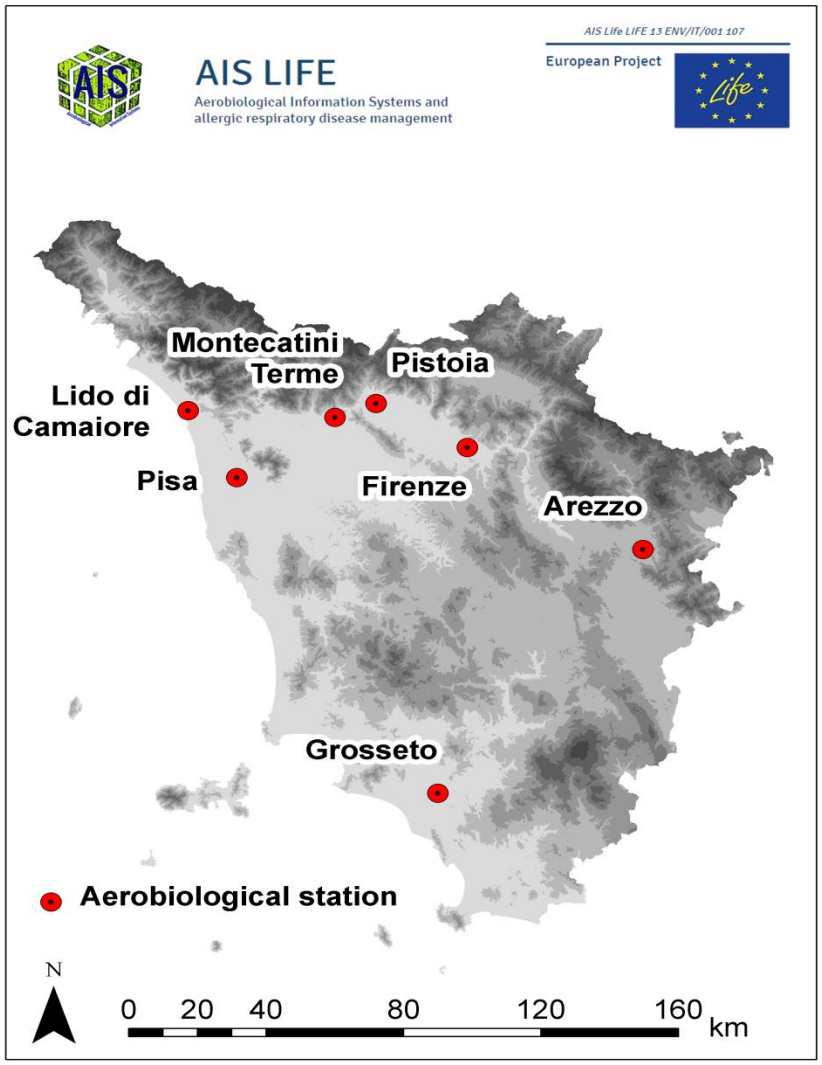
Study area of Italian case study



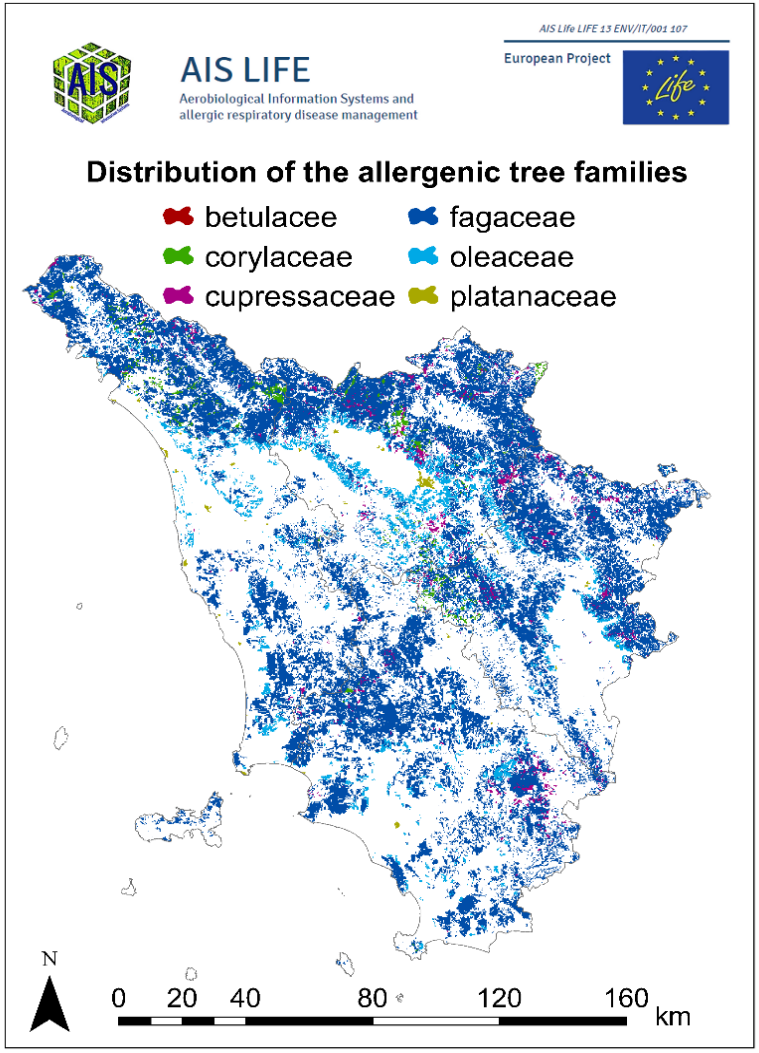
5 aerobiological stations are managed by Regional Environmental Agency (ARPAT):

Lido di Camaiore
Pistoia
Montecatini Terme,
Florence
Grosseto.

Other data from:

Pisa station: managed by Department of Biology of Pisa University (station was installed in the AIS LIFE project activities)
Arezzo: managed by a private company.

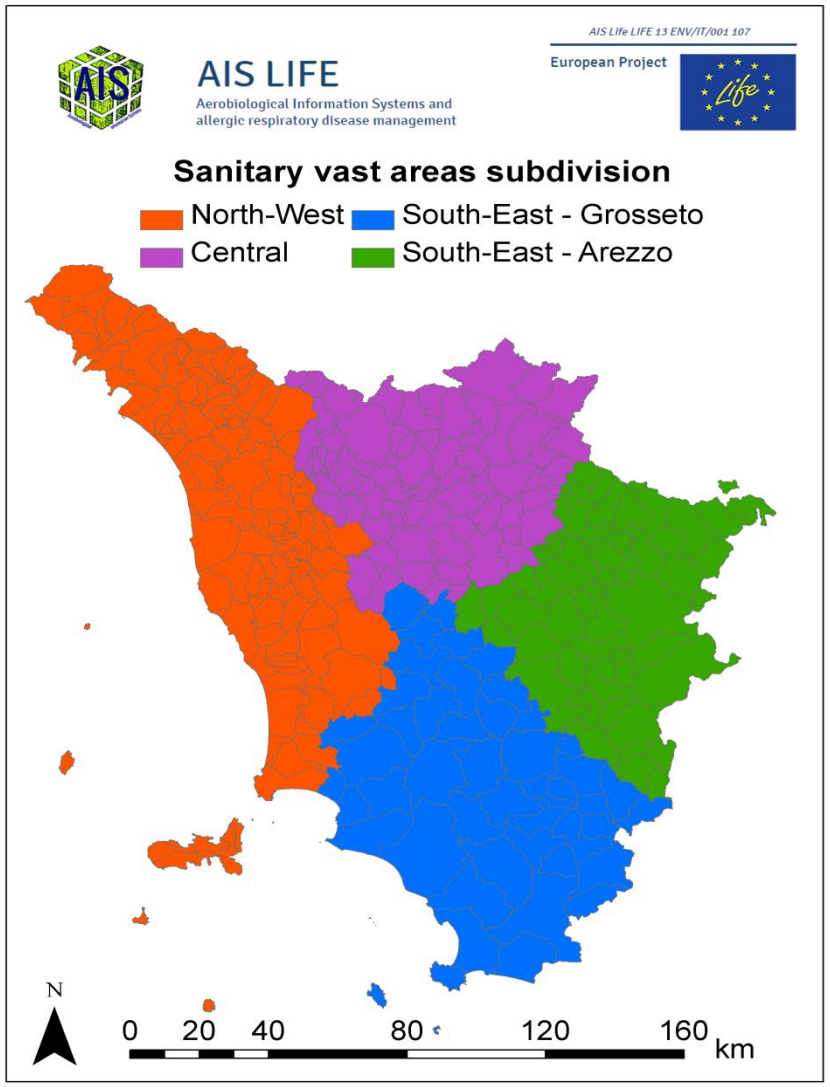
Methodology



All regional territory has been taken into consideration. For the analysis of land, “Inventario Forestale della Toscana” and the Corine Land Cover Software was used.

The study has considered the most common tree species in the Tuscan territory that are the highest responsable of allergy. Families considered were: Oleaceae (olive and ash), Fagaceae (Oak, beech and chestnut), Corylaceae (Hazel, hornbeam and white), Betulaceae (alder and birch), Cupressaceae (Cypress), Platanaceae (plane tree).

Methodology



The Municipalities of Tuscany have been grouped in four vast regions corresponding to the Regional Sanitary Districts.

Four aerobiological stations have been selected for aerobiological data collection. Each station is placed in a different Sanitary District and it represents the aerobiological reference station.

The chosen aerobiological stations are: Pisa, Firenze, Arezzo and Grosseto.

Methodology

- The meteorological forecast is provided by LaMMA Consortium - Environmental Modelling and Monitoring Laboratory for Sustainable Development.

- The aerobiological data are provided:

Biology Department, University of Pisa, for Pisa station.
ARPAT, Agenzia Regionale per la Protezione Ambientale della Toscana, for Grosseto and Florence station
Private company, for Arezzo station.

Outputs

1. The record of aerobiological and meteorological station is used to create a map of pollen concentration, classified in high, medium, low or absent, for individual tree family in each area study.

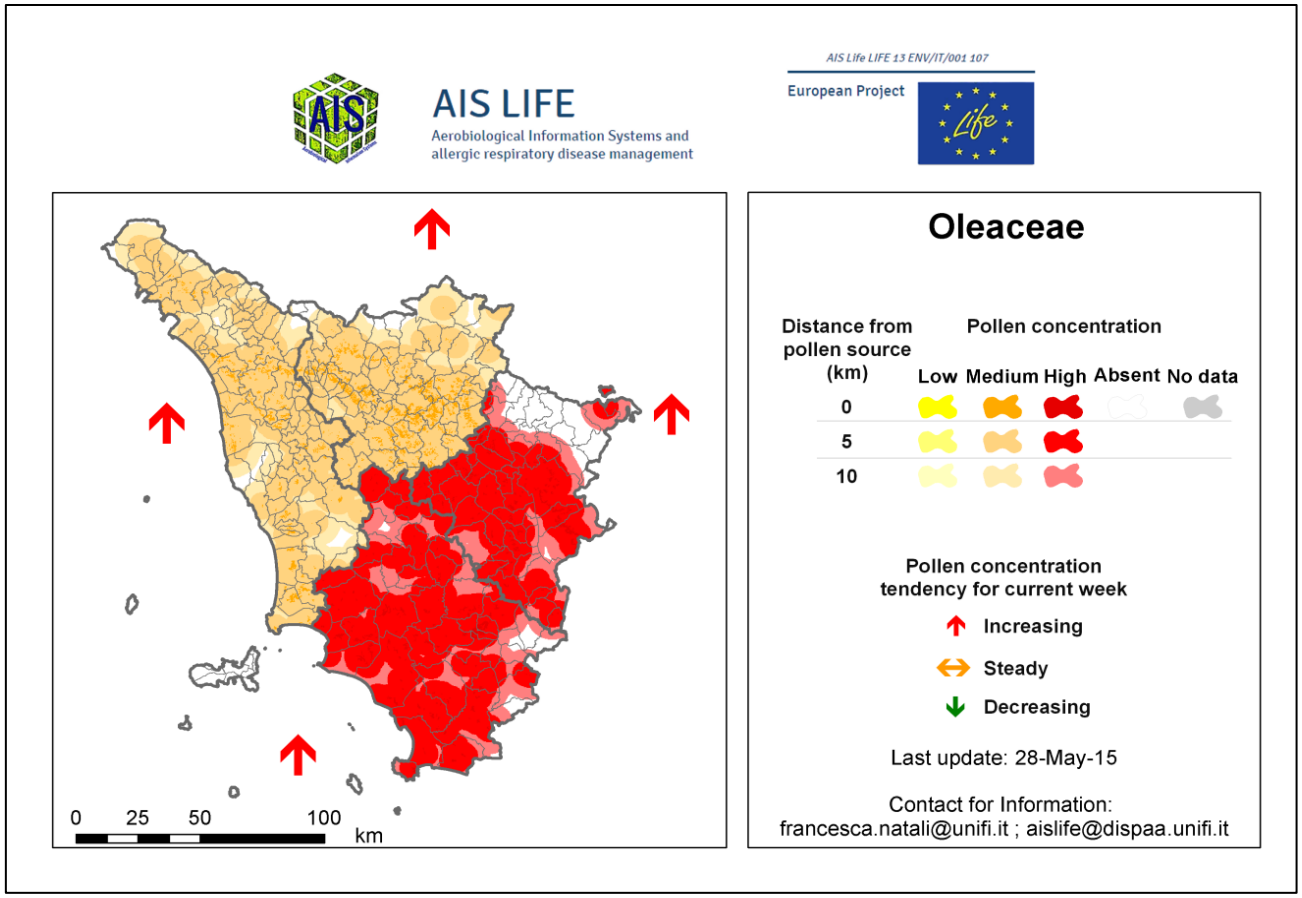
2. Buffering was defined and used to establish 'zones' around potential sources of aeroallergens that reflects the perceived area in which those sources could affect the population. Thus, two buffers around those sources with a diameter of 5 km and 10 km, were established. The buffer areas are indicated with the same colors (different tonality) according to the concentration of pollen source.

3. For each allergic species the tendency of concentration trends (increasing, decreasing or steady) for the week to come is also provided.

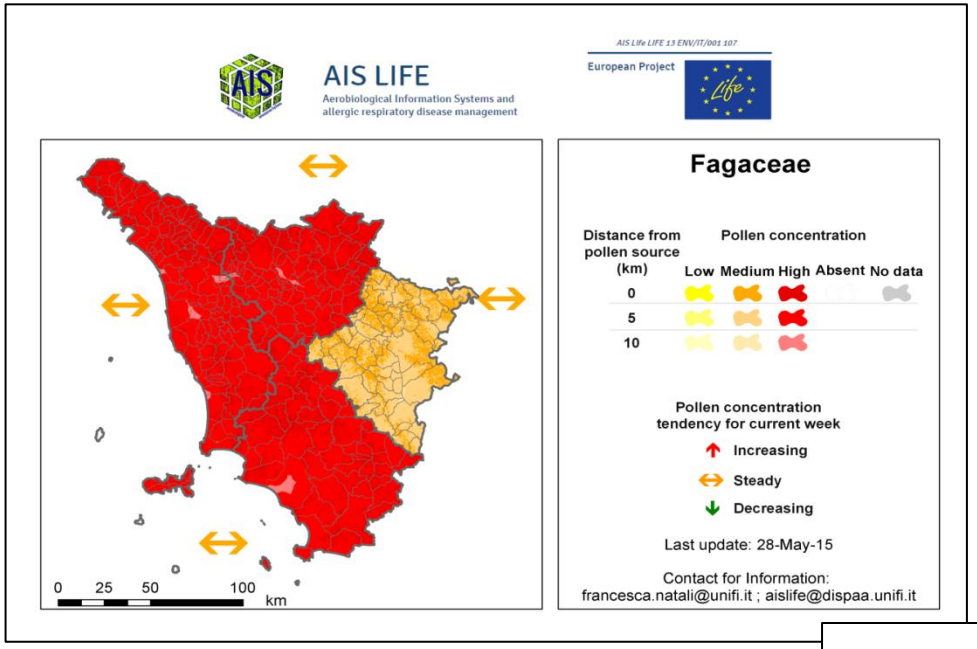
4. The distribution of pollen concentration maps provides useful information about the level of risk to patients depending on the geographic area and the considered species.

Outputs

The maps have been elaborated with the use of a geographic information system (GIS).



Outputs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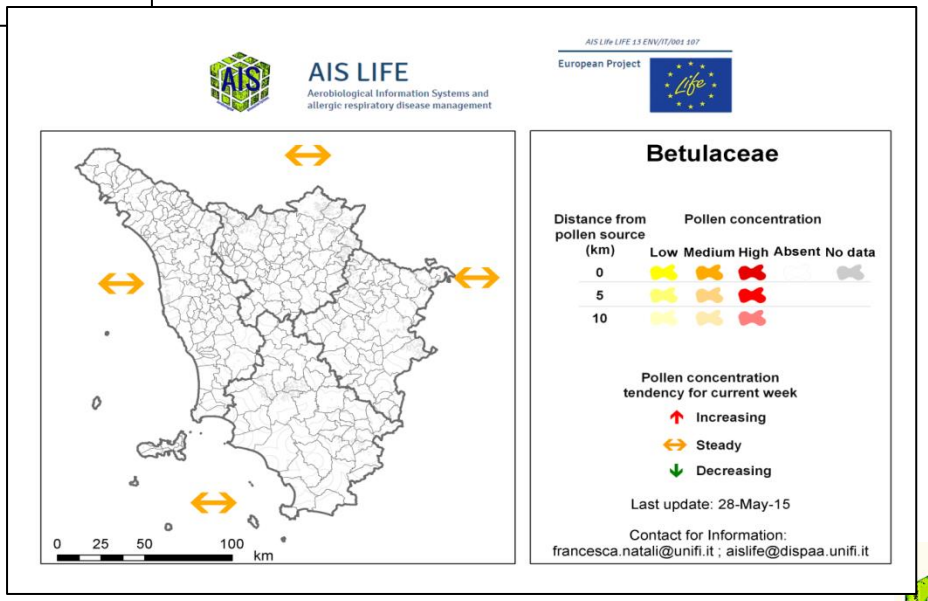
Fagaceae
Distance from pollen source (km)
Pollen concentration
Low Medium High Absent No data
0
5
10
Pollen concentration tendency for current week
Increasing
Steady
Decreasing
Last update: 28-May-15
Contact for Information:
francesca.natali@unifi.it ; aislife@dispaa.unifi.it
0 25 50 100 km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Betulaceae
Distance from pollen source (km)
Pollen concentration
Low Medium High Absent No data
0
5
10
Pollen concentration tendency for current week
Increasing
Steady
Decreasing
Last update: 28-May-15
Contact for Information:
francesca.natali@unifi.it ; aislife@dispaa.unifi.it
0 25 50 100 km

Dissemination

- Weekly maps are diffused using project (www.ais-life.eu), thanks to the collaboration with INSERM/UPMC
- On local web sites (www.biometeo.it)
- On social Network (Facebook and Twitter).

Future perspective

- Dissemination of maps in the Tuscan territory;
- Database of pollen data in progress
- Improvement the accuracy and the representativeness of the available input data
- Improvement of the quality of the maps
- Possible application in urban area developing phenological map and allergy pollen risk
- Dissemination and stakeholders

Thank you for your attention!!!