# ambee

# Pollen Data Accuracy Report

## Insights into Ambee's forecast model benchmarked against Industry Standards

Madison Ave, 11011
Lat, Long : 40.79, -73.94

**300** µg/m3
**High Tree Pollen**
Cypress, Ash, Birch, and Elm are present.

## About Ambee | Hyperlocal Climate & Environmental Intelligence

# We Build Accurate Environmental Data Delivered via APIs

**Air Quality** | **Pollen** | **Weather** | **Forest Fire**

Ambee is at the front line of the techno-environmental revolution. Ambee's environmental data enables anyone, anywhere in the world, to understand their hyperlocal environment in real time. The datasets provided by Ambee are used to power critical business decisions across continents, from startups to Fortune 500 companies.

**Get API Key for Free**  **Contact Us**

sanofi

SUN PHARMA

BAYER

Cipla

# Pollen Data

Pollen data refers to a collection of information and measurements related to pollen, encompassing pollen types, counts, index and forecasts.



**Know more about Pollen API** →

# Pollen API

Ambee's pollen API provides precise and up-to-date pollen data, facilitating seamless integration and utilization within applications or systems.
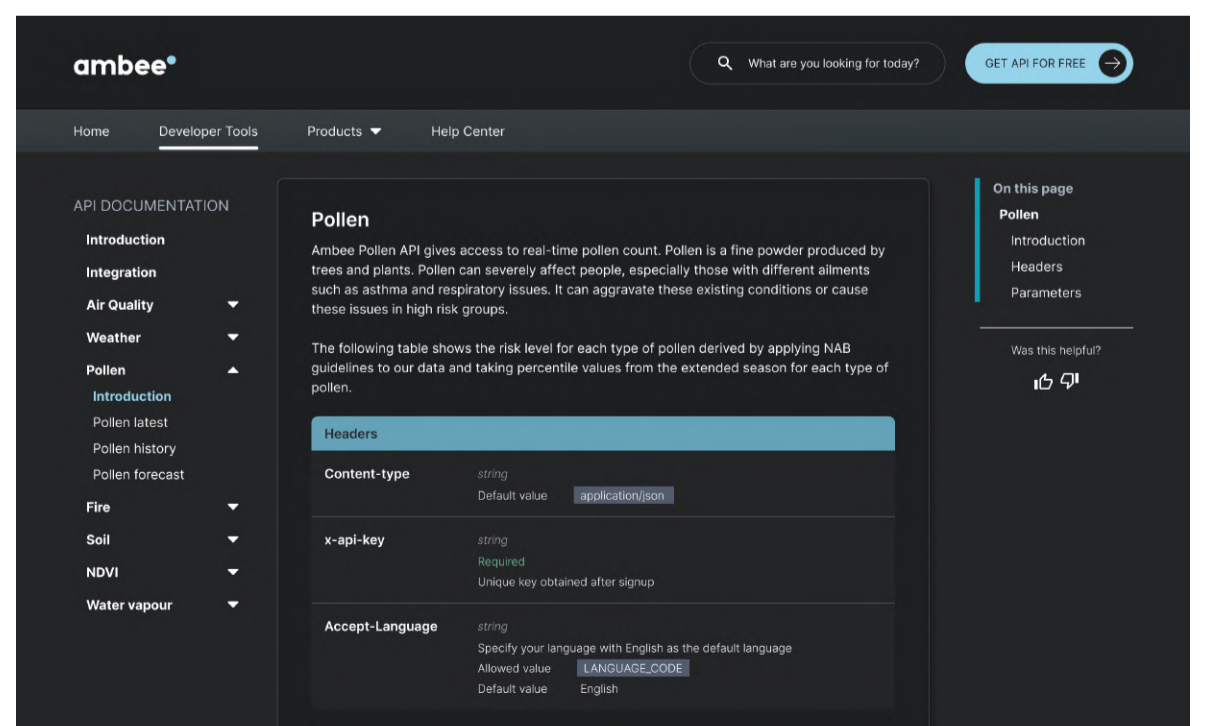


**API documentation** →

# Functions

**Customization Options:** Tailor data queries with filters like pollen type, location, and timeframe, enhancing the API's adaptability.

**Real-time and historical data:** Comprehensive insights on pollen types, counts, indexes, & forecasts tailored to your chosen location.

**Visualizations:** Easily interpret pollen levels through diverse visual formats, such as heatmaps, providing clear geographical insights.

**Health Recommendations:** Receive personalized insights based on pollen data to aid informed decisions regarding allergies.

# Applications

**Monitor Pollen Levels:** Keep allergy sufferers informed about local pollen counts for improved activity planning.

**Manage Allergies:** Provide real-time recommendations on medication, air purification, and strategies based on current pollen levels.

**Informed Business Decisions:** Enable businesses to customize marketing, adjust product offerings, and plan events with insights from seasonal pollen trends.

**Public Health Enhancement:** Enable health agencies to issue allergy alerts and offer guidance on AQ management strategies using pollen data.

# Ambee's Pollen Data

Ambee's pollen data provides detailed insights into the local pollen landscape, offering information on pollen counts, associated allergy risks, and even identifying specific subspecies.

## Pollen Data Suite Overview

| Parameters | Description |
|---|---|
| Risk levels | High, Medium, and Low |
| Granularity | 5 sq km; has the ability to go more granular |
| Real-time | Updated hourly |
| Forecast | Up to 120 hours |
| Historical | Up to 10 years of historical data (daily, hourly) with the last 48 hours available on APIs |
| Input Format | Latitude, longitude, country code, division, zip code, placename, state, city |
| Data Format Supported | JSON |

## Pollen Types Coverage
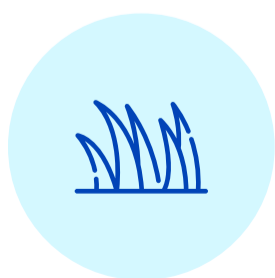


Tree     Grass     Weed

# Pollen Regional Species Coverage

## North America

| | |
|---|---|
| **Tree** | Oak, Cypress/Juniper/Cedar, Mulberry, Pine, Elm, Ash, Birch, Maple, Poplar |
| **Weed** | Ragweed |
| **Grass** | Grass |

## Europe

| | |
|---|---|
| **Tree** | Hazel, Elm, Pine, Alder, Poplar / Cottonwood, Oak, Plane, Birch, Cypress |
| **Weed** | Mugwort, Chenopod, Ragweed, Nettle |
| **Grass** | Grass |

## Queensland and Northern Australian Territory

| | |
|---|---|
| **Tree** | Casuarina, Acacia, Myrtaceae, Cypress, Pine |
| **Weed** | Chenopod, Sedges, Aster, Plantago |
| **Grass** | Grass |

## Rest of Australia and New Zealand

| | |
|---|---|
| **Tree** | Casuarina, Acacia, Myrtaceae, Cypress, Pine, Elm, Willow, Oak, Olive, Alder, Birch |
| **Weed** | Chenopod, Sedges, Aster, Plantago, Rumex |
| **Grass** | Grass |

# Pollen Data Use Cases

### Marketing
Personalization
Higher conversions
Improved ROI

### Engagement
Pollen  alerts + triggers
Customer loyalty + retention
HCP engagement

### Forecasting
Demand planning
Campaign planning
Sales correlation

**Optimize product strategies:** Streamline workflows, meet the demands for anti-allergy products, and improve sales forecasts by leveraging real-time, historical, and forecasted pollen data.

**Revolutionize healthcare management:** Efficiently address chronic health conditions by gaining valuable insights into environmental triggers, enhancing the overall quality of healthcare.

**Tailor marketing campaigns:** Revamp your marketing strategies with our pollen API, enabling personalized and targeted campaigns that resonate with your audience.

**Elevate customer interaction:** Boost consumer engagement through real-time pollen updates and personalized alerts, creating a seamless and valuable customer experience.

**Anticipate health challenges:** Proactively assess potential health risks stemming from seasonal pollen exposures, enabling timely interventions and preventive measures.

**Empower research endeavors:** Contribute significantly to health research initiatives by providing accurate and reliable allergy forecast data, advancing our understanding of environmental impacts on health.

# Why Ambee's Pollen Data is Better ?

For precise pollen data, we integrate insights from pollen stations, analyze weather seasonalities, establish meteorological correlations, and consider high-resolution vegetation indices, phenological factors, employing our proprietary AI & ML models.

Ambee holds periodical training of proprietary AI and ML models.

The data is of postcode level with hyperlocal granularity. It is available for all latitudes and longitudes within supported geographies, including underserved regions.
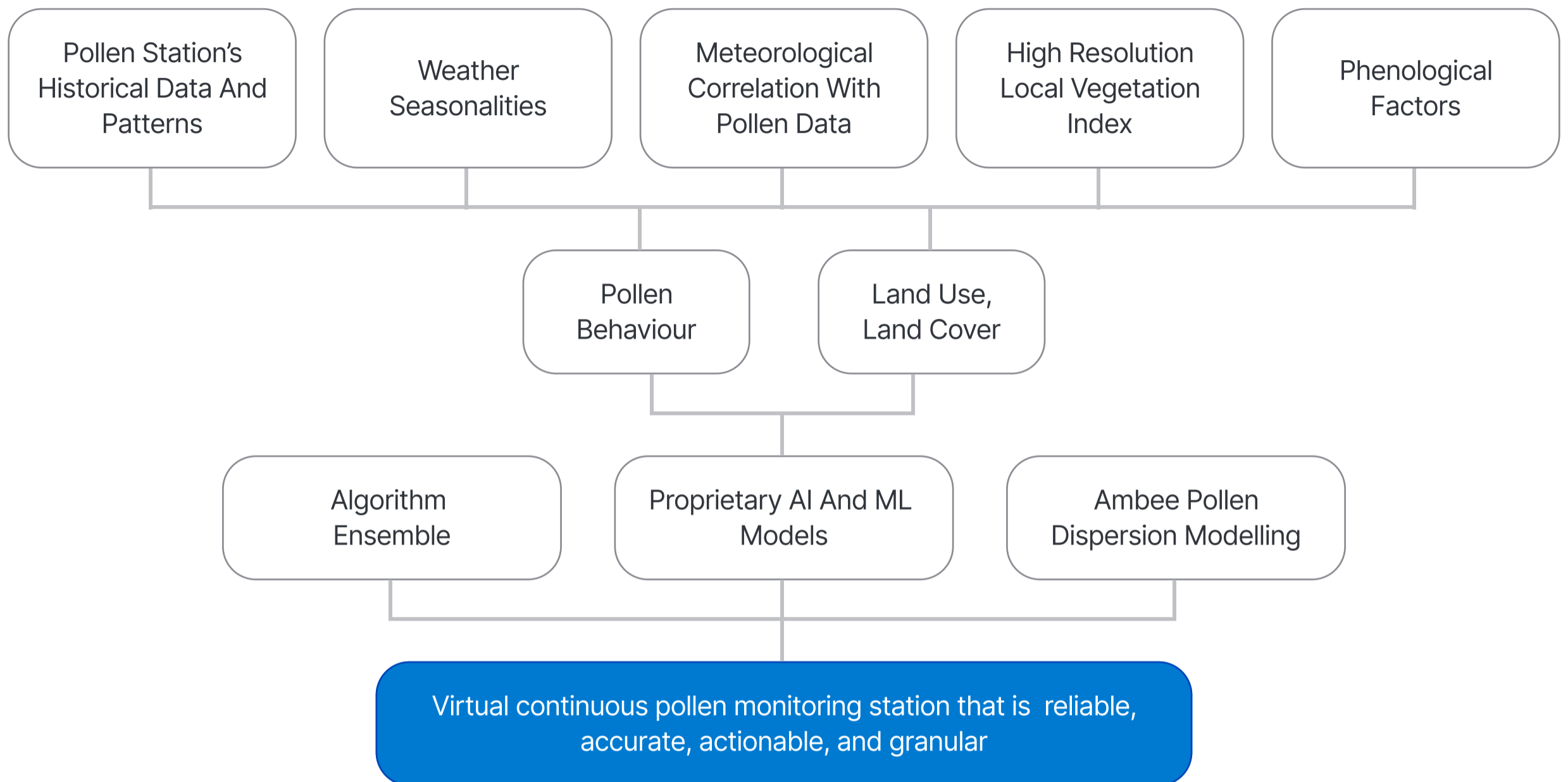
Ambee's pollen data is modeled after factors like multi-species vegetation, weather, and phenology.

Ambee provides data on an hourly frequency, and it is regularly updated. It is available throughout the year.

Real-time pollen data and the hourly forecast with accurate pollen count numbers are available.

Ambee's risk levels are based on NAB standards, and the risk assessments are done using the NAB-compliant method.

# How We Build Data ?

| Pollen Station's Historical Data And Patterns | Weather Seasonalities | Meteorological Correlation With Pollen Data | High Resolution Local Vegetation Index | Phenological Factors |
|---|---|---|---|---|

| Pollen Behaviour | Land Use, Land Cover |
|---|---|

| Algorithm Ensemble | Proprietary AI And ML Models | Ambee Pollen Dispersion Modelling |
|---|---|---|

**Virtual continuous pollen monitoring station that is reliable, accurate, actionable, and granular**

# Risk Mapping

| Risk Level | Tree | Grass | Weed |
|---|---|---|---|
| 🟢 Low | 0-95 | 0-29 | 0-20 |
| 🟡 Moderate | 96-207 | 30-60 | 21-77 |
| 🟠 High | 208-703 | 61-341 | 78-266 |
| 🔴 Very High | 704+ | 342+ | 267+ |

# Ground Stations vs. Ambee

| Features | Ground Stations | Ambee |
| --- | --- | --- |
| Operating principle | Manual counting stations | Based on real-time stations + meteorological, phenological, and vegetation data |
| Technology | Sampling and counting by machine | 20 years of historical data, analysis, engineering, machine learning, and modeling Output data format |
| Output data format | Pollen risk categories only | Near real-time pollen types, counts, along with risk levels (low, medium, and high) |
| Geographical spread | One station per city and depends on the location of the pollen station | Global - Europe, North America, Asia, Australia, and New Zealand |
| Granularity | Granularity is limited to city level | Postcode-level hyperlocal granularity |
| Data modeling | Subjected to manual placement and sampling errors | Pollen is modeled after factors like vegetation, weather, and phenology |
| Seasonal coverage | No data outside the pollen season | Data is provided throughout the year |
| Frequency | Frequency is limited to daily; generally, irregular | Hourly frequency; regularly updated |
| Location | Data published only for a few cities | Data is available for all latitudes-longitudes within supported geographies |
| Availability | No Real-Time Data | Real-time data and the hourly forecast are available |

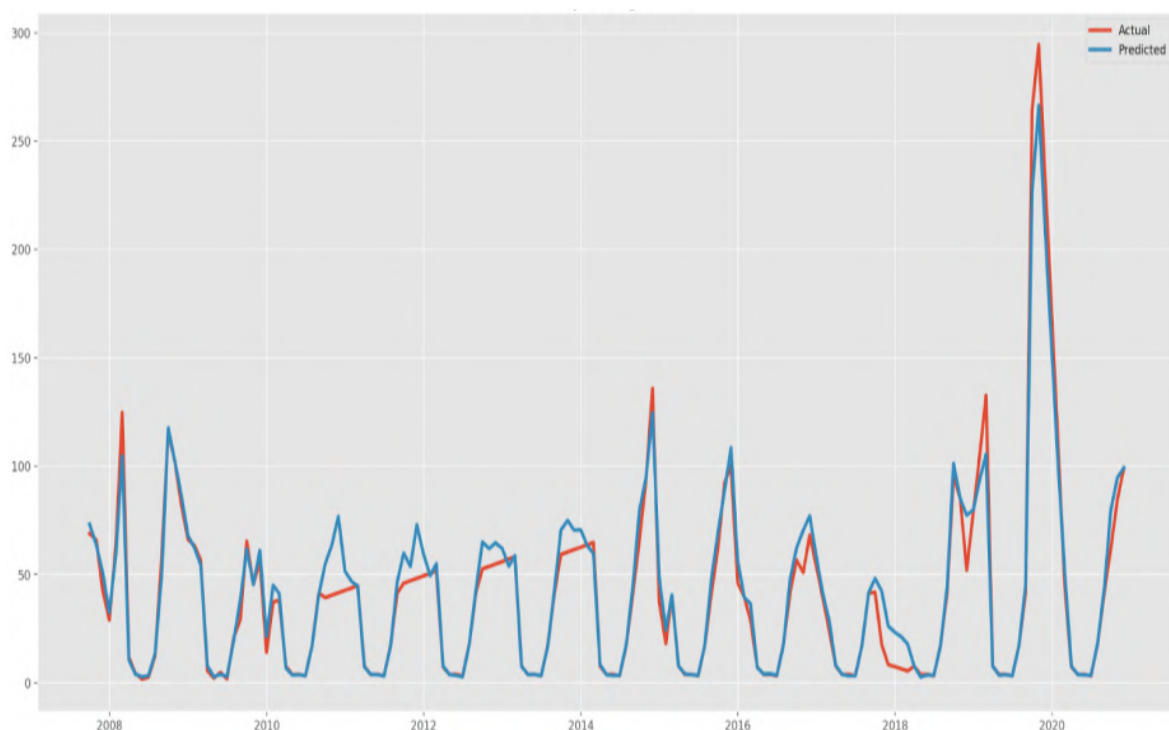# Benchmarking ambee Accuracy Against Industry Standards - Australia

* Accuracy achieved in terms of percentage w.r.t Comparison between the actual pollen count from **on-ground stations and Ambee's model predictions**

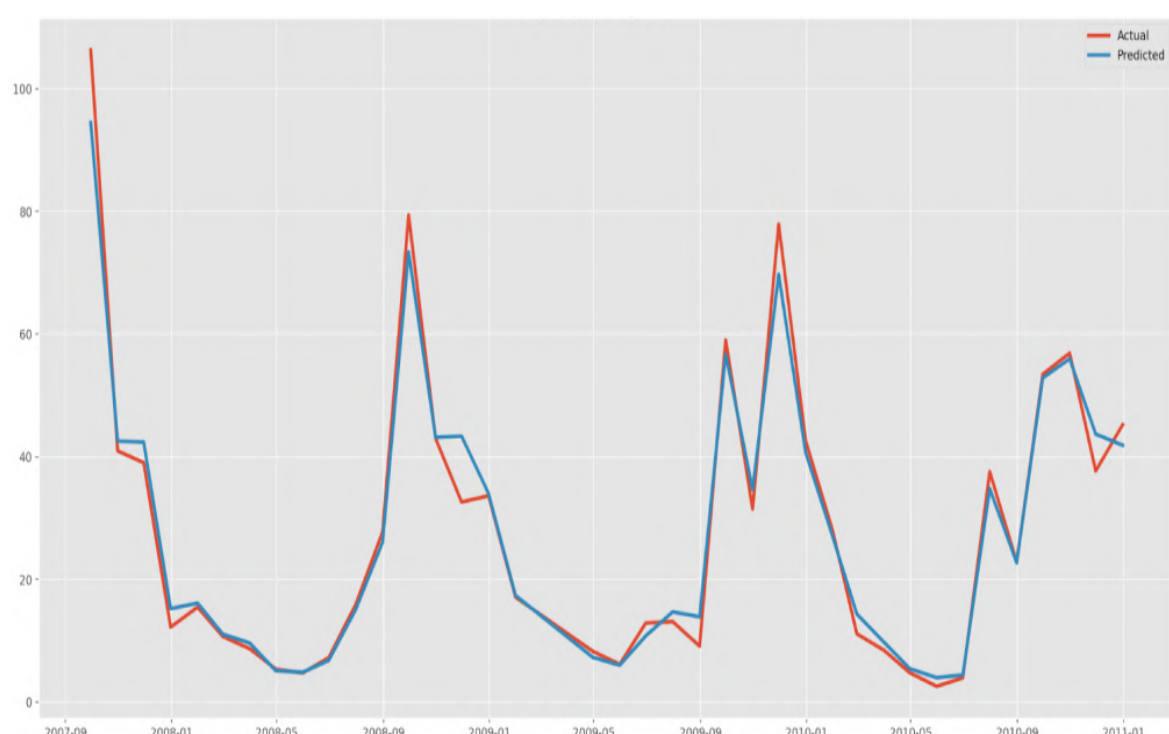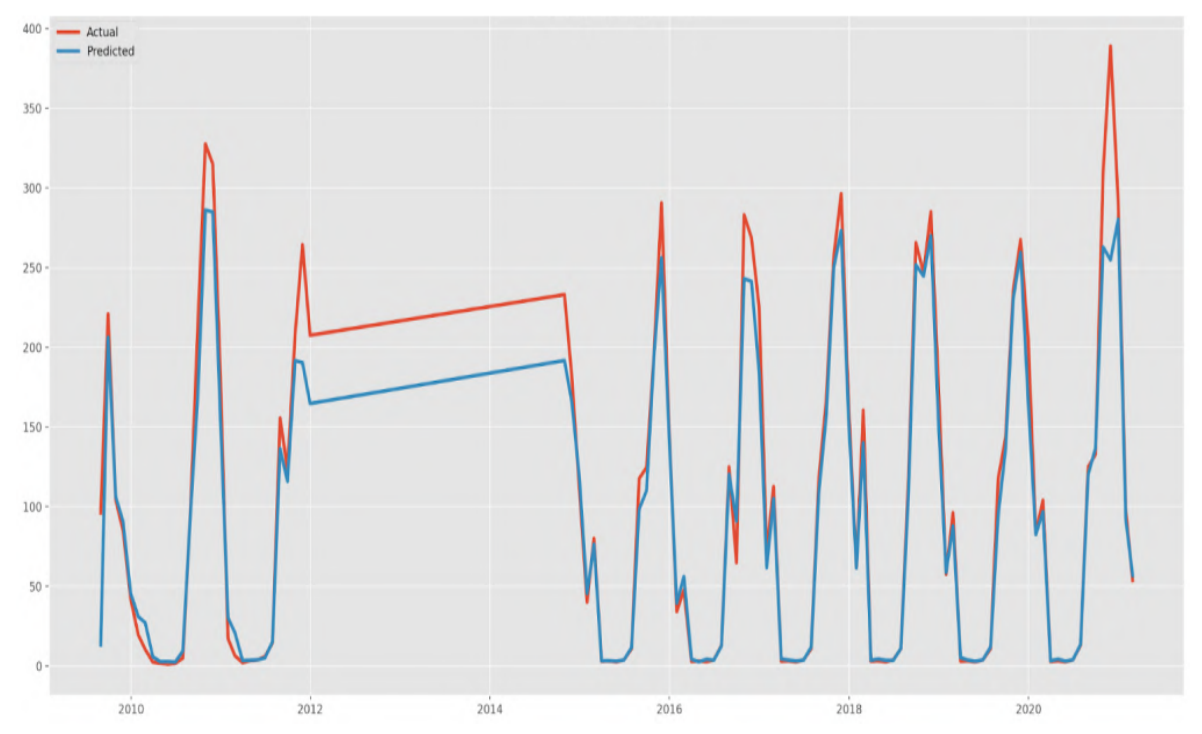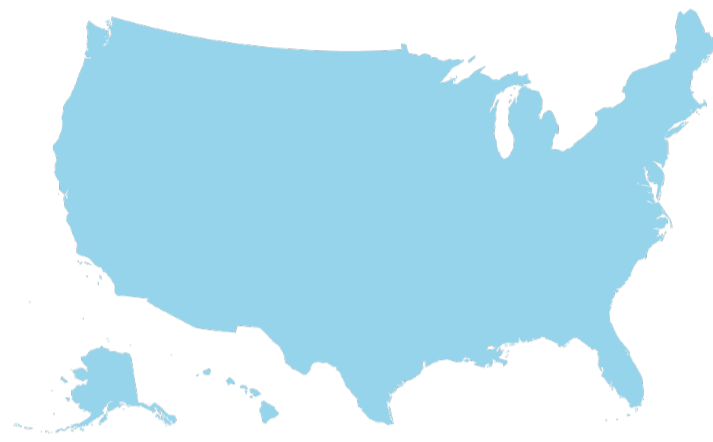| City | a Accuracy* |
|------|-------------|
| Canberra | 97.5% |
| Sydney | 96% |
| Hobart | 96% |
| Melbourne | 95% |

— Actual    — Ambee

## Canberra



## Sydney
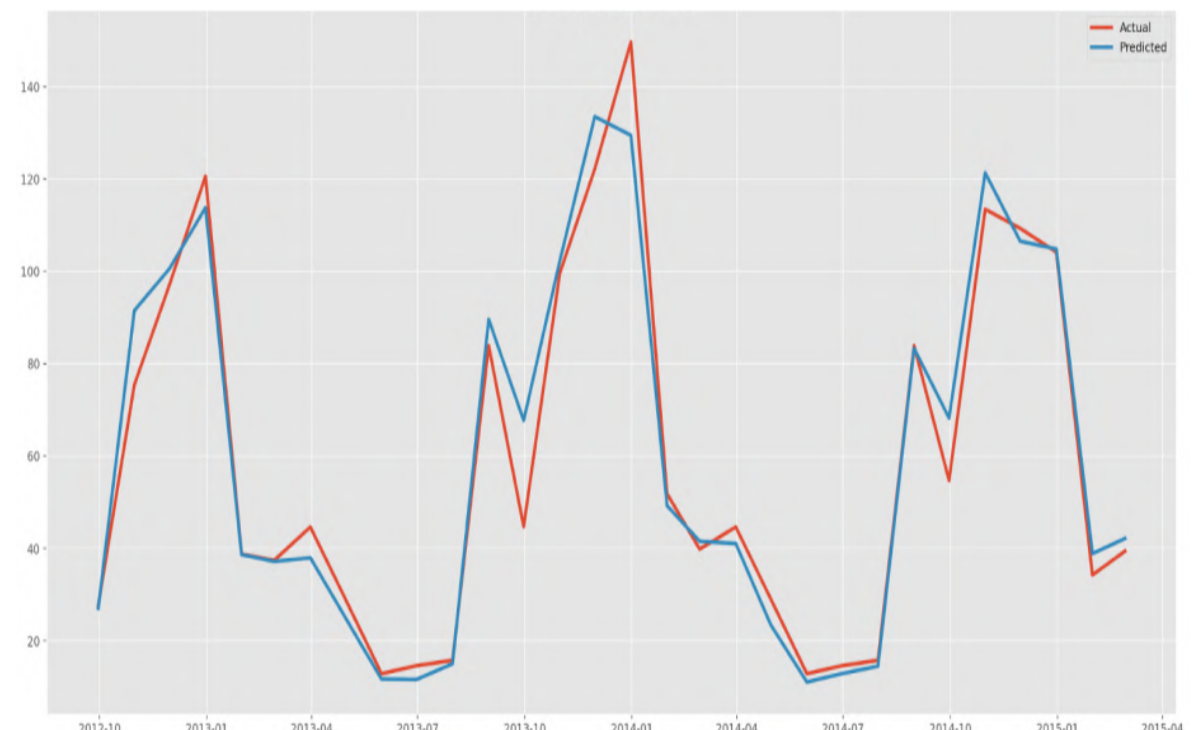


## Hobart



## Melbourne

# Benchmarking ambee Accuracy Against Industry Standards – USA

*\* Accuracy achieved in terms of percentage w.r.t Comparison between the actual pollen count from **on-ground stations and Ambee's model predictions***

| City | a Accuracy* |
|------|------------|
| Plano | **98.73%** |
| Atlanta | **98.4%** |
| Lincoln | **98%** |

| City | a Accuracy* |
|------|------------|
| Dayton | **98%** |
| Boise | **97%** |
| Houston | **96%** |

— Actual   — Ambee

## Plano
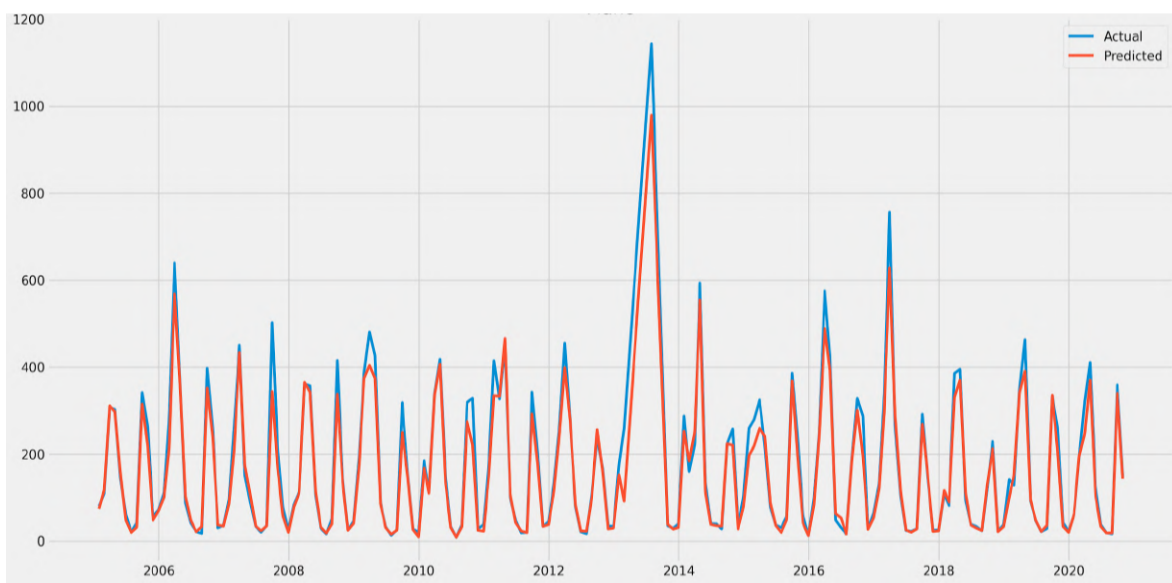


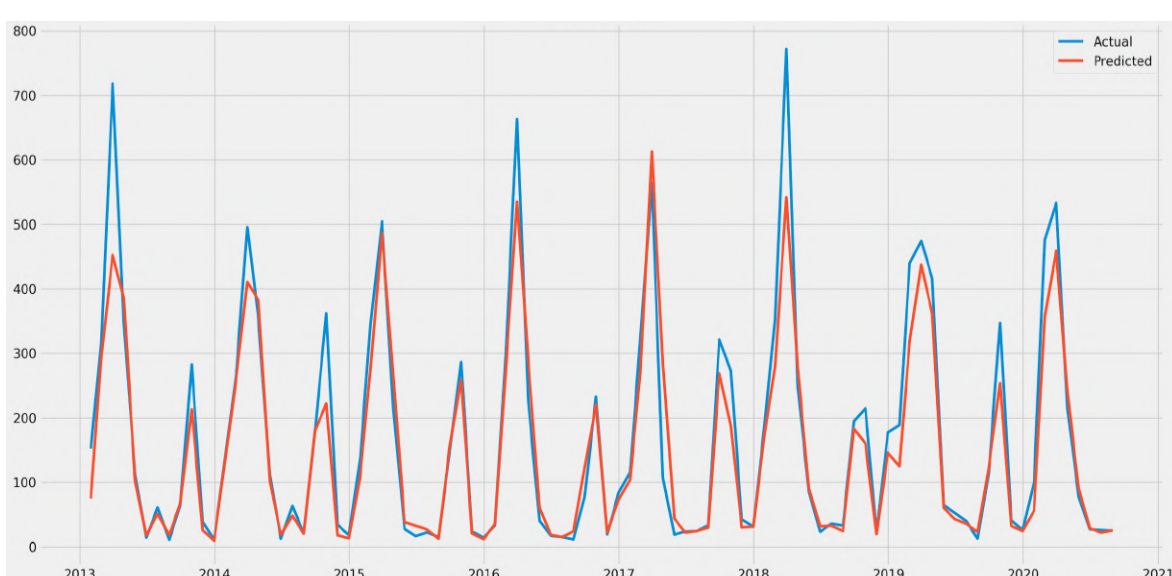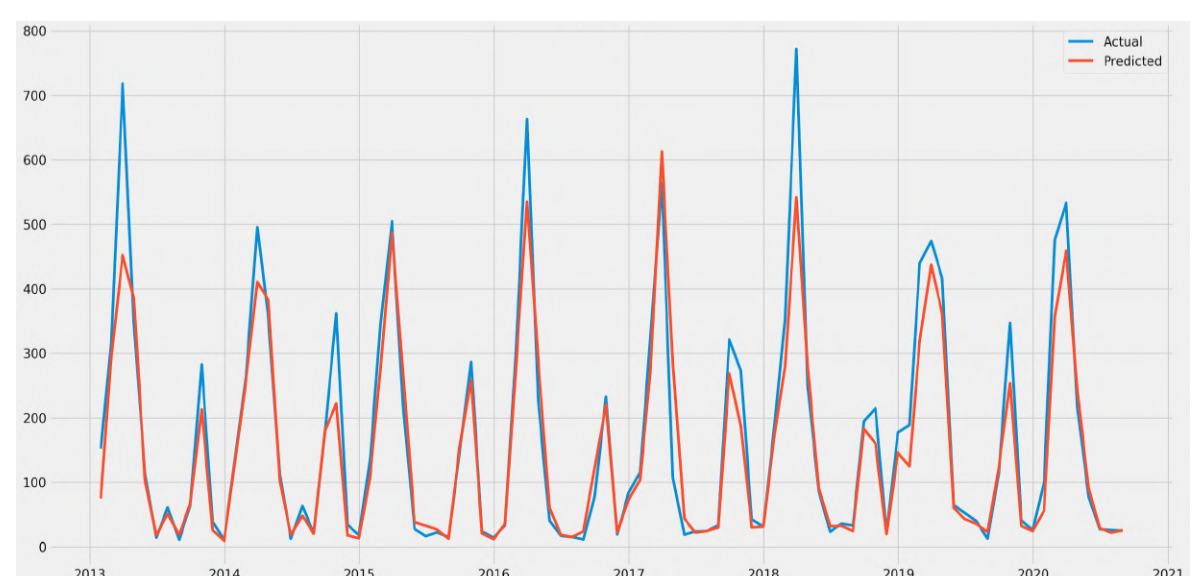## Dayton
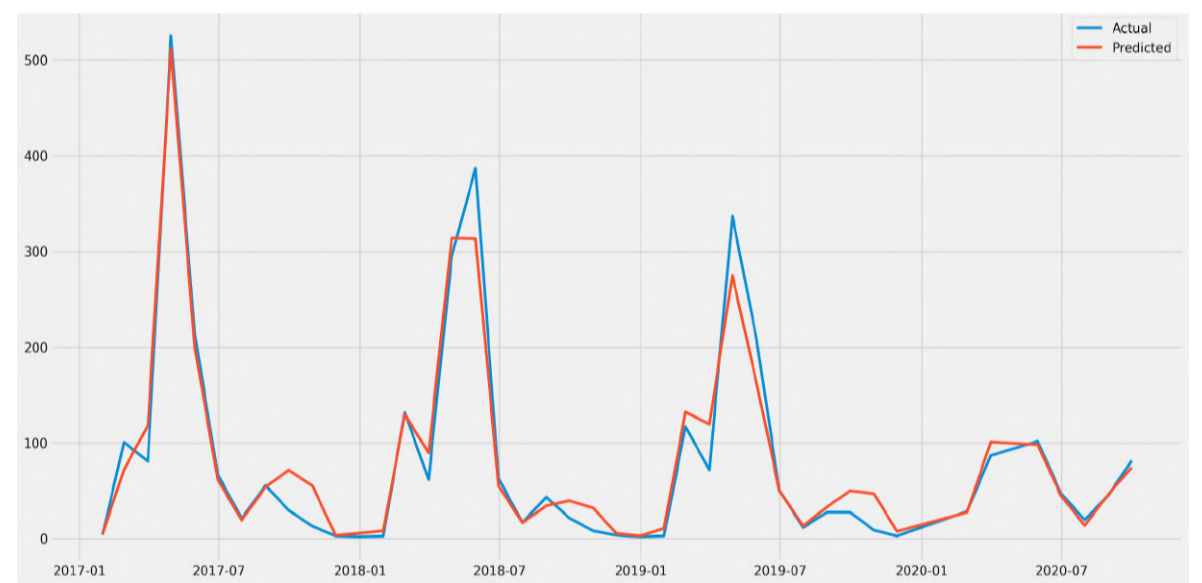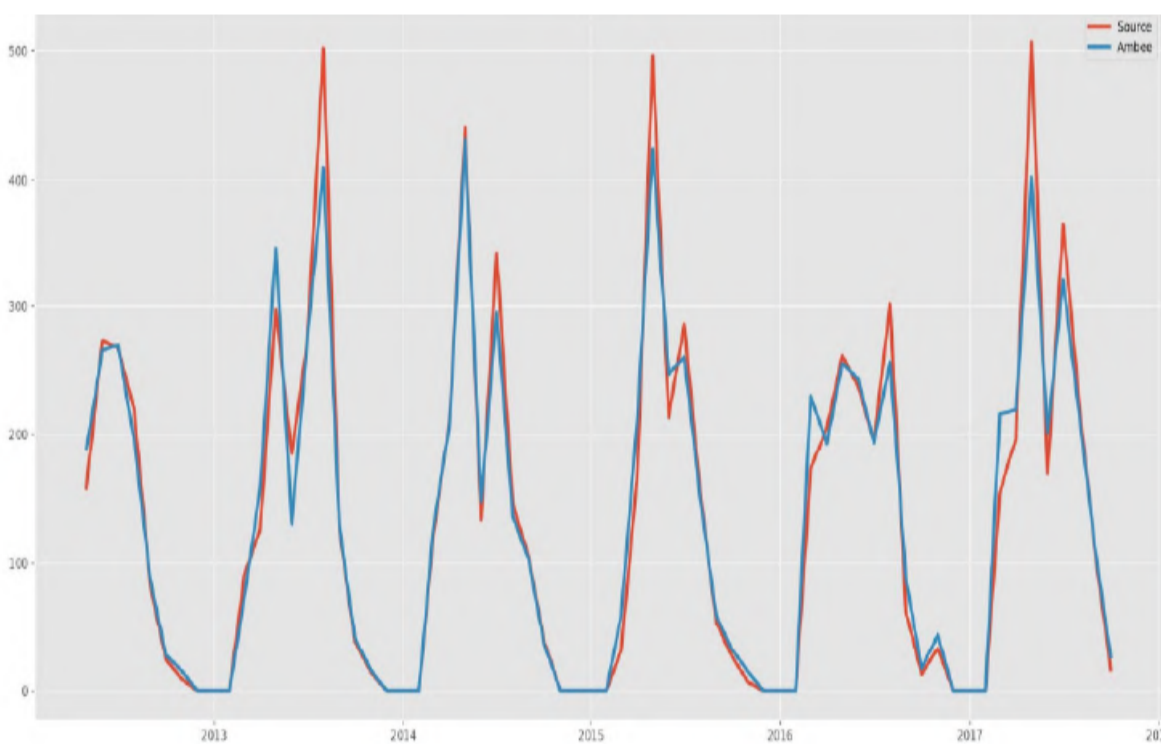


## Atlanta
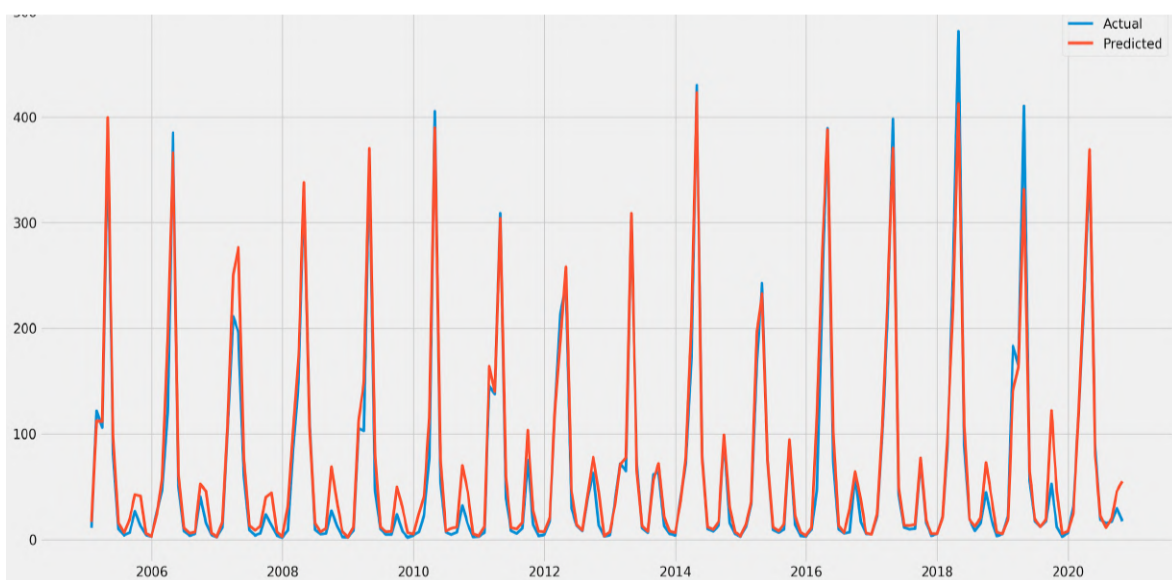


## Boise
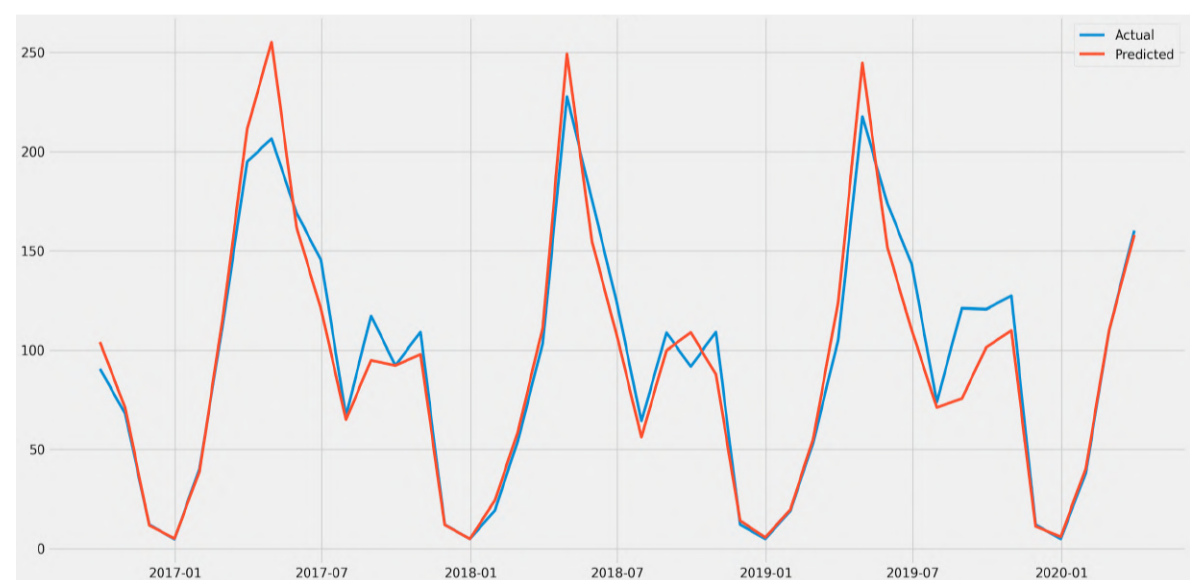


## Lincoln



## Houston

# Benchmarking ambee Accuracy Against Industry Standards - Europe

\* Accuracy achieved in terms of percentage w.r.t Comparison between the actual pollen count from **on-ground stations and Ambee's model predictions**

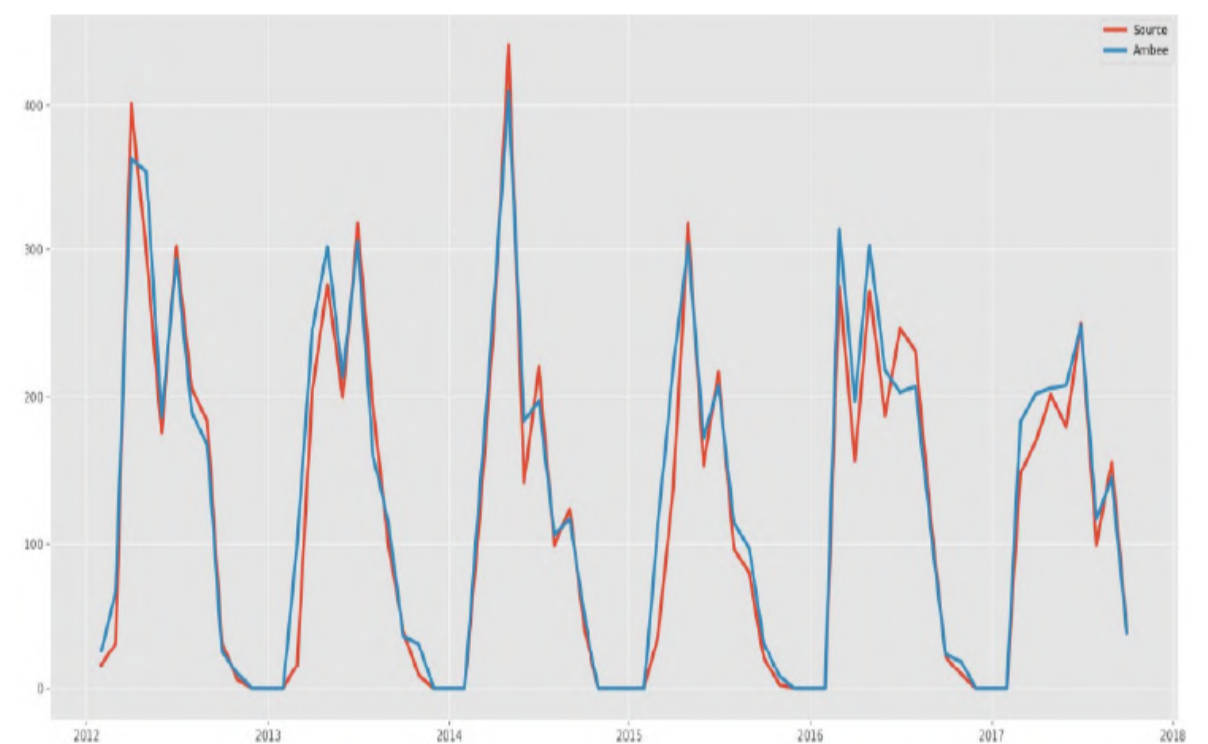| City | a Accuracy* |
|------|-------------|
| Lyon | **96%** |
| Nice | **95%** |
| Toulouse | **95%** |
| Bordeaux | **94%** |
| Paris | **93%** |

— Actual  — Ambee

## Lyon



## Nice



## Toulouse
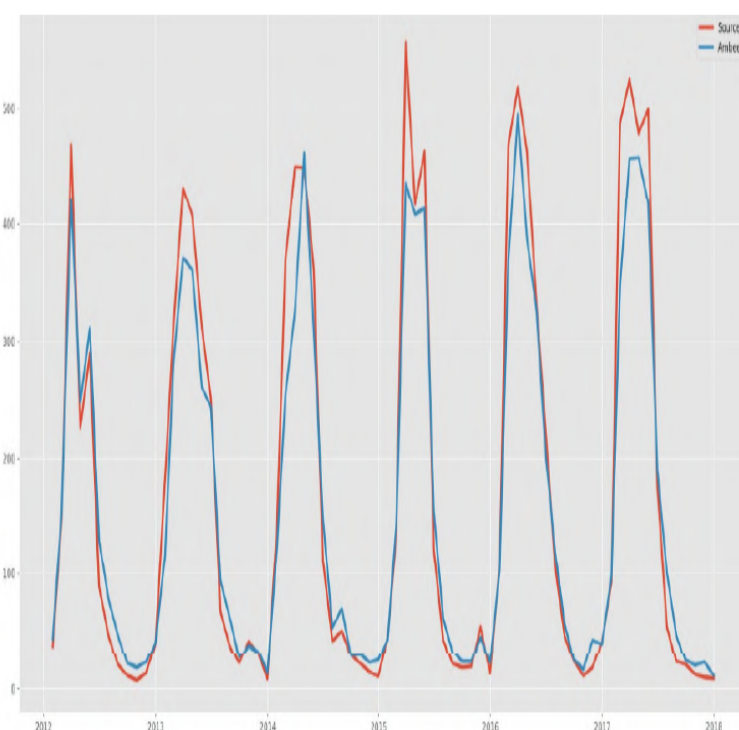


## Bordeaux
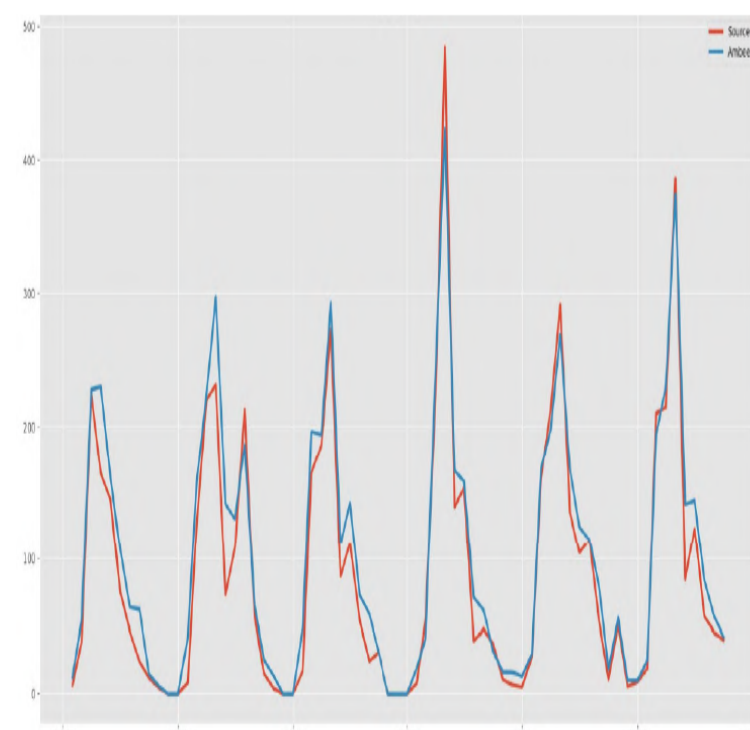


## Paris
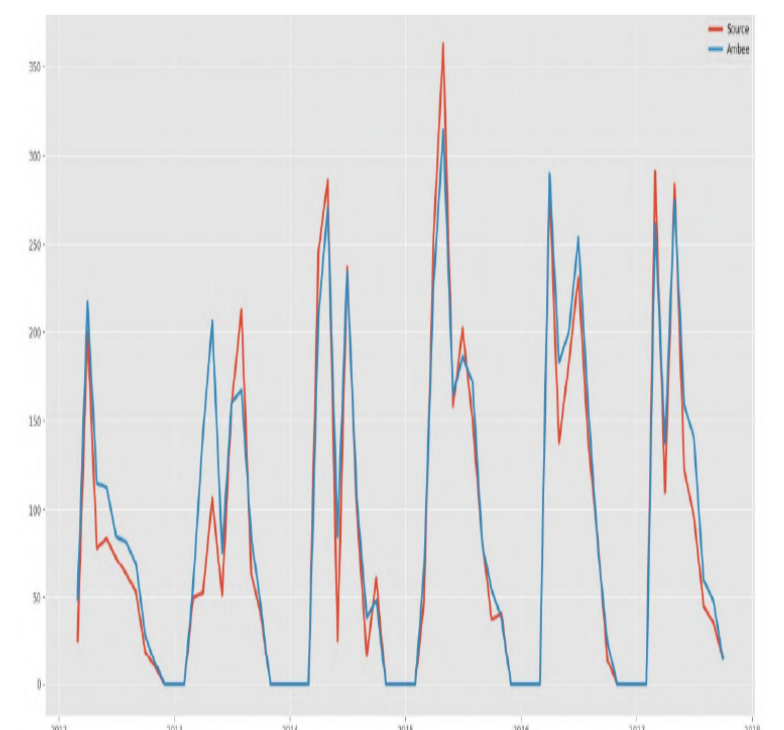
# Data Comparison

| Features | Ambee | Competitor |
| --- | --- | --- |
| Pollen count and species level count | Yes | No |
| Risk levels and species risk levels | Yes | Yes |
| Coverage | Europe, Asia, North America | Europe and North America |
| Granularity | 5km x 5km | N/A |
| Frequency | Hourly, active for full-year | Hourly |
| Historical data | 7 days, up to 10 years | Upto 168 hours |
| Risk level determination | Values derived through NAB guidelines | Proprietary |
| Unit | Pollen grains/m3 | Proprietary |
| Language Support | Multi-language support on a need basis | N/A |

# Try out our APIs

Ambee's data can be accessed using the API key available on the API dashboard. You simply need to sign up for the dashboard, and you will get access to a unique API key and a 15-day free trial. Reach out to our team for any inquiries or collaboration.

**Get API Key for Free**   **Contact Us**

# Resources

**How to get started with Ambee APIs** →

**How To Make An API Call To Ambee APIs Using Postman** →

**Explore our website to discover more about our Ambee.** →

# Appendix

## Pollen Risk Levels

This table outlines the assessed risk levels for each type of pollen, determined by applying NAB guidelines to our comprehensive dataset. The percentile values extracted from the extended seasonal data for each specific pollen type provide a nuanced perspective on the potential risks associated with varying pollen types. This assessment serves as a valuable tool for understanding and communicating the dynamic nature of pollen-related hazards.

| Risk Level | Tree | Grass | Weed |
|---|---|---|---|
| 🟢 Low | 0-95 | 0-29 | 0-20 |
| 🟡 Moderate | 96-207 | 30-60 | 21-77 |
| 🟠 High | 208-703 | 61-341 | 78-266 |
| 🔴 Very High | 704+ | 342+ | 267+ |

## Pollen Species Risk Levels

| Species | Low | Moderate | High | Very High |
|---|---|---|---|---|
| Acacia* | Below 96 | 96-207 | 208-703 | Above 703 |
| Alder | Below 22 | 22-32 | 33-81 | Above 81 |
| Ash | Below 22 | 22-37 | 38-63 | Above 63 |
| Birch | Below 47 | 47-99 | 100-264 | Above 264 |
| Casuarina | Below 11 | 11 - 16 | 17-33 | Above 33 |

* If species are not significantly present, parent category risk level is used instead.

| Species | Low | Moderate | High | Very High |
|---|---|---|---|---|
| Cypress | Below 56 | 56-85 | 86-257 | Above 257 |
| Cypress/Juniper/Cedar | Below 56 | 56-85 | 86-257 | Above 257 |
| Elm | Below 12 | 12 - 20 | 21-48 | Above 48 |
| Hazel | Below 10 | 10 - 13 | 14-30 | Above 30 |
| Maple | Below 11 | 11 - 18 | 19-34 | Above 34 |
| Mulberry | Below 22 | 22-38 | 39-74 | Above 74 |
| Myrtaceae | Below 12 | 12 - 22 | 23-49 | Above 49 |
| Oak | Below 28 | 28-57 | 58-195 | Above 195 |
| Olive* | Below 96 | 96-207 | 208-703 | Above 703 |
| Pine | Below 13 | 13-26 | 27-80 | Above 80 |
| Plane | Below 28 | 28-51 | 52-86 | Above 86 |
| Poplar/Cottonwood | Below 21 | 21-42 | 43-102 | Above 102 |
| Willow* | Below 96 | 96-207 | 208-703 | Above 703 |
| Aster* | Below 21 | 21 - 77 | 78-266 | Above 266 |
| Chenopod | Below 5 | 5 - 9 | 10-41 | Above 41 |
| Mugwort* | Below 21 | 5 - 9 | 21 - 77 | Above 266 |
| Nettle | Below 20 | 20-56 | 57-166 | Above 166 |
| Plantago* | Below 21 | 21 - 77 | 78-266 | Above 266 |
| Ragweed | Below 10 | 10 - 15 | 16-77 | Above 77 |
| Rumex* | Below 21 | 21 - 77 | 78-266 | Above 266 |
| Sedges* | Below 21 | 21 - 77 | 78-266 | Above 266 |