ambee

Technology & Data Guide

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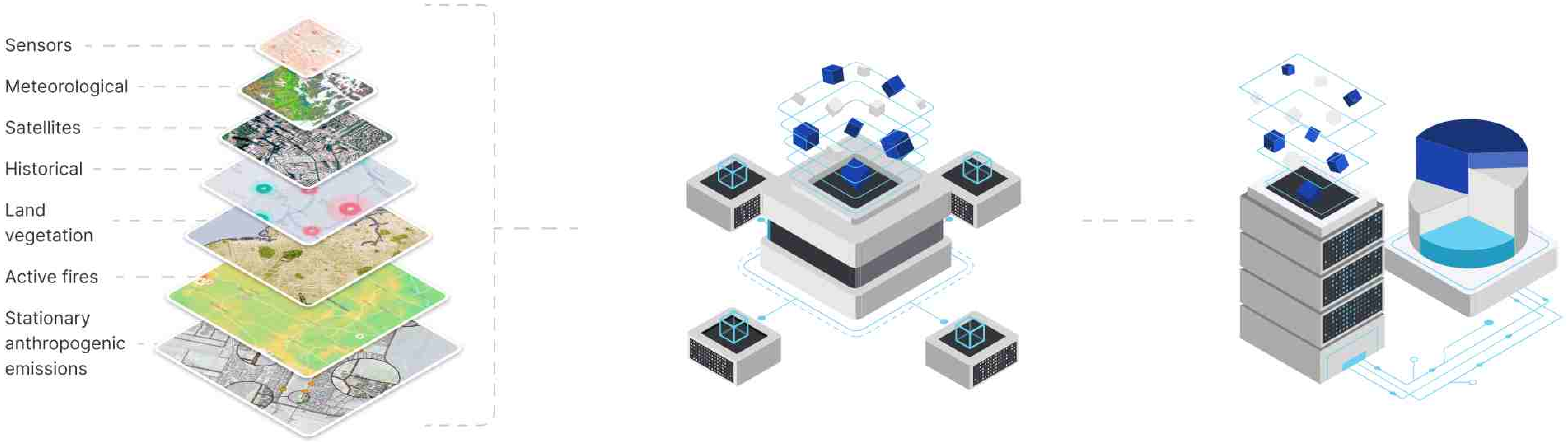
1. Introduction

QUICK ACCESS:

- Data architecture
- Intellectual property
- Accuracy highlights
- Data security

1.1 Data architecture

Our patented AI models —



Measure & own
Raw data collected from multiple sources

Analyze
Multi-modal approach applied using proprietary AI and ML techniques

Drive actionable insights
Effective decision-making with hyperlocal climate insights

FIG. 1 | *Architecture of Ambee data*

1.2 Intellectual property

Our superior accuracy is a result of patented systems ensuring our climate models are ahead of the curve, incorporating the latest advances in AI and ML.

3 Patents filed

- **2** Air quality
- **1** Pollen

1. WO2022195628 - AN ARTIFICIAL NEURAL NETWORK BASED VIRTUAL AIR MONITORING NETWORK SYSTEM

Artificial neural network to monitor air quality by creating a virtual network of stations and sensors to gather air quality information.

Request for AQ for location x, y for time 't'

↓

Creating VAMS at location x,y

↓

Identifying traffic and industrial sources near the requested location

↓

Adding recognized variable into the interpolation

↓

Return AQ output AQ (x,y,t) = Interpolation (S1,S2,S3...Sn,IS,TH,d,t)

EXHIBIT 1 | *Functional overview of the patent*

2. SYSTEMS AND METHODS FOR A MULTIMODAL SPATIO-TEMPORAL AIR QUALITY NETWORK (PROVISIONAL)

A comprehensive air quality monitoring network that combines sensor data, satellite imagery, geospatial, and demographic information with machine learning techniques.

3. SYSTEMS AND METHODS FOR WEATHER-BASED POLLEN MONITORING (PROVISIONAL)

A system for precise pollen count predictions across regions and times, utilizing environmental and seasonal data with machine learning. It incorporates phenological inputs and plant peak, start, and end seasons to improve accuracy.

1.3 Accuracy highlights

- Integrity of reference-grade sensor data is maintained.
- Scientific anomalies and errors in reference-grade sensors are effectively managed.
- Missing values are thoroughly handled where stations are offline.
- AI-based algorithms enable precise data interpolation within a **10 km** radius.
- AI-based calibration enhances satellite data accuracy within a **50 km** proximity.

Weighted anthropogenic data

Feature-engineered data

10+ years of training data

Multiple algorithms in ETL

Unique models for different geographies

1.4 Data security

Ambee's cloud infrastructure safeguards data with top industry security standards, backed by SOC 2 Type II and ISO27001 certifications for enterprise-grade protection.

SOC 2 Type II **ISO 27001**

EXHIBIT 2 | *Ambee's infosec credentials*

Continuous monitoring

Our data infrastructure is continuously monitored for compliance with SOC2 Type II and ISO 27001 requirements.

Reliable uptime

Our fault-tolerant infrastructure ensures availability even during extreme demand.

2. Ambee Pollen

QUICK ACCESS:

- Dataset overview
- Pollen historical
- Pollen forecast

Dataset overview

Ambee's pollen dataset

Comprehensive pollen insights for allergy management

PARAMETER	DESCRIPTION
Grass pollen	Provides count for pollen grains from grasses measured in grains/m^3
Tree pollen	Provides count for pollen grains from trees measured in grains/m^3
Weed pollen	Provides count for pollen grains from weeds measured in grains/m^3
Risk	Provides a risk evaluation with levels: **Low** - Mild-low risk to those with severe respiratory issues. No risk for the general public **Moderate** - Risky for those with severe respiratory problems. Mild risk for the general public **High** - Risky for all groups of people **Very high** - Highly risky for all groups of people
Species	Provides count for species for pollen. Currently available for Europe, North America and ANZ.

TABLE 1 | *Response parameters of Ambee's pollen API*

Data specifications

10+ years
Hourly historical

96 hrs*
Forecast

< 1 km^2*
Granularity

JSON
Data format

*Available on demand

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+

TABLE 2 | *Risk mapping of Ambee's pollen data*

Data coverage

Europe

Tree	hazel, elm, pine, alder, poplar/ cottonwood, oak, plane, birch, cypress
Weed	mugwort, chenopod, ragweed, nettle
Grass	grass

Southern and Western Australia and New Zealand

Tree	Myrtaceae,casuarina, acacia, cypress, pine, elm, willow, oak, olive, alder, birch
Weed	chenopod, sedges, aster, plantago, rumex
Grass	grass

North America

Tree	oak, cypress/juniper/cedar, mulberry, pine, elm, ash, birch, maple, poplar
Weed	ragweed
Grass	grass

Queensland and Northern Australian Territory

Tree	Myrtaceae, casuarina, acacia, cypress, pine
Weed	chenopod, sedges, aster, plantago
Grass	grass

TABLE 3 | *Regional coverage of Ambee's pollen API*

Data architecture

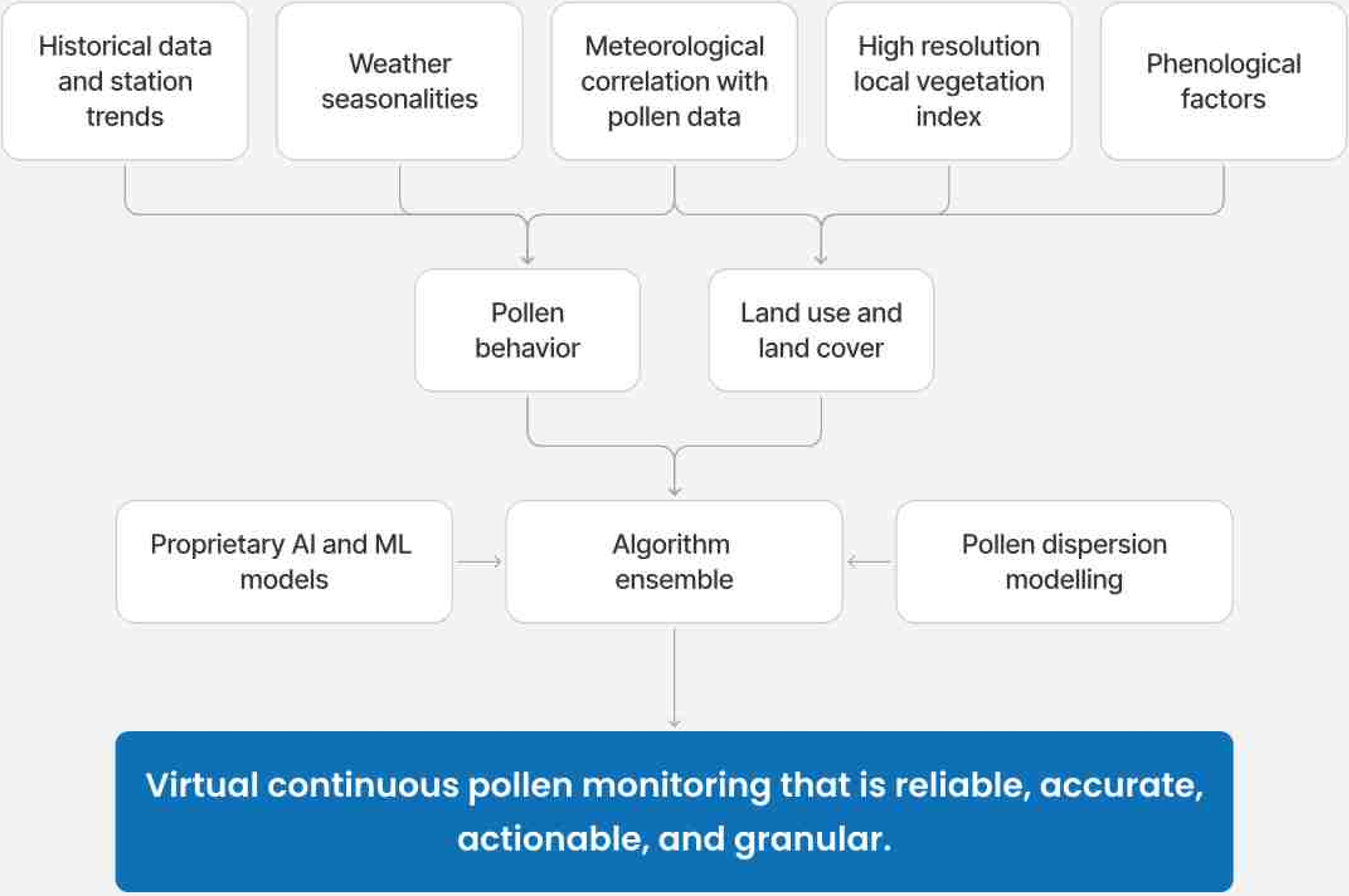


EXHIBIT 3 | *Schematic representation of Ambee's pollen data architecture*

What makes Ambee's pollen data accurate?

- Ambee periodically re-trains and calibrates its proprietary AI and ML models to enhance accuracy.
- The data is available with hyperlocal granularity, covering multiple regions, including frequently underserved ones.
- Ambee's pollen data is modeled using factors such as multi-species vegetation, weather conditions, and phenology.
- Data is provided on an hourly basis and is regularly updated, ensuring year-round availability.
- Both real-time pollen data and hourly forecasts, including accurate pollen count numbers, are offered.
- Ambee's risk levels are derived using National Allergy Bureau (NAB) guidelines.

Ambee pollen v. ground station

PARAMETER	GROUND STATIONS	AMBEE
Operating principle	Manual counting stations	Based on real-time stations + meteorological, phenological, and vegetation data
Technology	Machine-based sampling and manual counting	10+ years of historical training data, analysis, engineering, machine learning, and modeling output data format
Data parameters	Pollen risk categories only*	Near real-time pollen category and species-level counts, along with risk levels
Geographical spread	One station per city and depends on the location of the pollen station*	Commercially relevant regions across Europe, North America, South America, Africa, Asia, Australia, and New Zealand
Granularity	Granularity is limited to city level	< 1 km^2**
Data modeling	Subjected to manual placement and sampling errors	Modeled after factors like vegetation, weather, and phenology
Seasonal coverage	No data outside the pollen season*	Data provided throughout the year

TABLE 4 | *Detailed qualitative comparison between ground stations and Ambee*

*Applicable for most stations

**Available on demand

Ambee pollen v. ground station (contd.)

PARAMETER	GROUND STATIONS	AMBEE
Frequency	Frequency is limited to daily at best, and is generally irregular	Hourly frequency; regularly updated
Location	Data published only for a few cities	Data available for all latitudes-longitudes within supported geographies
Availability	Inconsistent data availability with no forecasting*	Hourly temporal resolution and hourly forecasts available

TABLE 4 | *Detailed qualitative comparison between ground stations and Ambee*

*Applicable for most stations

Pollen historical

QUICK ACCESS:

Validation methodology

Accuracy comparison

2.2.1

Validation methodology

Our approach: Historical seasonality

The following graphs compare historical trends with a focus on seasonality. Given the variations in methodology and geographic location, a direct one-to-one mapping between the datasets is not feasible. Instead, we concentrate on identifying and evaluating correlations in seasonal patterns across the datasets. We use R^2 scores to see how our model's predictions match the actual data, indicating how much of it can be explained by the model.

2.2.2

Accuracy comparison

Accuracy overview by region

REGION	ACCURACY % (R^2)
Asia/Japan	82%
Australia and New Zealand	81%
Europe	88%

REGION	ACCURACY % (R^2)
North America	94%
South Africa	90%
South America	95%

TABLE 5 | *Accuracy % (R^2) of Ambee's historical pollen data wrt ground stations*

LEGEND	DESCRIPTION
Y-axis (total pollen count)	Total pollen count at any given point in time
X-axis (timestamp)	Represents the time period from 2006 to 2024 (2022 in Exhibit 3)
Solid black line (station)	Represents the actual pollen count recorded by traditional ground stations
Dashed yellow line (Ambee)	Represents the pollen count recorded by Ambee

TABLE 6 | *Legend guide for Ambee's historical pollen comparison graphs*

Benchmarking Ambee's historical pollen: USA - Seattle, Washington HISTORICAL

See more in appendix

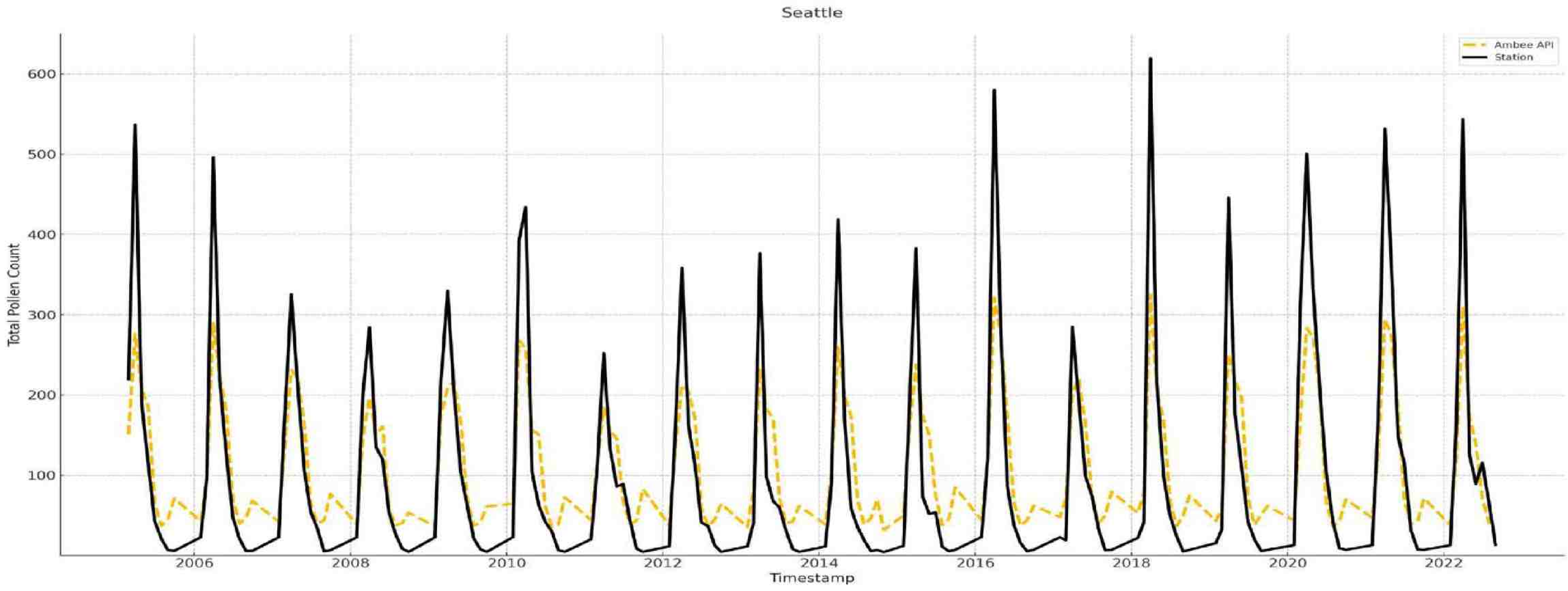


EXHIBIT 4 | *Ambee historical pollen v. ground station in Seattle from 2006 to 2022*

Benchmarking Ambee's historical pollen: USA - Philadelphia, Pennsylvania HISTORICAL

See more in appendix

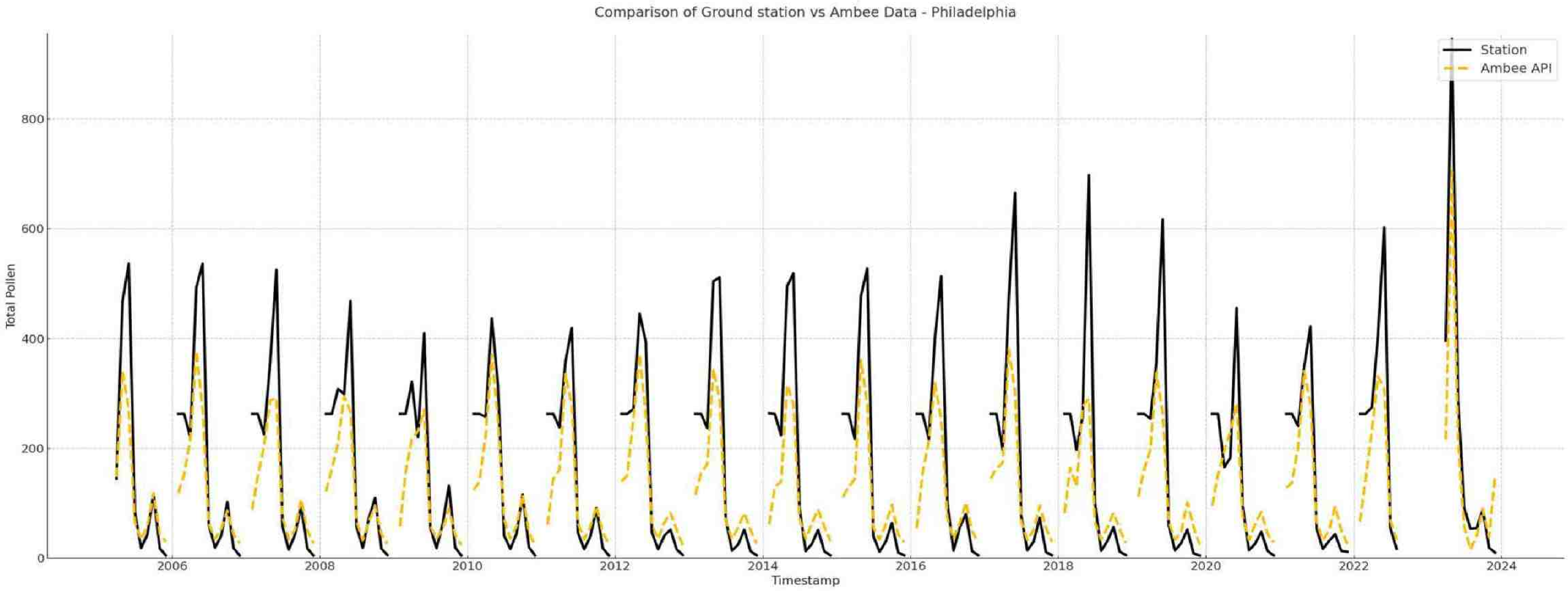


EXHIBIT 5 | *Ambee historical pollen v. ground station in Philadelphia from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - Tampa, Florida HISTORICAL

See more in appendix

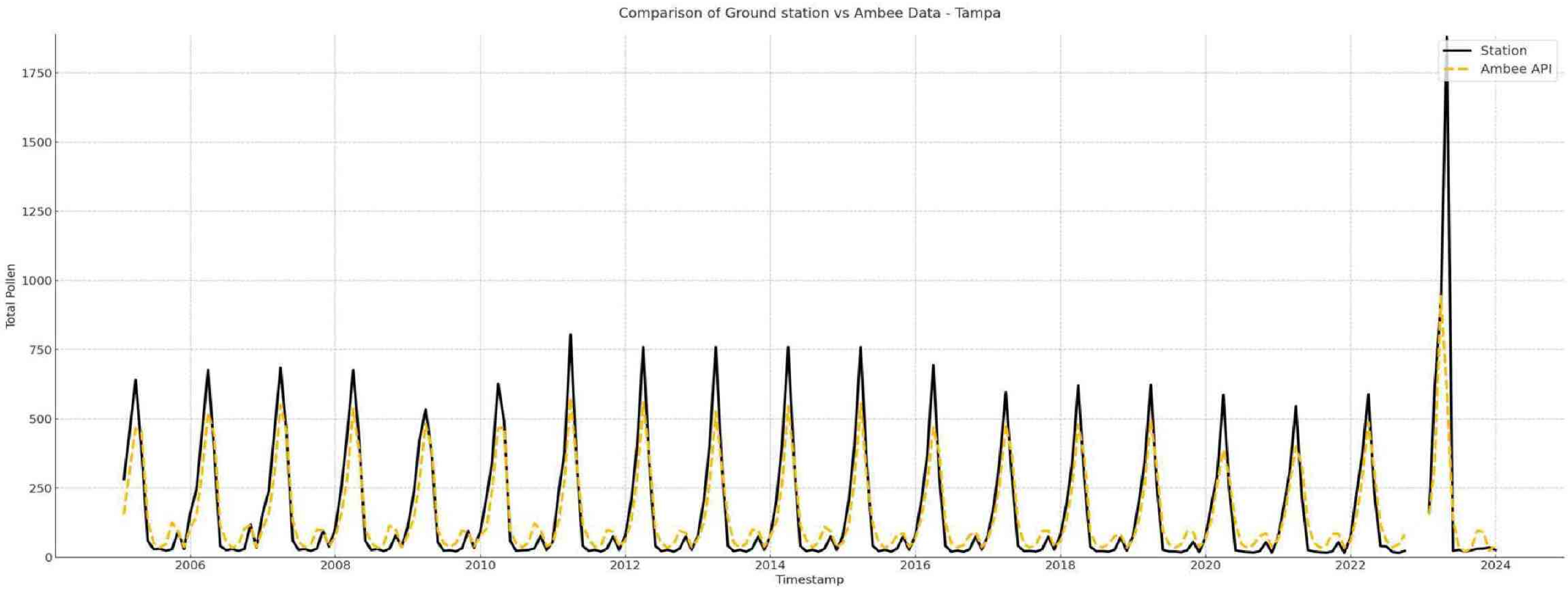


EXHIBIT 6 | *Ambee historical pollen v. ground station in Tampa from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - San Francisco, California HISTORICAL

See more in appendix

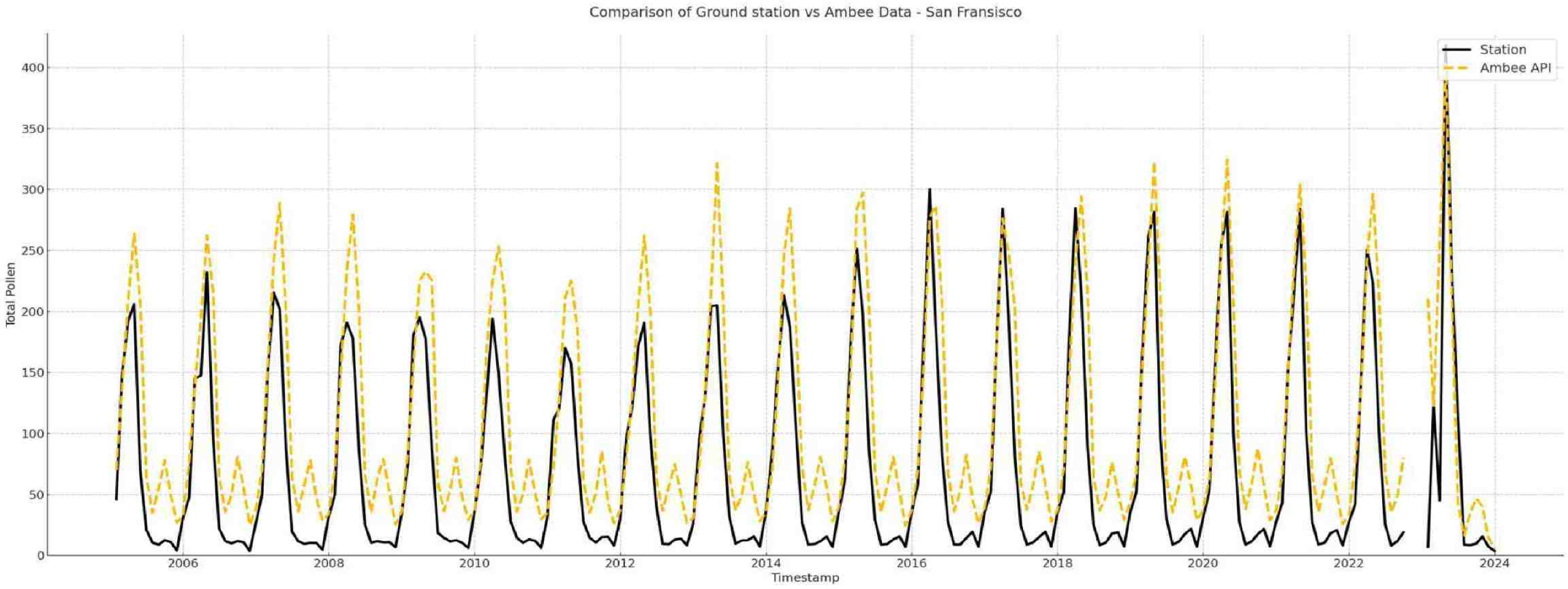


EXHIBIT 7 | *Ambee historical pollen v. ground station in San Francisco from 2006 to 2024*

Pollen forecast

QUICK ACCESS:

Validation methodology

Accuracy comparison

2.3.1

Validation methodology

Our approach: Post-forecast observation

We generated a 48-hour forecast from 2nd to 4th September 2024 using our predictive models. After the forecast period, we gathered real-time observational data from Ambee's API, enabling a direct comparison between the predicted values and the real-time observations. This comparison assessed the accuracy of our predictions and validated the performance of our forecasting model during the specified timeframe.

2.3.2

Accuracy overview

Performance metrics

Next to each model in the legend, you will find these performance metrics:

- **MAE (mean absolute error):** Measures the average magnitude of errors between the predicted and actual values.
- **RMSE (root mean squared error):** Measures the average magnitude of error in a set of predictions by calculating the square root of the average of squared differences between predicted and actual values.

LEGEND	DESCRIPTION
X-axis: (timestamp)	Represents the time period from Sep 2nd to Sep 4th, 2024
Y-axis (total pollen count)	Represents the total pollen count at any given time
Solid black line (Ambee real-time)	This solid black line represents the real-time measurements from Ambee's real-time pollen API
Dashed yellow line (Ambee forecast)	The dashed yellow line represents the predicted pollen count recorded by Ambee's forecast pollen API

TABLE 7 | *Legend guide for Ambee's forecast pollen comparison graphs*

Benchmarking Ambee's forecast pollen: USA - Los Angeles, California FORECAST

See more in appendix

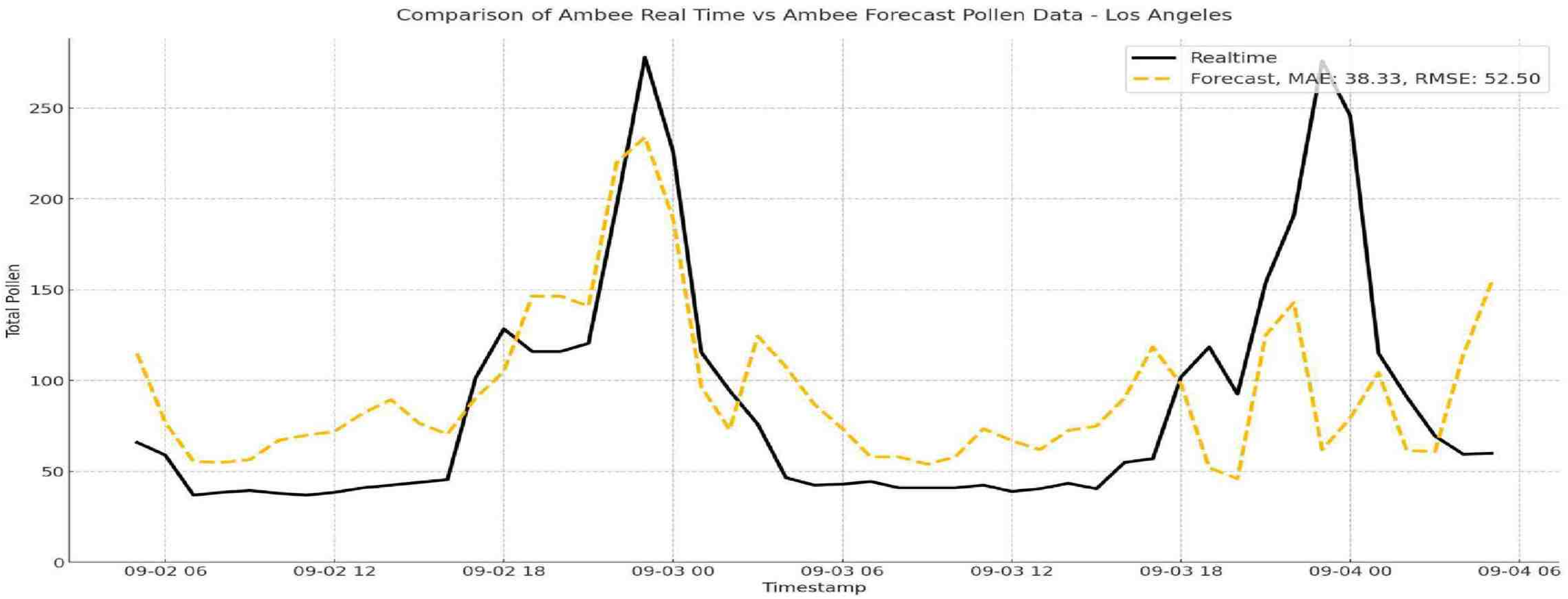


EXHIBIT 8 | *Ambee forecast pollen v. real-time in Los Angeles from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: EUR - London, England FORECAST

See more in appendix

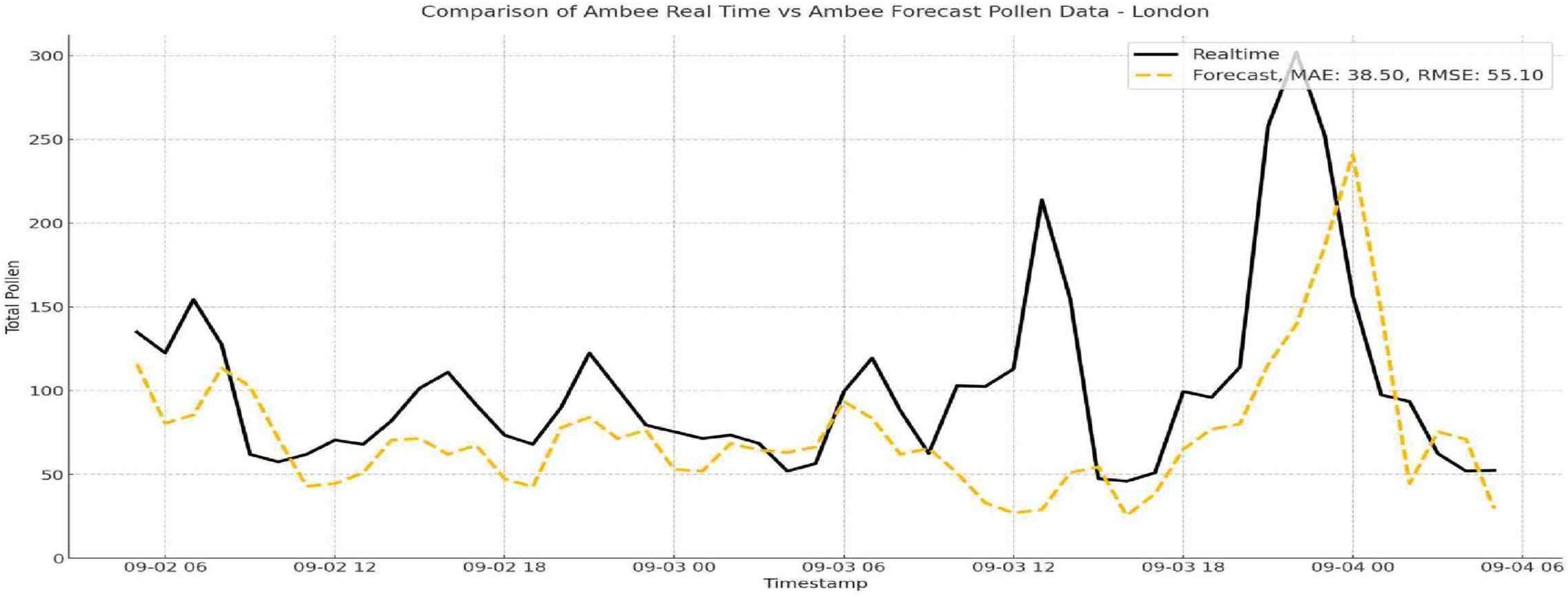


EXHIBIT 9 | *Ambee forecast pollen v. real-time in London from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: AUS - Melbourne, Victoria FORECAST

See more in appendix

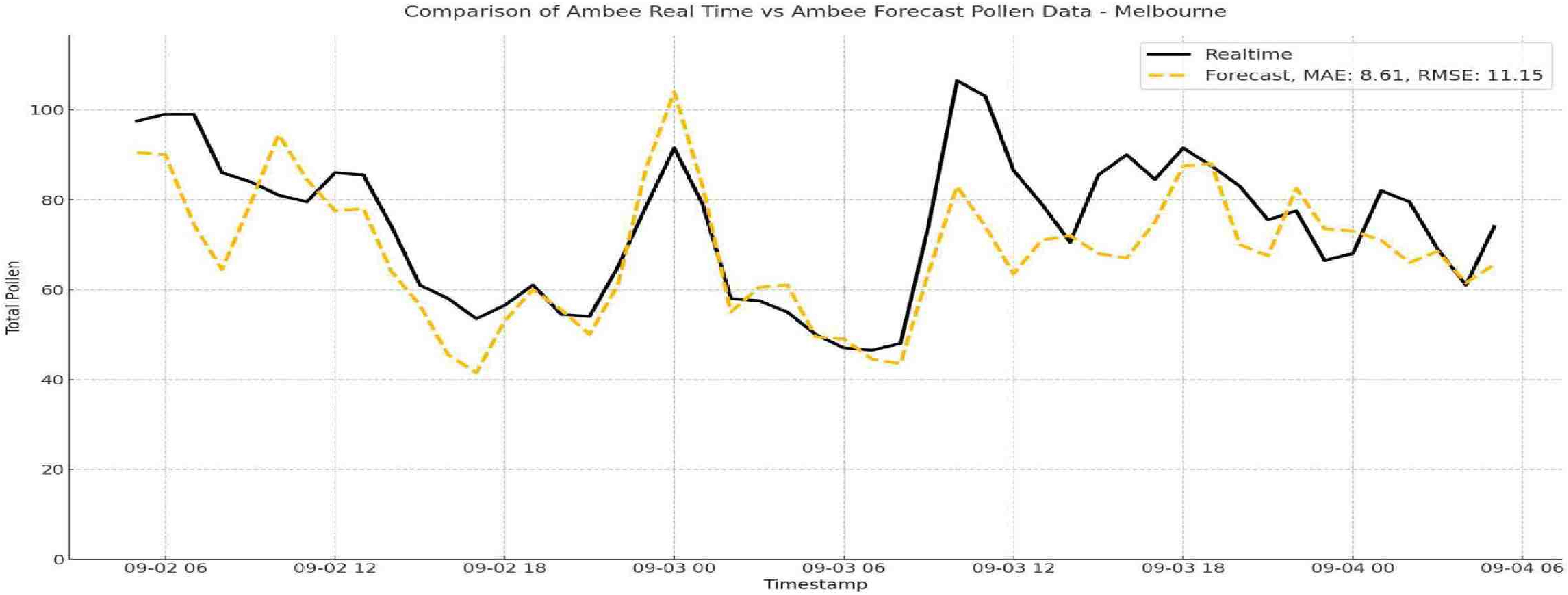


EXHIBIT 10 | *Ambee forecast pollen v. real-time in Melbourne from 2nd to 4th September 2024*

Benchmarking Ambee’s forecast pollen: ASIA - Tokyo, Japan FORECAST

See more in appendix

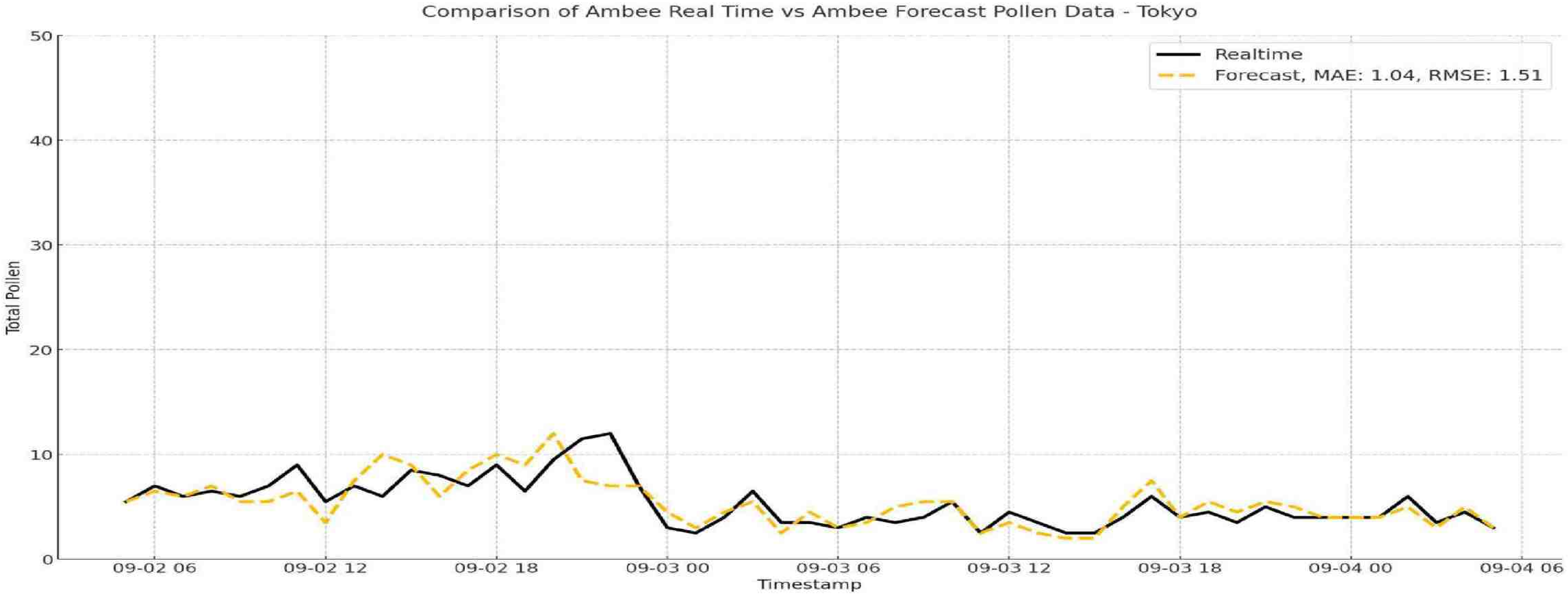


EXHIBIT 11 | *Ambee forecast pollen v. real-time in Tokyo from 2nd to 4th September 2024*

Note: Tokyo doesn't see high load of pollen in September compared to other geographies.

3.

Ambee air quality

QUICK ACCESS:

Dataset overview

Air quality live

Air quality forecast

Dataset overview

Ambee's air quality dataset

Comprehensive pollution parameters

PARAMETER	DESCRIPTION
PM2.5	Particulate matter < 2.5 µm (µg/m^3)
PM10	Particulate matter < 10 µm (µg/m^3)
SO2	Sulphur dioxide (ppb)
NO2	Nitrogen dioxide (ppb)
O3	Ozone (ppb)
CO	Carbon monoxide (ppm)
AQI	Air quality index
updatedAt	ISO timestamp of event (UTC)
aqiInfo	Brief info about the effects of the AQI

TABLE 8 | *Response parameters of Ambee's AQ API*

Data specifications

Multiple AQ indices
US EPA AQI, DAQI (UK), NAQI (India, CPCB), and other national indices available upon request

Global
Coverage

10+ years
Hourly historical

96 hrs*
Forecast

< 1 km²*
Granularity

*Available on demand

Air quality live

QUICK ACCESS:

Validation methodology

Accuracy comparison

3.2.1

Validation methodology

Our approach: Leave-one-out cross-validation (LOO-CV)

Ambee employs the "leave one out"[1] method to ensure the accuracy of our AQ models. Here's how it works:

- We start by "leaving out" one sensor from our dataset.
- The machine learning model is trained on the remaining sensor data, excluding the selected sensor.
- Once trained, the model predicts the air quality for the location of the sensor that was left out.
- The predicted air quality value is compared with the actual value recorded by the sensor.
- This process is repeated for every sensor in the dataset, with each sensor being left out once.

By evaluating the model's performance across all sensor locations, we can assess how well the model generalizes to new, unseen areas. This allows us to estimate the accuracy of predictions, even for regions where no sensors are installed.

There are some caveats to keep in mind, that might affect the accuracy of air quality models in general, and these are:

- Limited reference-grade sensors in some regions may reduce prediction accuracy, especially in areas with sparse sensor networks.
- Different sensors can report varying PM2.5 levels due to differences in calibration and sensitivity.
- Air quality sensors may experience delays in updating their data or might revise data after they have already been published. This might affect the accuracy of the models.

[1] - Webb, G. I., Sammut, C., Perlich, C., Horváth, T., Wrobel, S., Korb, K. B., ... Raedt, L. D. (2011). Leave-One-Out Cross-Validation. Encyclopedia of Machine Learning, 600 601.doi:10.1007/978-0-387-30164-8_469

Sammut, C. and Webb, G.I. (2010b) 'Leave-One-Out Cross-Validation,' in Springer eBooks, pp. 600–601. https://doi.org/10.1007/978-0-387-30164-8_469

Accuracy comparison

Ambee's air quality data outperforms competitors with unmatched accuracy.

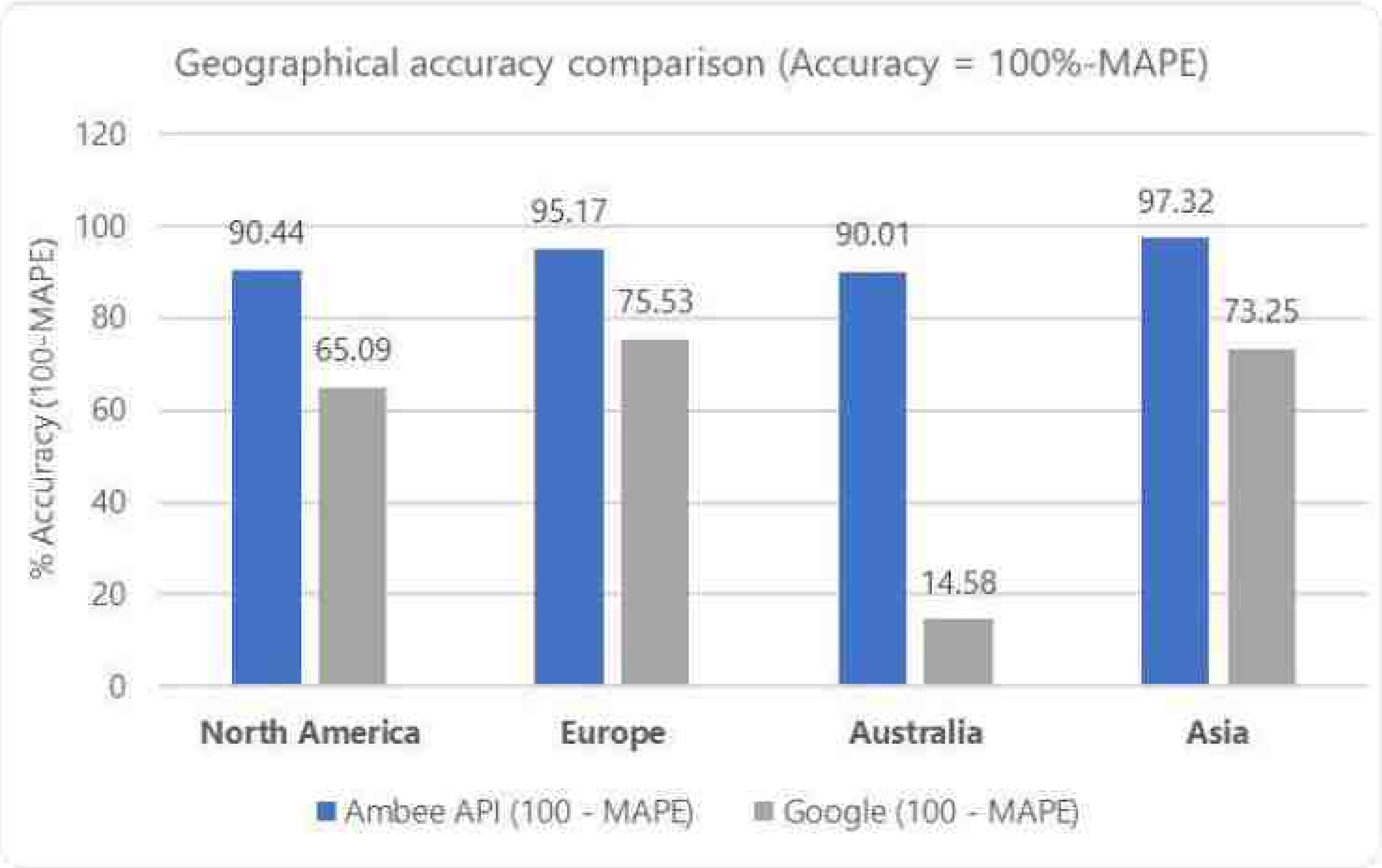


EXHIBIT 12 | *Accuracy % (100-MAPE) comparison*

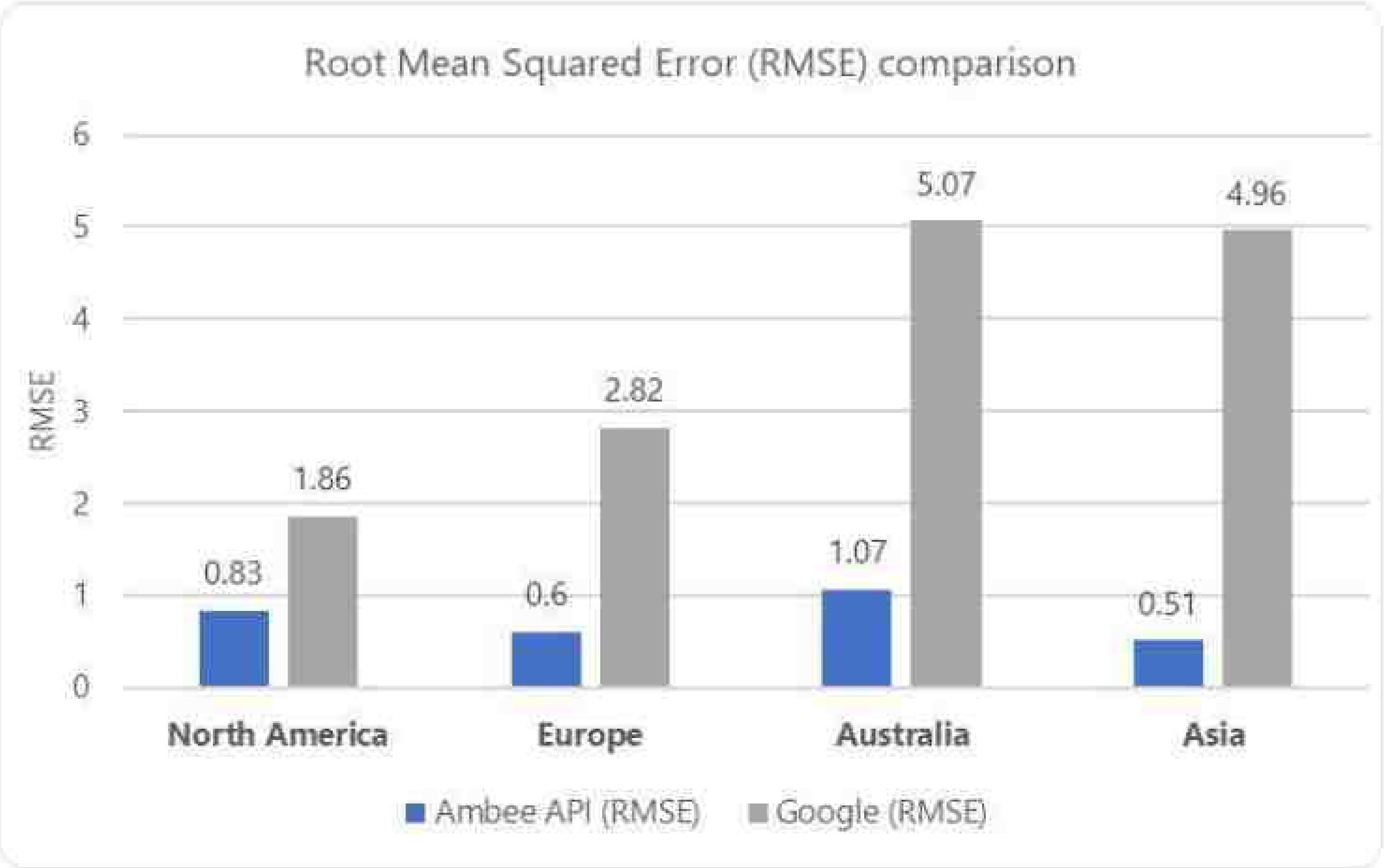


EXHIBIT 13 | *Root mean squared error (RMSE) comparison*

CONTINENTS	AMBEE ACCURACY % (100 - MAPE)	GOOGLE ACCURACY % (100 - MAPE)
North America	90.44	65.09
Europe	95.17	75.53
Australia	90.01	14.58
Asia	97.32	73.25

CONTINENTS	AMBEE RMSE (µg/m3)	GOOGLE RMSE (µg/m3)
North America	0.83	1..86
Europe	0.6	2.82
Australia	1.07	5.07
Asia	0.51	4.96

- Ambee's data performs consistently better across different geographies, showing a higher accuracy and lower RMSE.
- Ambee's RMSE is significantly and consistently lower across regions, significantly better than the 7 µg/m³ limit of maximum permissible of RMSE set by the USEPA for PM2.5

Terminology

MAPE (mean absolute percentage error): Measures the average of absolute percentage errors between predicted and actual values.

RMSE (root mean squared error): Measures the average magnitude of error in a set of predictions by calculating the square root of the average of squared differences between predicted and actual values.

Ambee's accuracy benchmark

The USEPA sets a maximum permissible root mean squared error (RMSE) of 7 µg/m³ for PM2.5 over a 24-hour period. We have set an even higher internal standard, aiming for half (±3.5 µg/m³) of that value to ensure that our AQ data meets stringent accuracy levels.

The following graphs display trend lines of PM2.5 levels over a 48-hour period from 2nd to 4th September 2024 (except Exhibit 5) for several stations across different regions of the world. PM2.5 was chosen for these comparisons since it is the most commonly measured pollutant at many stations. Additionally, PM2.5 is often the most prevalent pollutant in many areas, making it a key indicator of air quality and a priority for monitoring.

Performance metrics

Next to each model in the legend, you will find these performance metrics:

- **MAE (mean absolute error):** Measures the average magnitude of errors between the predicted and actual values.
- **RMSE (root mean squared error):** Measures the average magnitude of error in a set of predictions by calculating the square root of the average of squared differences between predicted and actual values.

LEGEND	DESCRIPTION
X-axis (timestamp)	Represents the time period from Sep 2nd to Sep 4th, 2024 (except Exhibit 5)
Y-axis (PM2.5)	Indicates the concentration of PM2.5 in micrograms per cubic meter (µg/m³)
Solid black line (station)	Represents the actual air quality readings from a reference-grade station. This serves as the "ground truth" or benchmark against which predictions from various models are compared.
Dashed blue line (Ambee model/ algorithm)	Data from Ambee's model/algorithm using the leave-one-out method. This serves as an accuracy estimate for areas without sensors.
Dashed teal line (Google)	Data from a competitor (Google's) API, potentially modified by their algorithm in certain locations, based on sensor data.
Dashed yellow line (Ambee API)	Data from Ambee's AQ API, where sensor data may be adjusted by our algorithm to account for anomalies or outliers.
Shaded blue area (error range)	Represents a ±3.5 µg/m³ deviation range from the actual station data. This region gives a visual idea of how close each model is to the station data.

TABLE 9 | *Legend guide for Ambee's live AQ comparison graphs*

Comparing Ambee's live AQ: USA - Seattle, Washington LIVE

See more in appendix

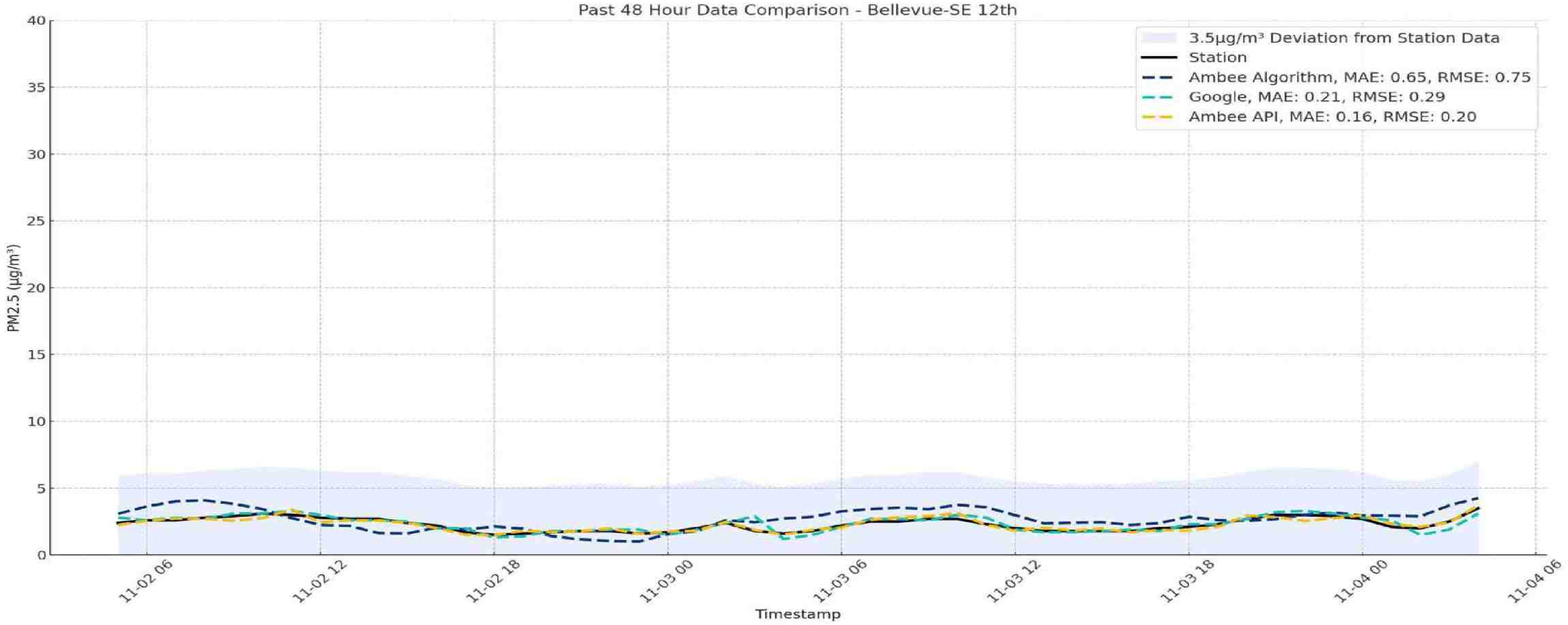


EXHIBIT 14 | *Accuracy comparison between Ambee's live AQ and Google in Seattle from 2nd to 4th November 2024*

Comparing Ambee's live AQ: EUR - Paris, France LIVE

See more in appendix

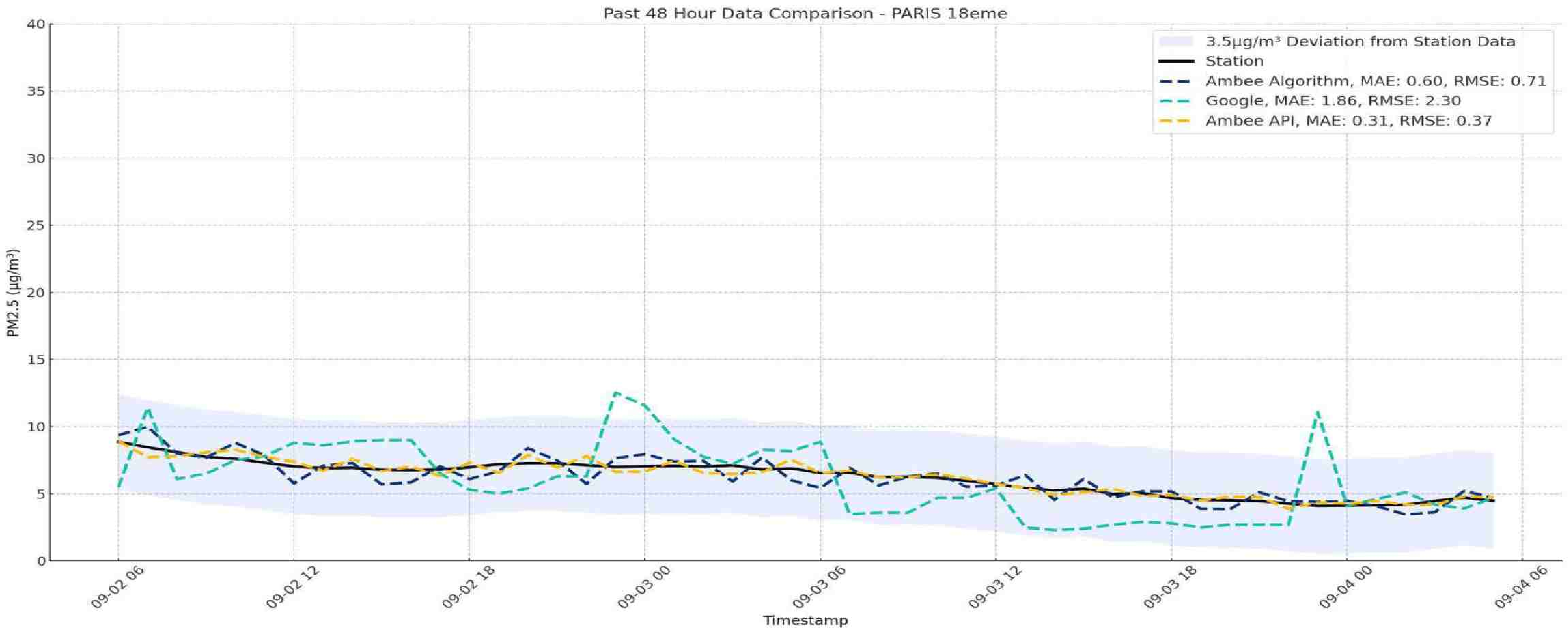


EXHIBIT 15 | *Accuracy comparison between Ambee's live AQ and Google in Paris from 2nd to 4th September 2024*

Comparing Ambee's live AQ: AUS - Melbourne, Victoria LIVE

See more in appendix

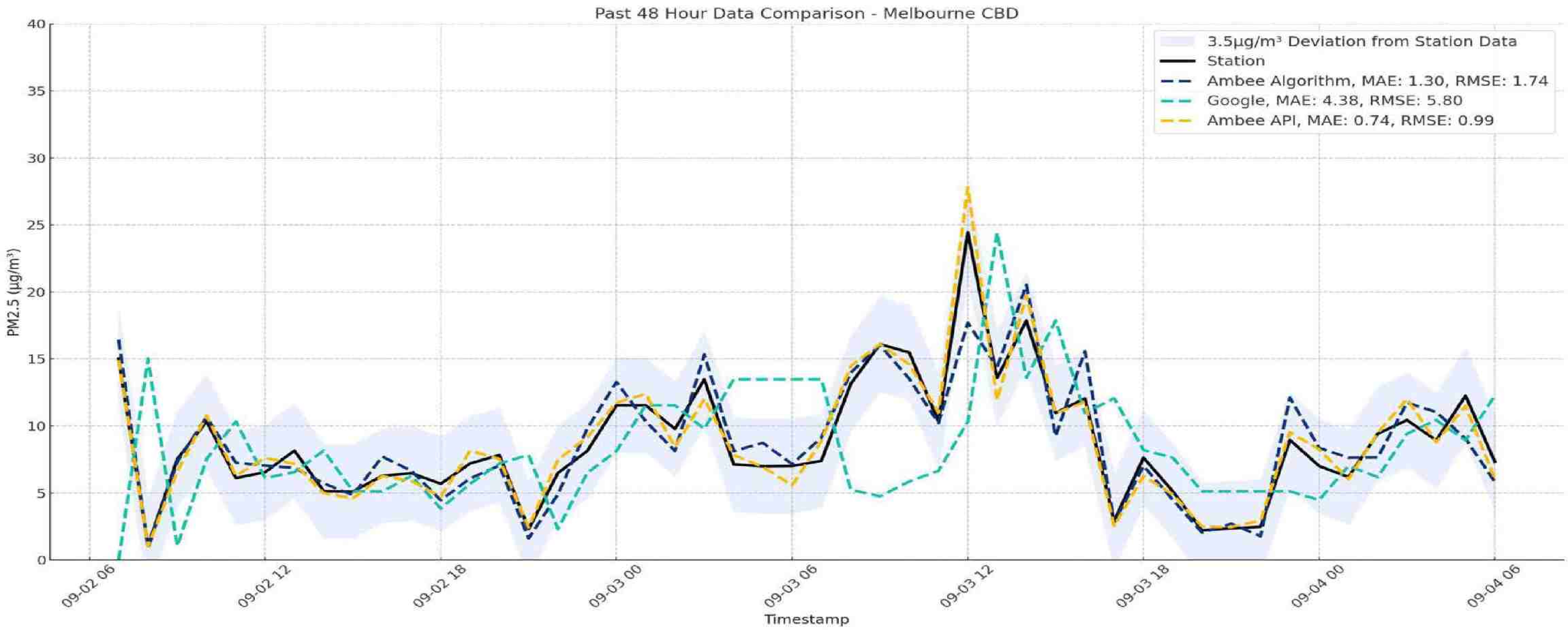


EXHIBIT 16 | *Accuracy comparison between Ambee's live AQ and Google in Melbourne from 2nd to 4th September 2024*

Comparing Ambee's live AQ: ASIA - Osaka, Japan LIVE

See more in appendix

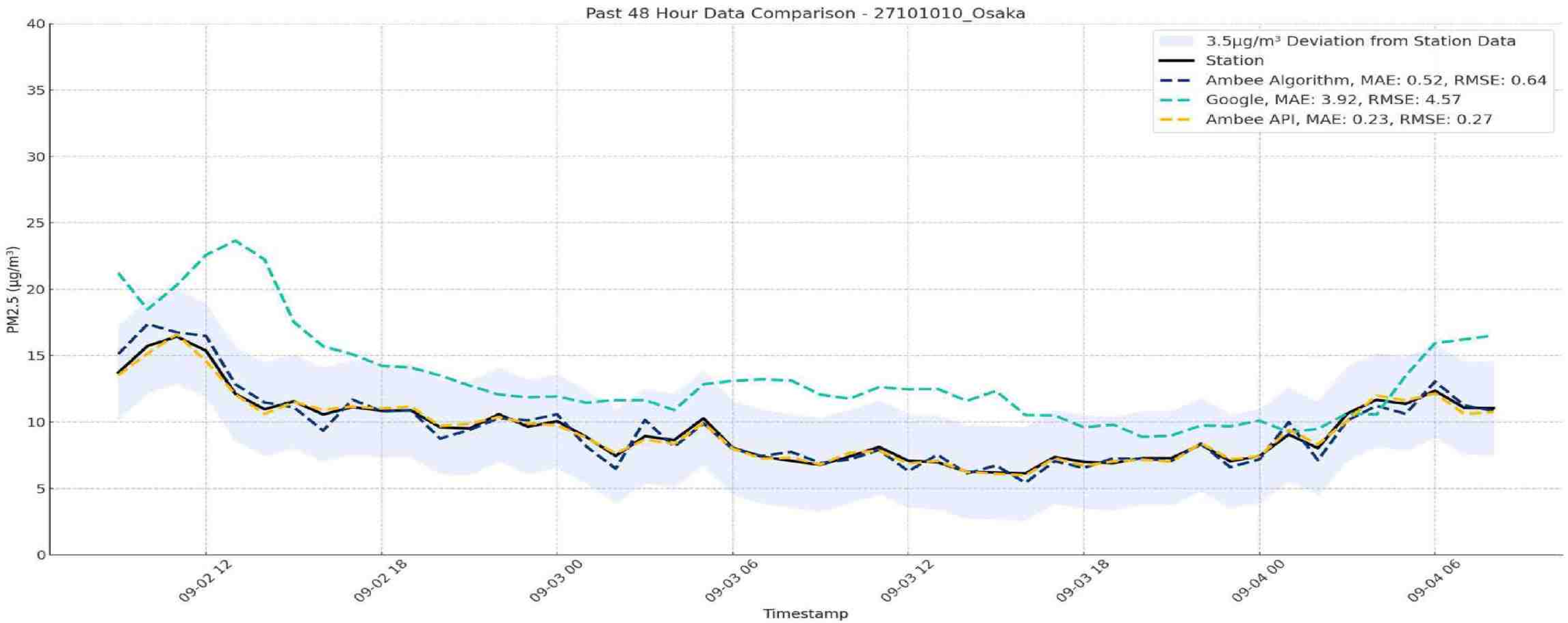


EXHIBIT 17 | *Accuracy comparison between Ambee's live AQ and Google in Osaka from 2nd to 4th September 2024*

Air quality forecast

QUICK ACCESS:

Validation methodology

Accuracy comparison

3.3.1

Validation methodology

Our approach: Post-forecast observation

We generated a 48-hour forecast from 2nd to 4th September 2024 using our predictive models. After the forecast period, we gathered real-time observational data from ground stations, enabling a direct comparison between the predicted values and the actual observations. This comparison assessed the accuracy of our predictions and validated the performance of our forecasting model during the specified timeframe.

3.3.2

Accuracy comparison

Performance metrics

Next to each model in the legend, you will find these performance metrics:

- **MAE (mean absolute error):** Measures the average magnitude of errors between the predicted and actual values.
- **RMSE (root mean squared error):** Measures the average magnitude of error in a set of predictions by calculating the square root of the average of squared differences between predicted and actual values.

LEGEND	DESCRIPTION
X-axis (timestamp)	Represents the time period from Sep 2nd to Sep 4th, 2024
Y-axis (PM2.5)	Indicates the concentration of PM2.5 in micrograms per cubic meter (μg/m³)
Black line (station)	Represents the actual air quality readings from a reference-grade station. This serves as the "ground truth" or benchmark against which predictions from various models are compared.
Dashed yellow line (Ambee API)	Predictions from Ambee’s AQ API, where sensor data may be adjusted by our algorithm to account for anomalies or outliers.
Shaded blue area	Represents a ±3.5 μg/m³ deviation range from the actual station data. This region gives a visual idea of how close each model is to the station data.

TABLE 10 | *Legend guide for Ambee’s forecast AQ comparison graphs*

Benchmarking Ambee's AQ forecast v. ground station: USA - Austin, Texas FORECAST

See more in appendix

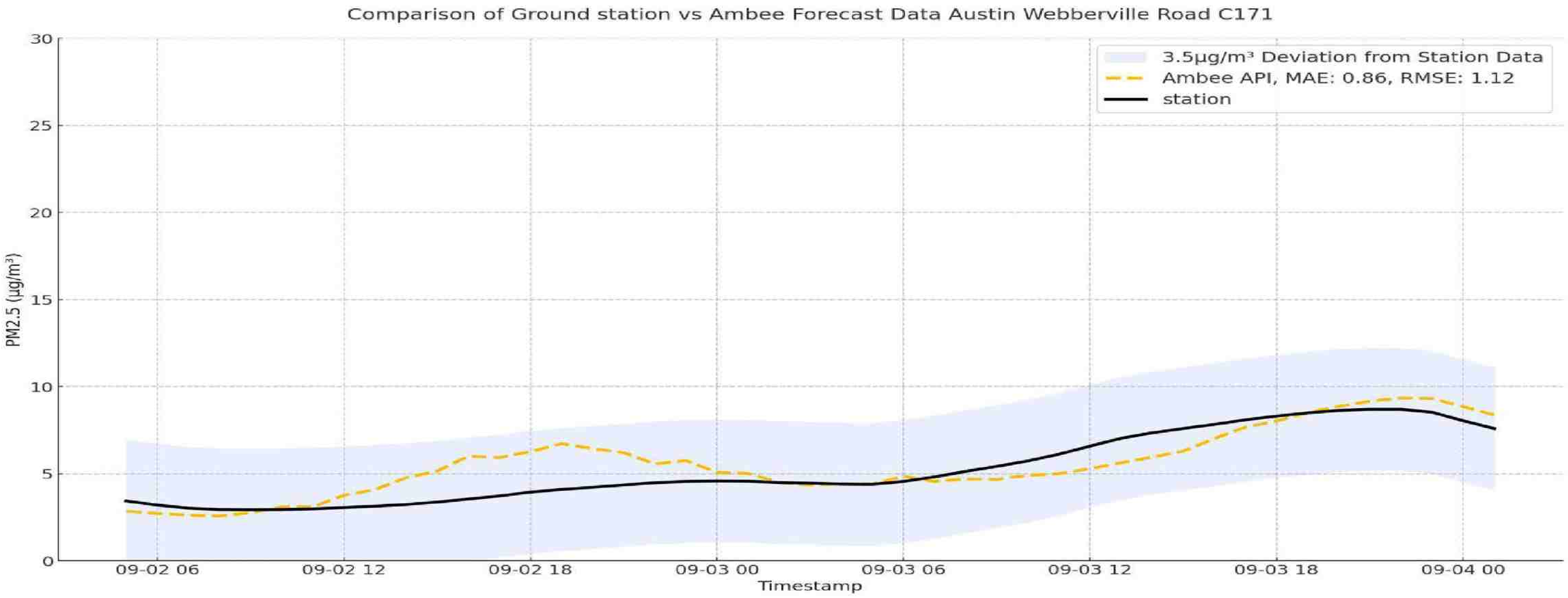


EXHIBIT 18 | *Ambee forecast AQ v. ground station in Austin from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: EUR - Vitry-sur-Seine, France FORECAST

See more in appendix

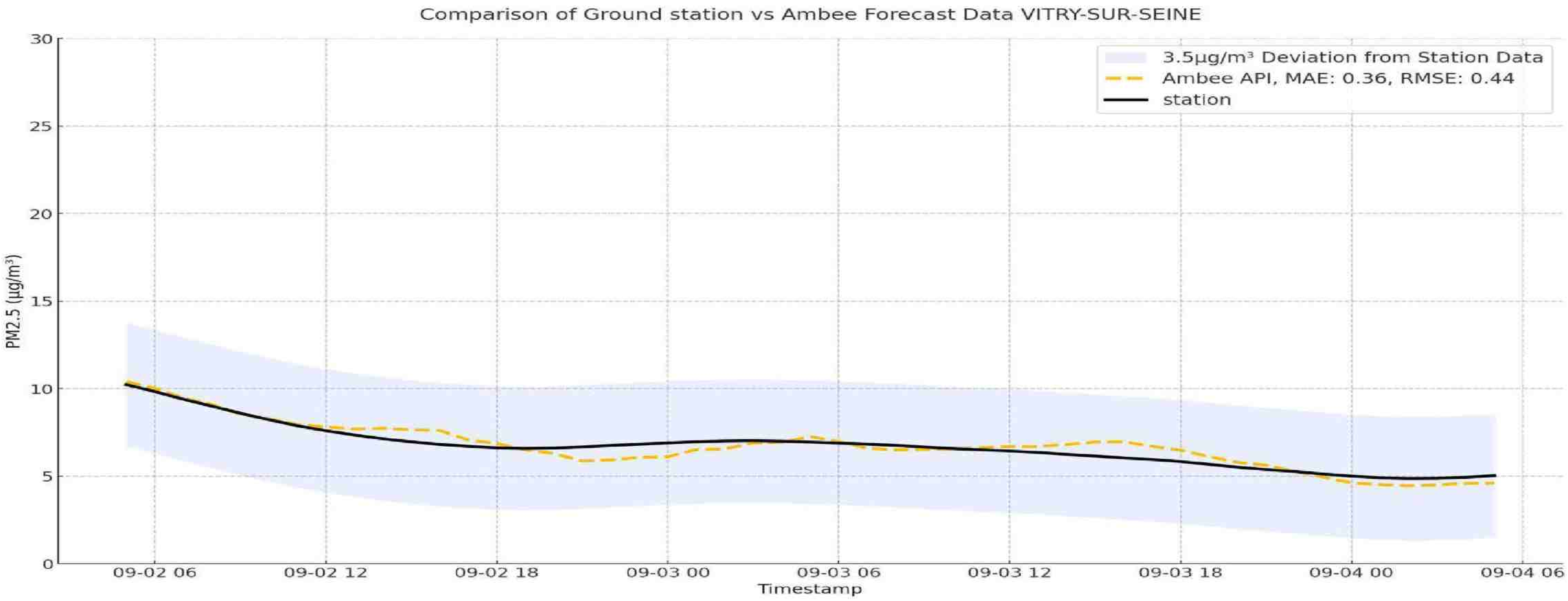


EXHIBIT 19 | *Ambee forecast AQ v ground station in Vitry-sur-Seine from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: AUS - Targinnie, Queensland FORECAST

See more in appendix

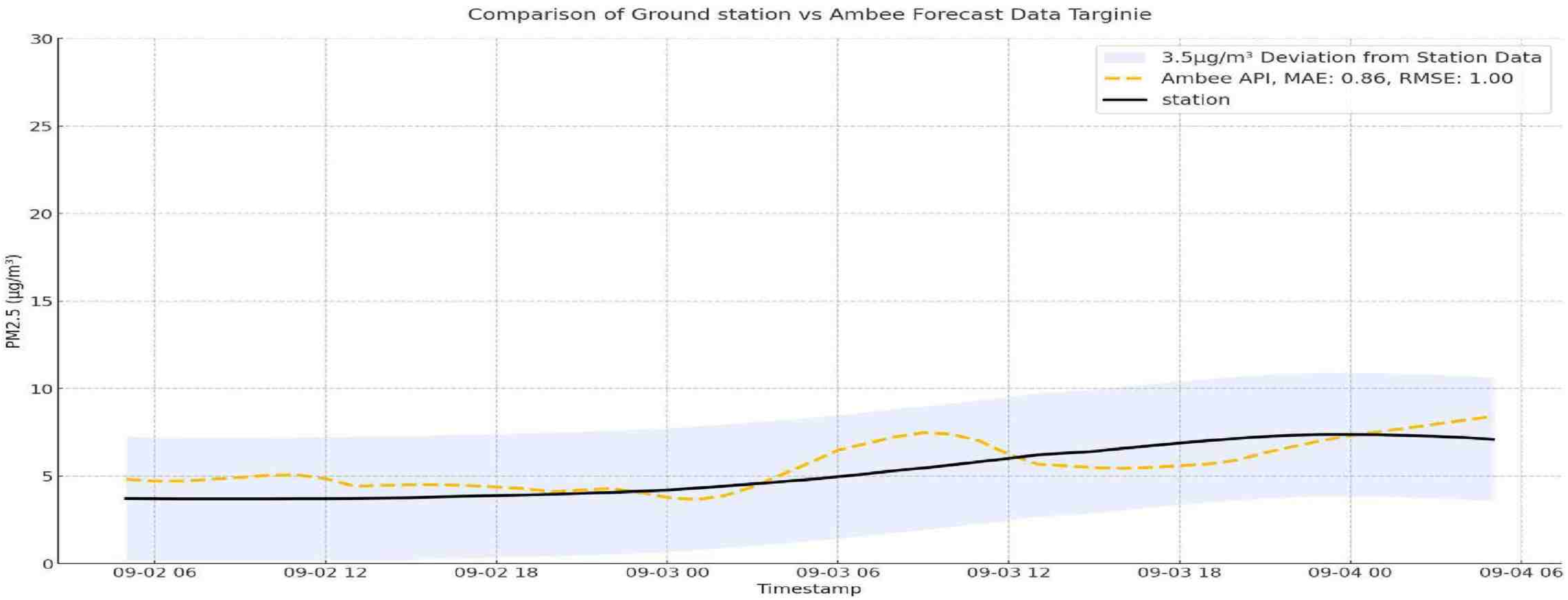


EXHIBIT 20 | *Ambee forecast AQ v ground station in Targinnie from 2nd to 4th September 2024*

4.
Appendix

QUICK ACCESS:

Additional pollen accuracy comparisons

Additional air quality accuracy comparisons

Additional pollen accuracy comparisons

HISTORICAL

Washington, DC

New York City, New York

Atlanta, Georgia

San Jose, California

St Louis, Missourie

Charlotte, North Carolina

Austin, Texas

Dallas, Texas

FORECAST

Los Angeles, California

Las Vegas, Nevada

London, England

Paris, France

Sydney, New South Wales

Brisbane, Queensland

New Delhi, India

Benchmarking Ambee's historical pollen: USA - Washington, DC HISTORICAL

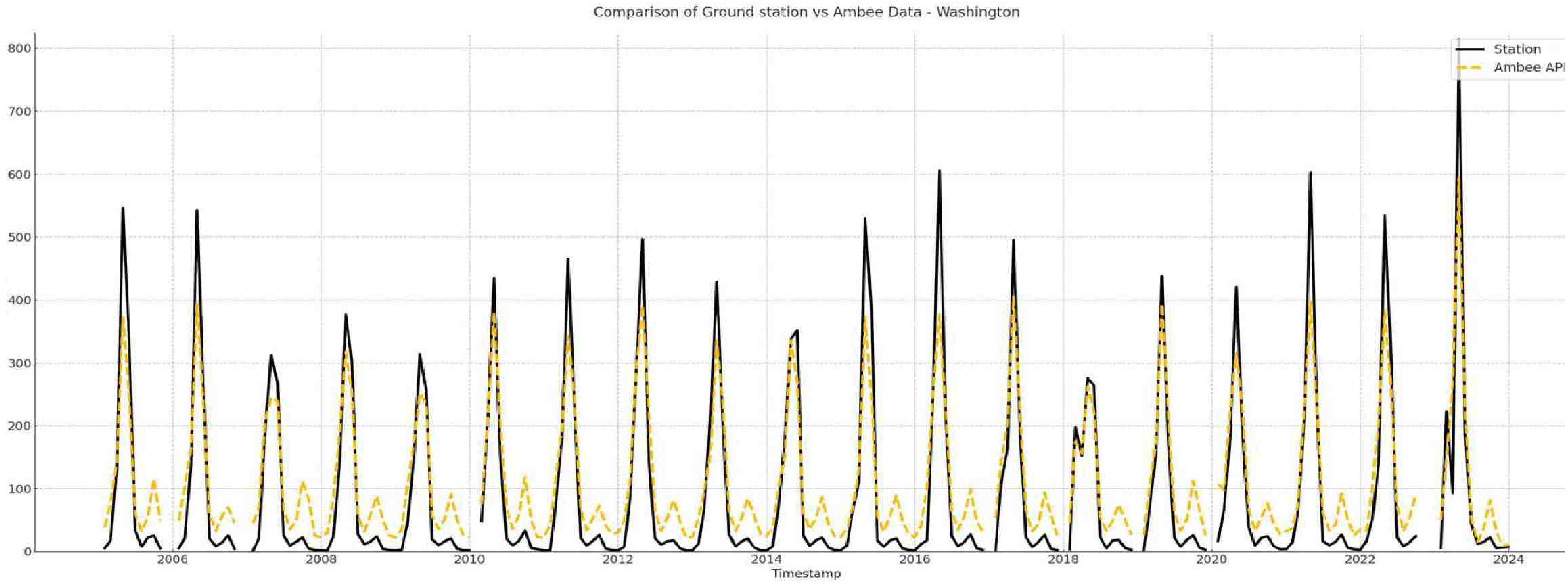


EXHIBIT 21 | *Ambee historical pollen v. ground station in Washington, DC from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - New York City, New York HISTORICAL

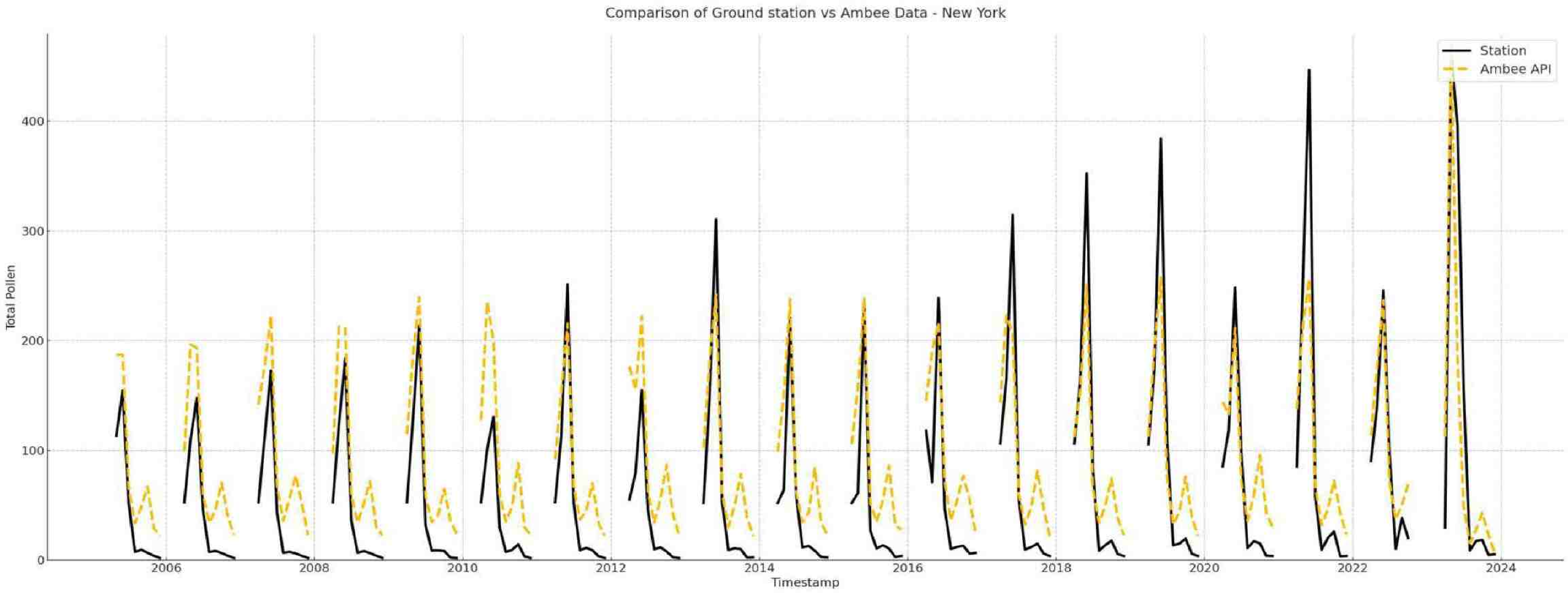


EXHIBIT 22 | *Ambee historical pollen v. ground station in New York from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - Atlanta, Georgia HISTORICAL

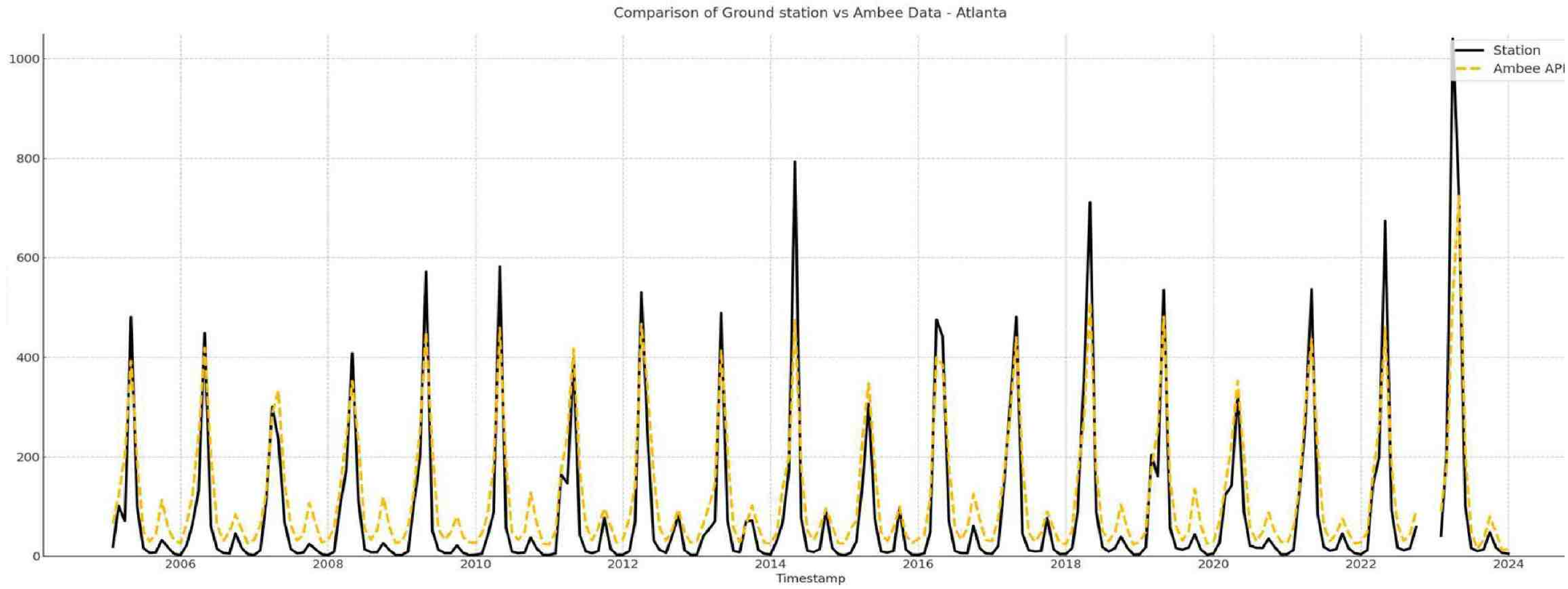


EXHIBIT 23 | *Ambee historical pollen v. ground station in Atlanta from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - San Jose, California HISTORICAL

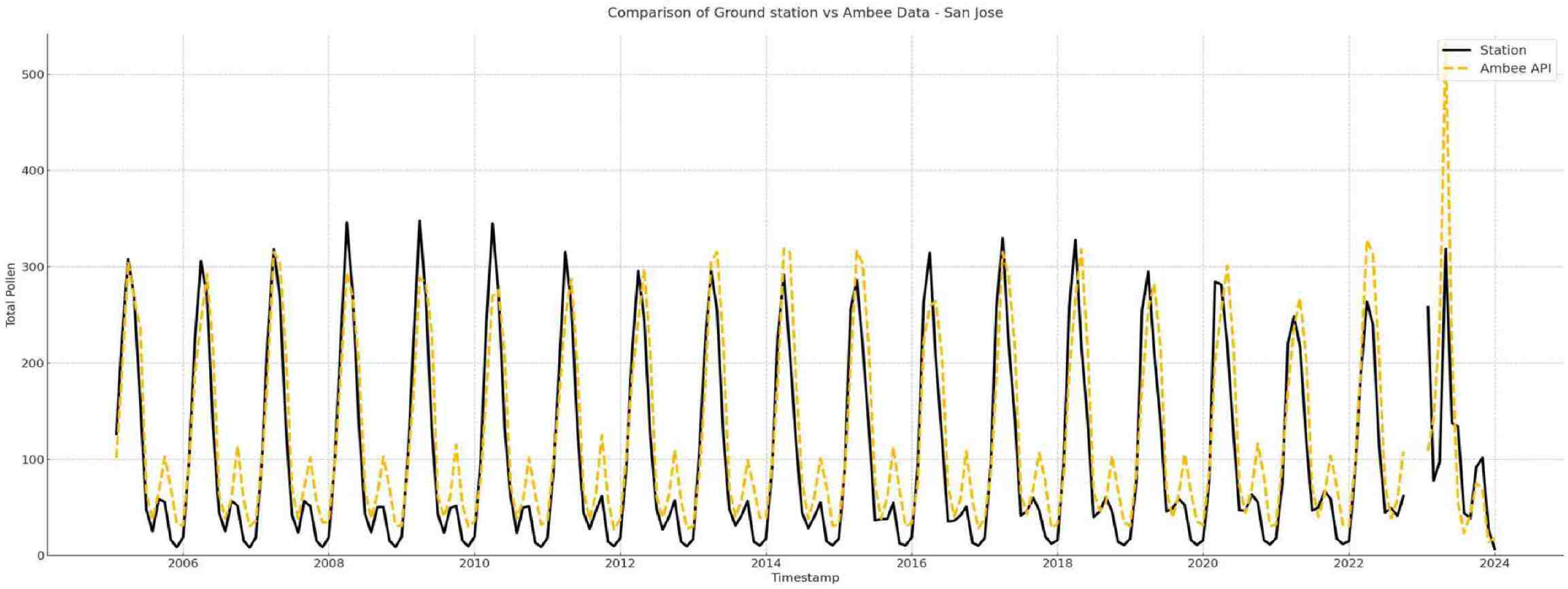


EXHIBIT 24 | *Ambee historical pollen v. ground station in San Jose from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - St Louis, Missouri HISTORICAL

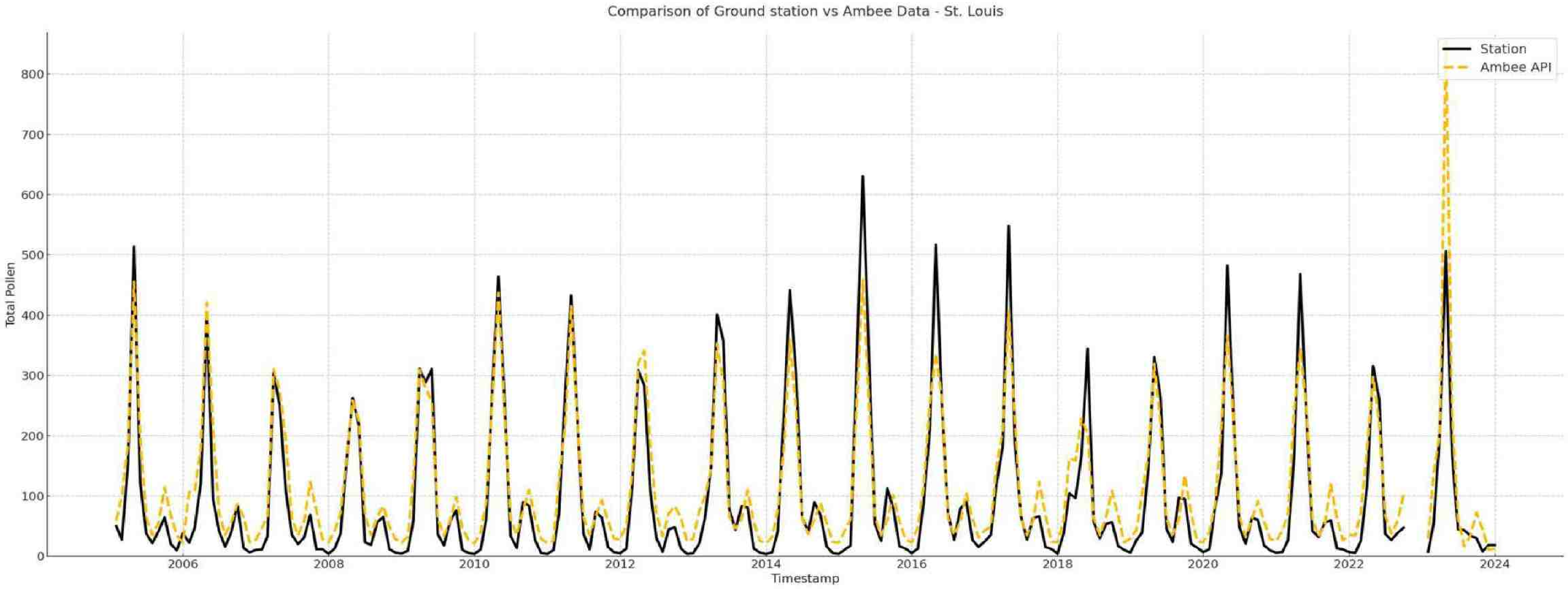


EXHIBIT 25 | *Ambee historical pollen v. ground station in St Louis from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - Charlotte, North Carolina HISTORICAL

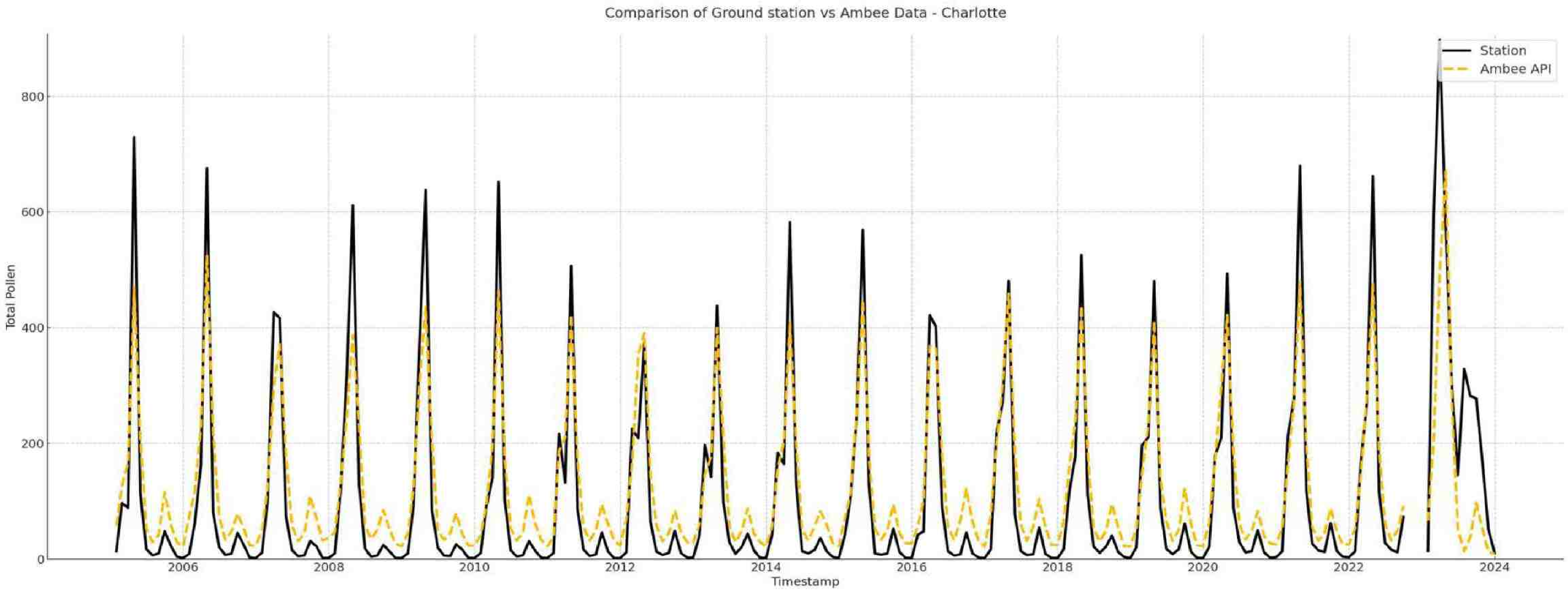


EXHIBIT 26 | *Ambee historical pollen v. ground station in Charlotte from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - Austin, Texas HISTORICAL

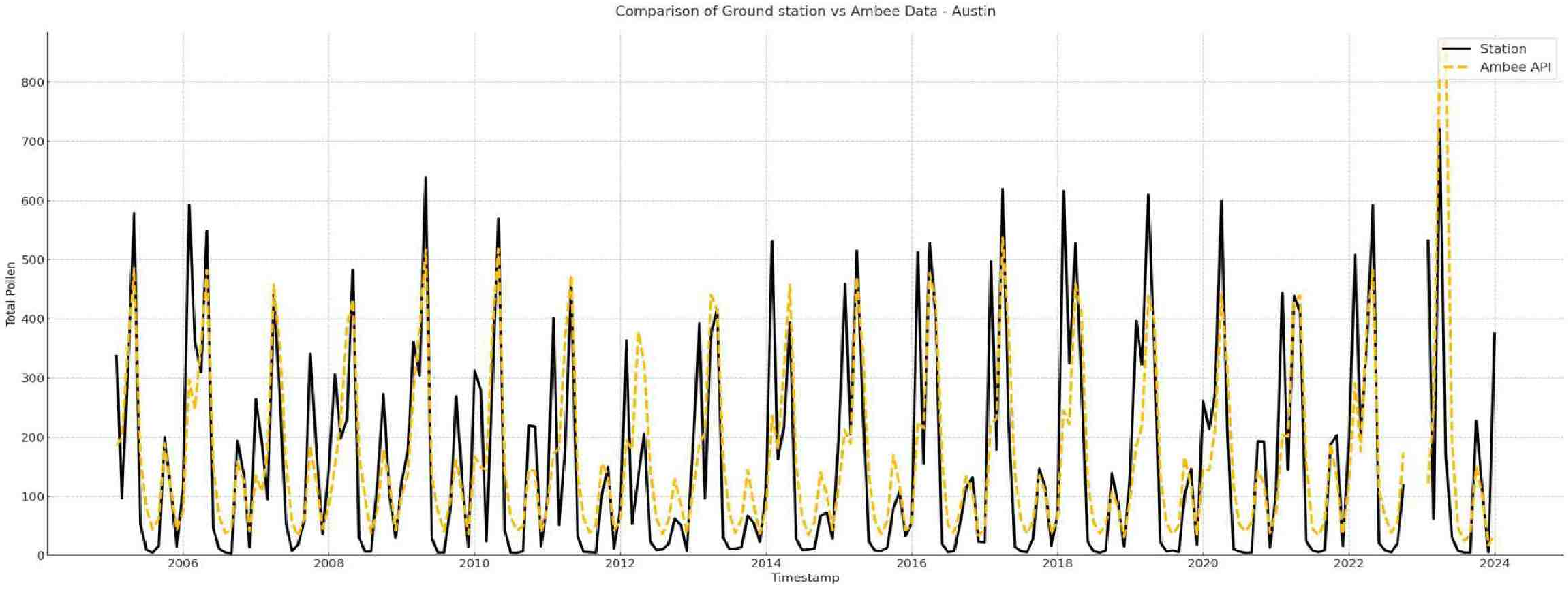


EXHIBIT 27 | *Ambee historical pollen v. ground station in Austin from 2006 to 2024*

Benchmarking Ambee's historical pollen: USA - Dallas, Texas HISTORICAL

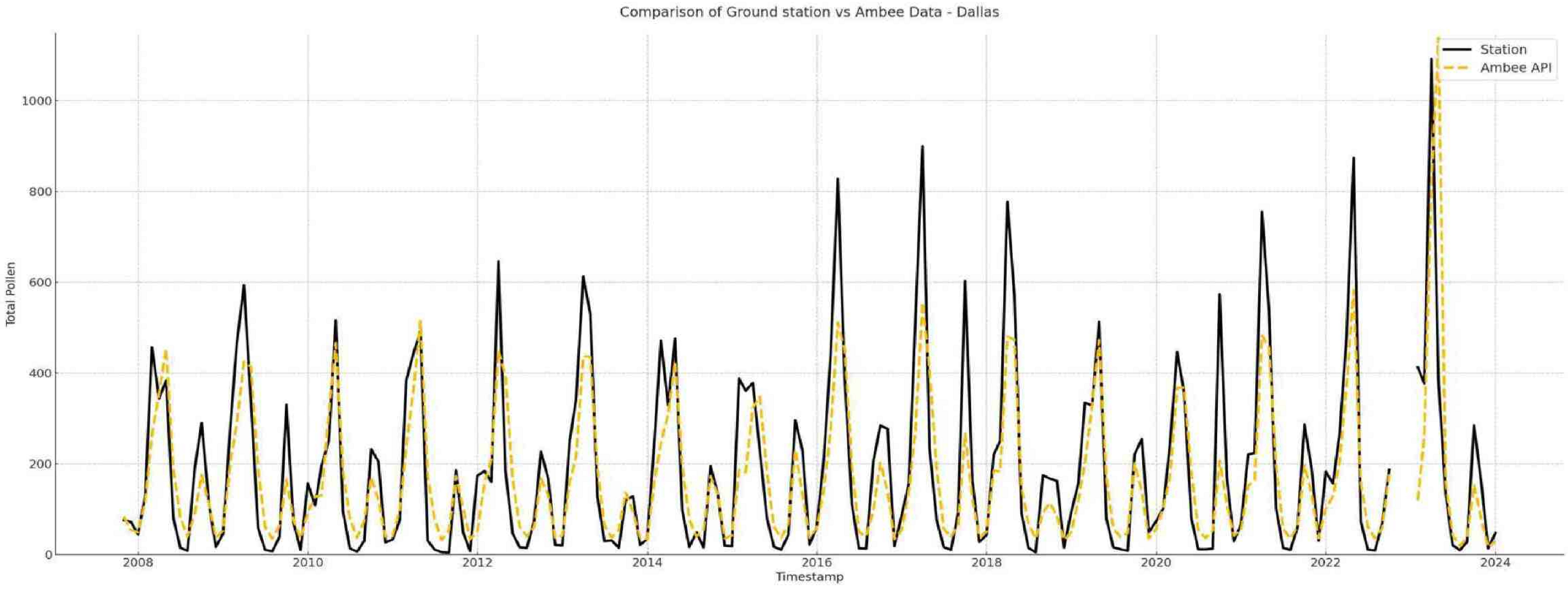


EXHIBIT 28 | *Ambee historical pollen v. ground station in Dallas from 2006 to 2024*

Benchmarking Ambee's forecast pollen: USA - Los Angeles, California FORECAST

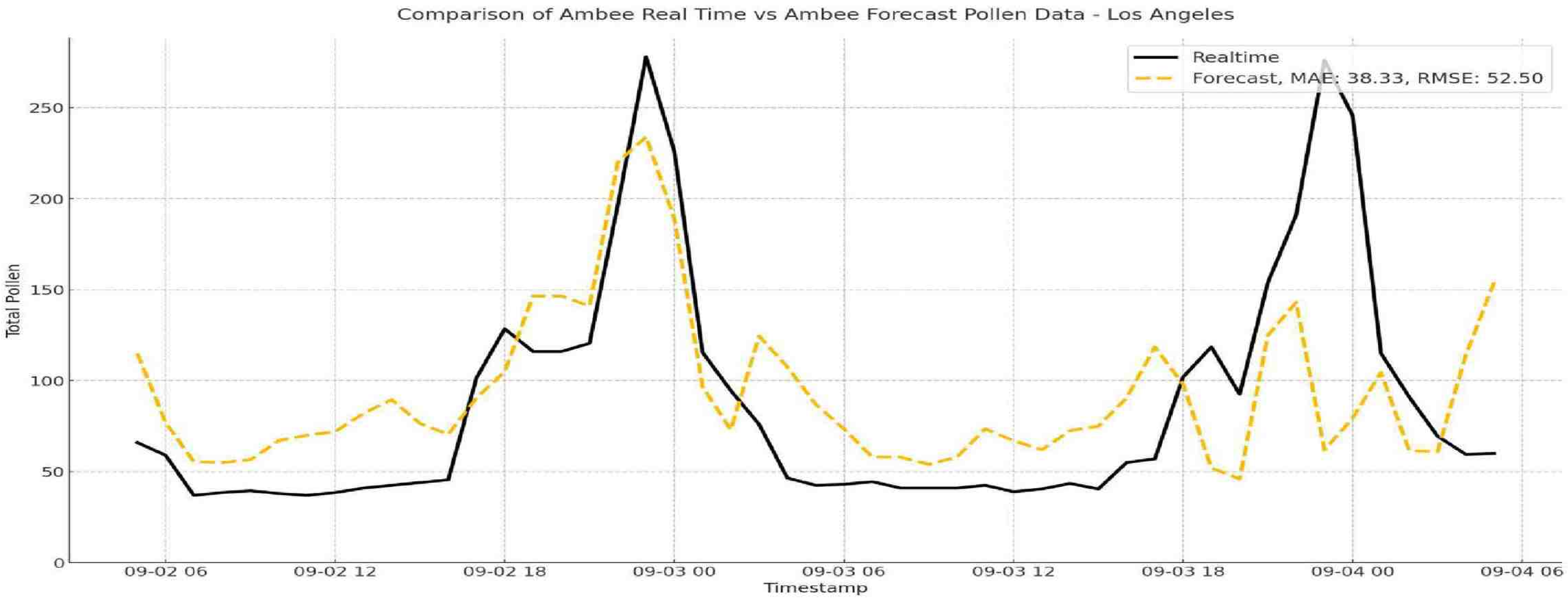


EXHIBIT 29 | *Ambee forecast pollen v. real-time in Los Angeles from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: USA - Las Vegas, Nevada FORECAST

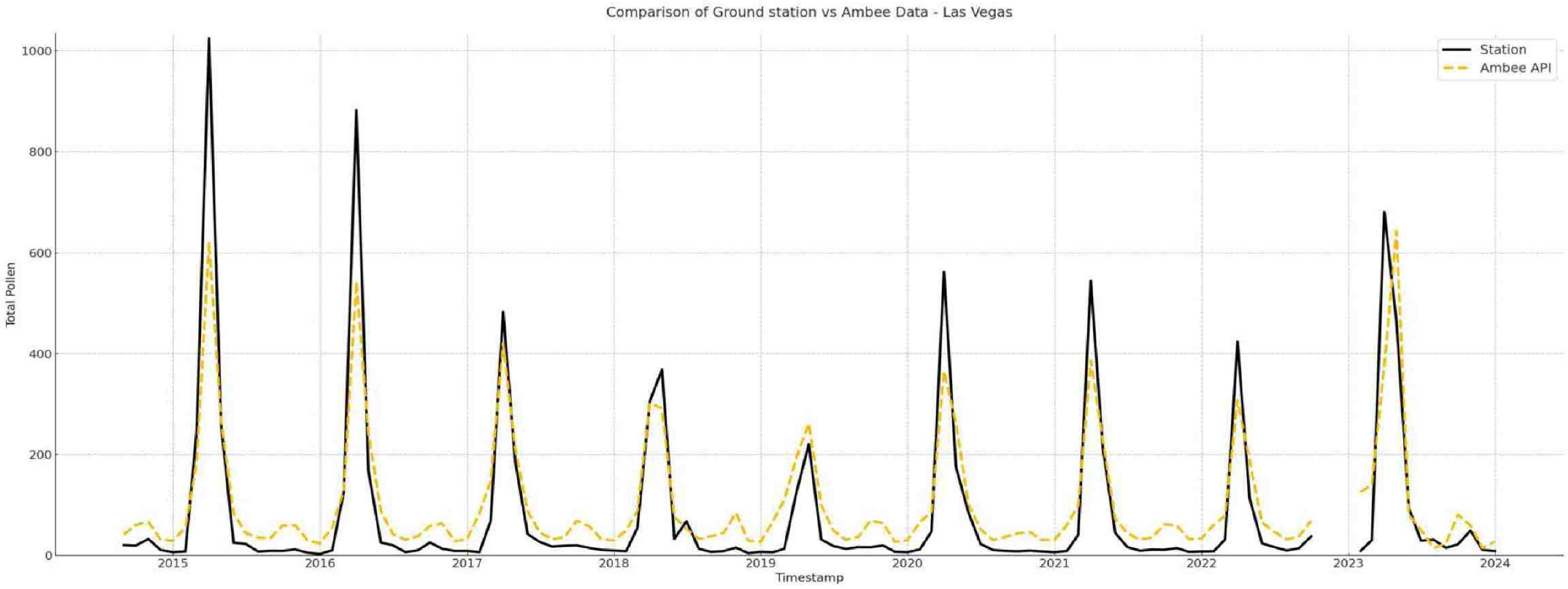


EXHIBIT 30 | *Ambee forecast pollen v. real-time in Las Vegas from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: EUR - London, England FORECAST

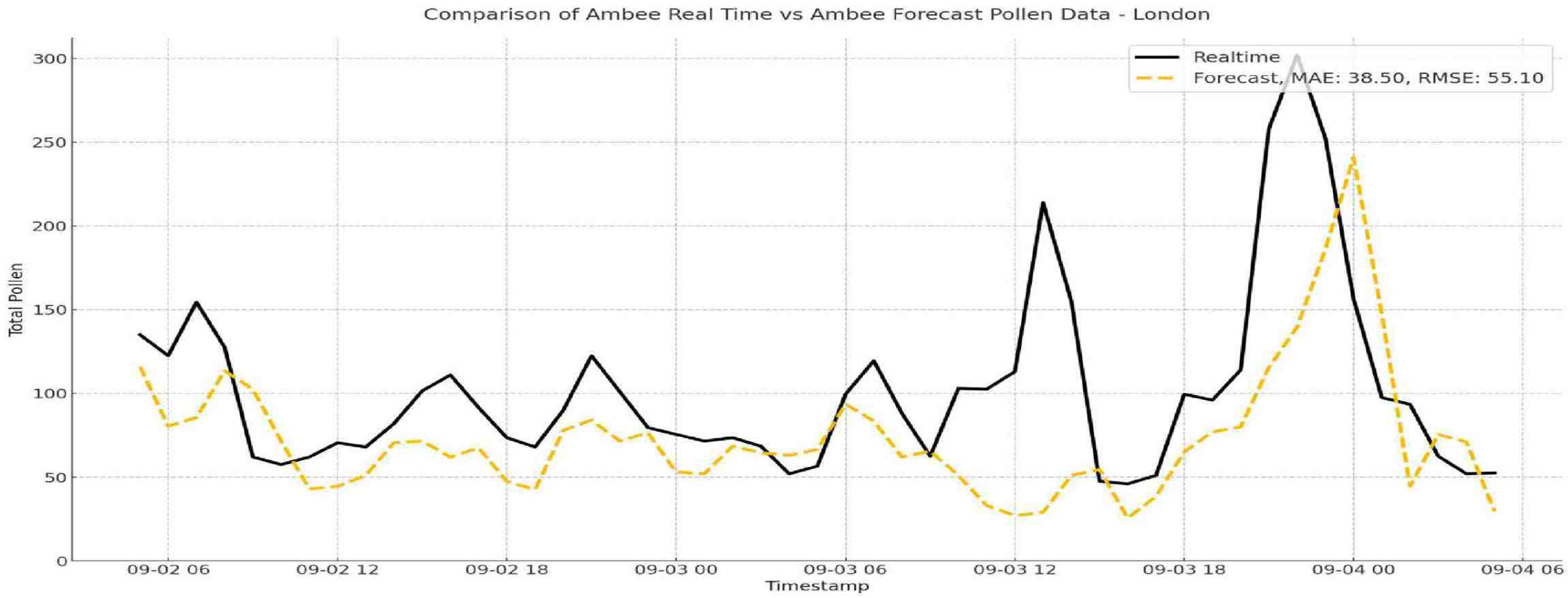


EXHIBIT 31 | *Ambee forecast pollen v. real-time in London from 2nd to 4th September 2024*

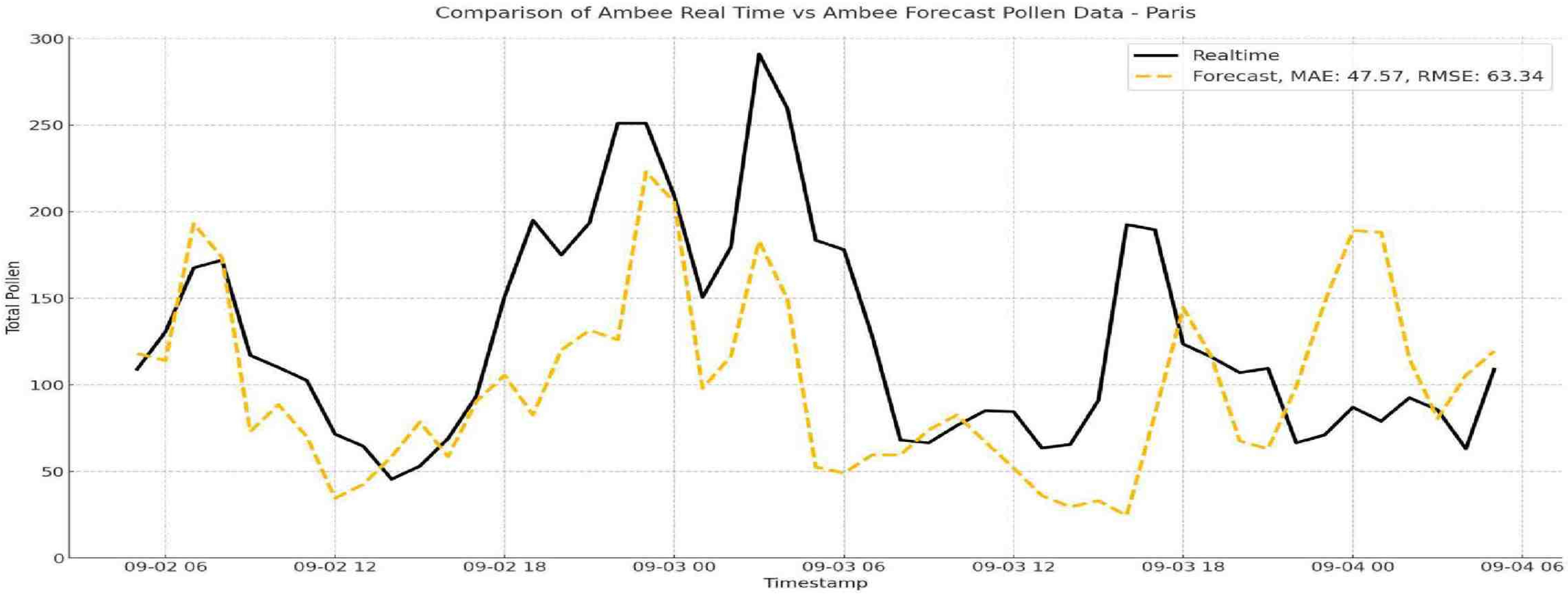


EXHIBIT 32 | *Ambee forecast pollen v. real-time in Paris from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: AUS - Sydney, New South Wales FORECAST

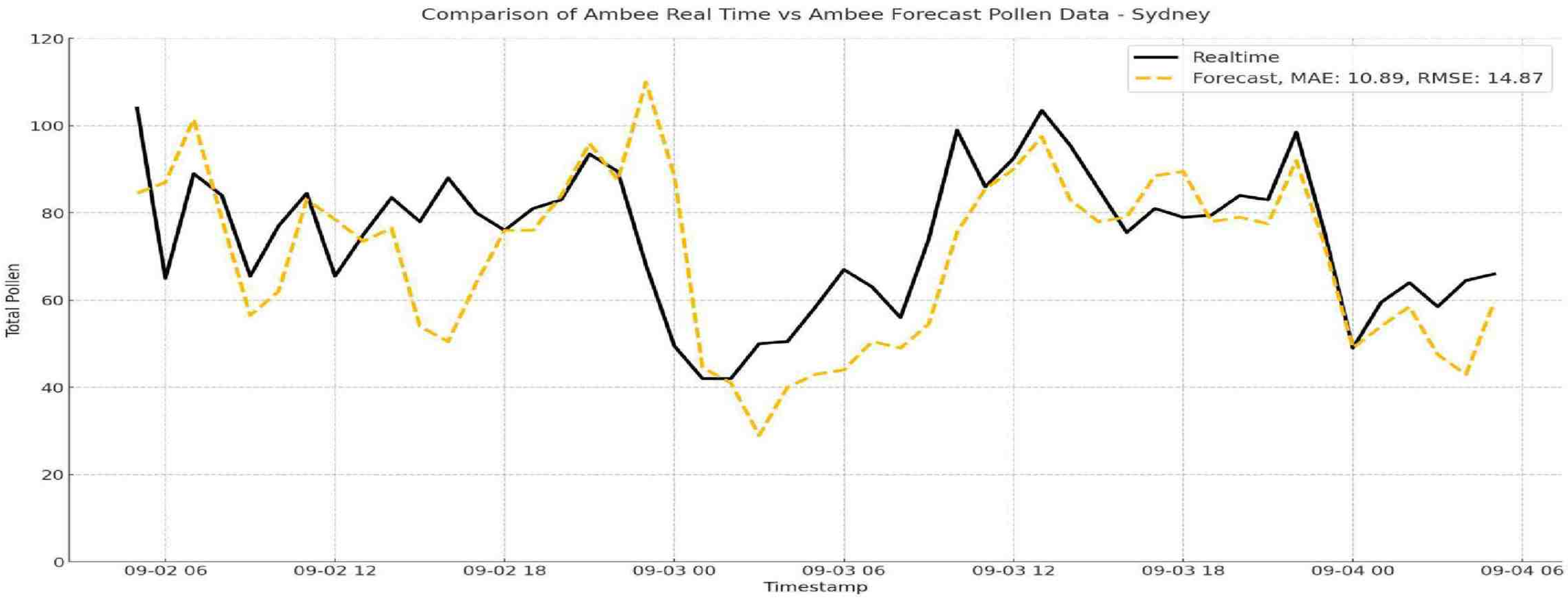


EXHIBIT 33 | *Ambee forecast pollen v. real-time in Sydney from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: AUS - Brisbane, Queensland FORECAST

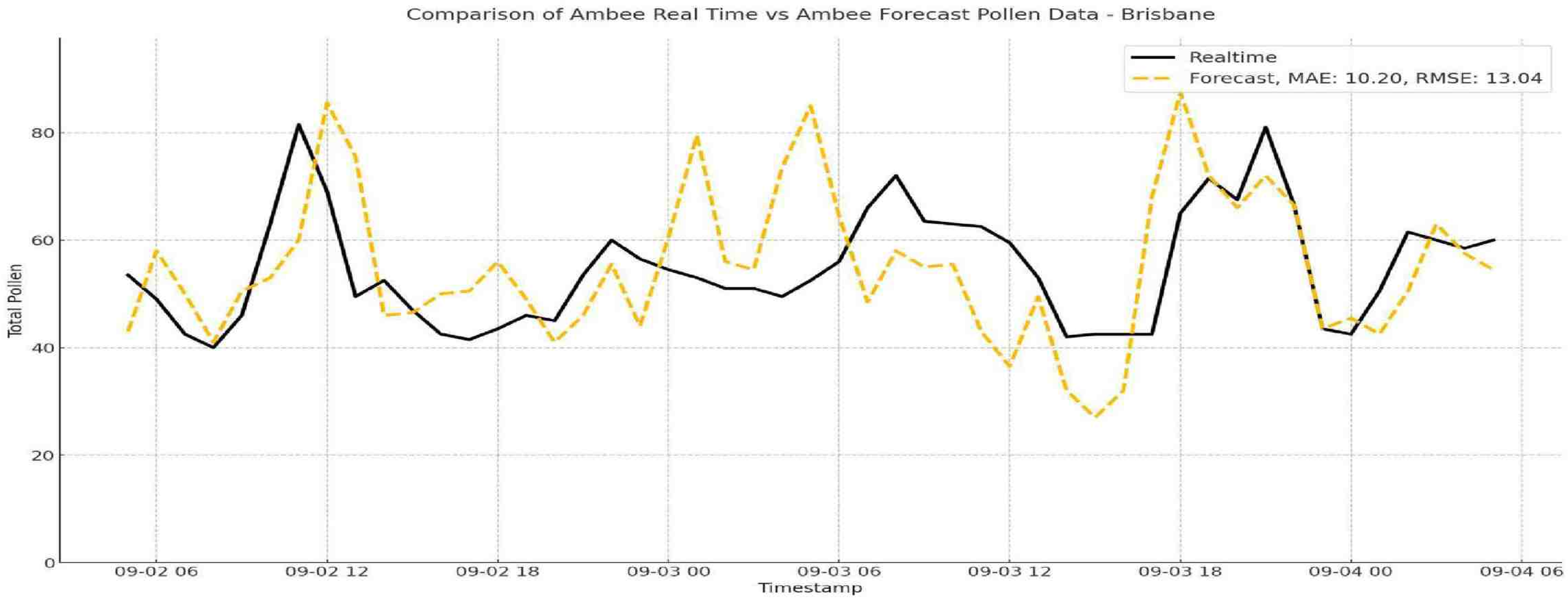


EXHIBIT 34 | *Ambee forecast pollen v. real-time in Brisbane from 2nd to 4th September 2024*

Benchmarking Ambee's forecast pollen: ASIA - New Delhi, India FORECAST

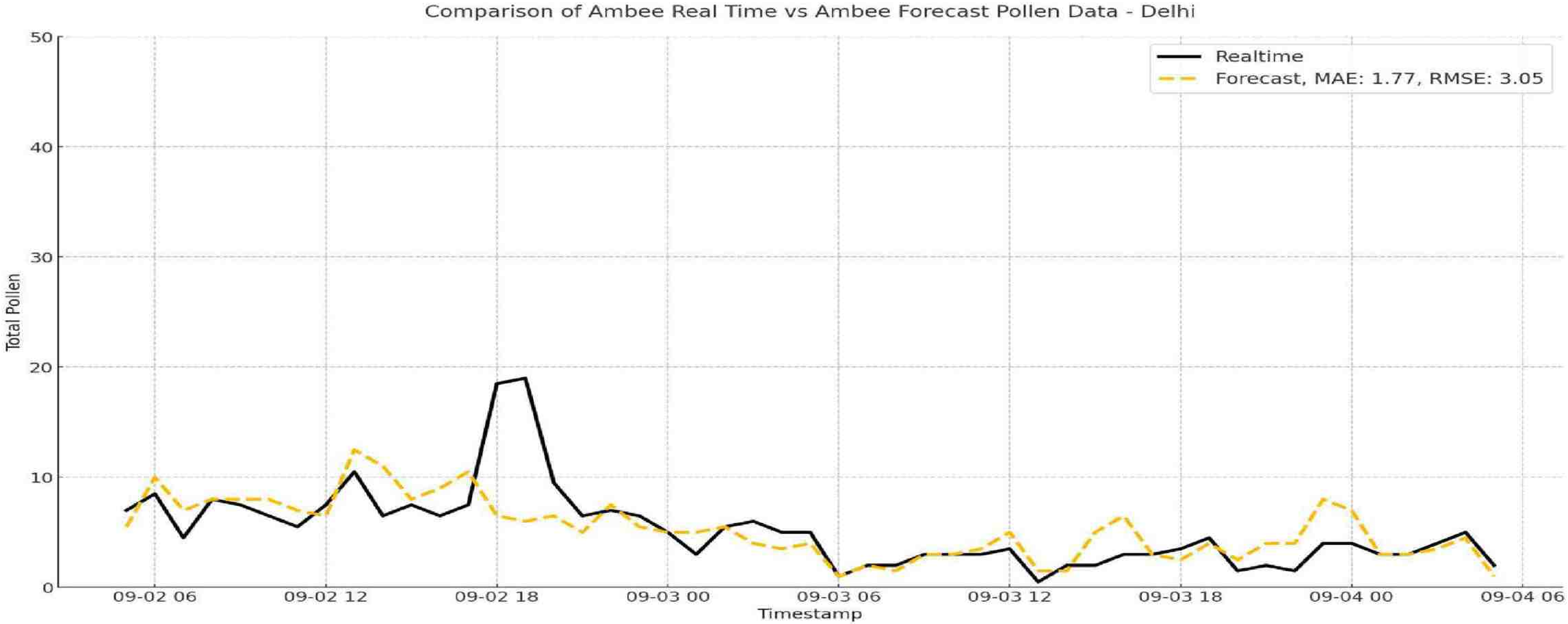


EXHIBIT 35 | *Ambee forecast pollen v. real-time in New Delhi from 2nd to 4th September 2024*

Additional air quality accuracy comparisons

LIVE

Port Townsend, Washington

Lake Forest Park, Washington

Los Angeles, California

Rahway, New Jersey

Paterson, New Jersey

Chicago, Illinois

Kingery, Illinois

Northbrook, Illinois

Glendale, California

Houston, Texas

Paris, France

Berlin, Germany

Brussels, Belgium

Madrid, Spain

Cammeray, New South Wales

Spotswood, Victoria

Randwick, New South Wales

New Delhi, India

Bangalore, India

Mumbai, India

Tokyo, Japan

FORECAST

Alamo Lake, Arizona

Chehalis, Washington

Kungsgatan, Sweden

Eriksgatan, Sweden

Hornsgatan, Sweden

Aylesford, England

St Albans, England

Aberdeen, Scotland

Cairns, Queensland

Kalgoorlie, Western Australia

Comparing Ambee's live AQ: USA - Port Townsend, Washington LIVE

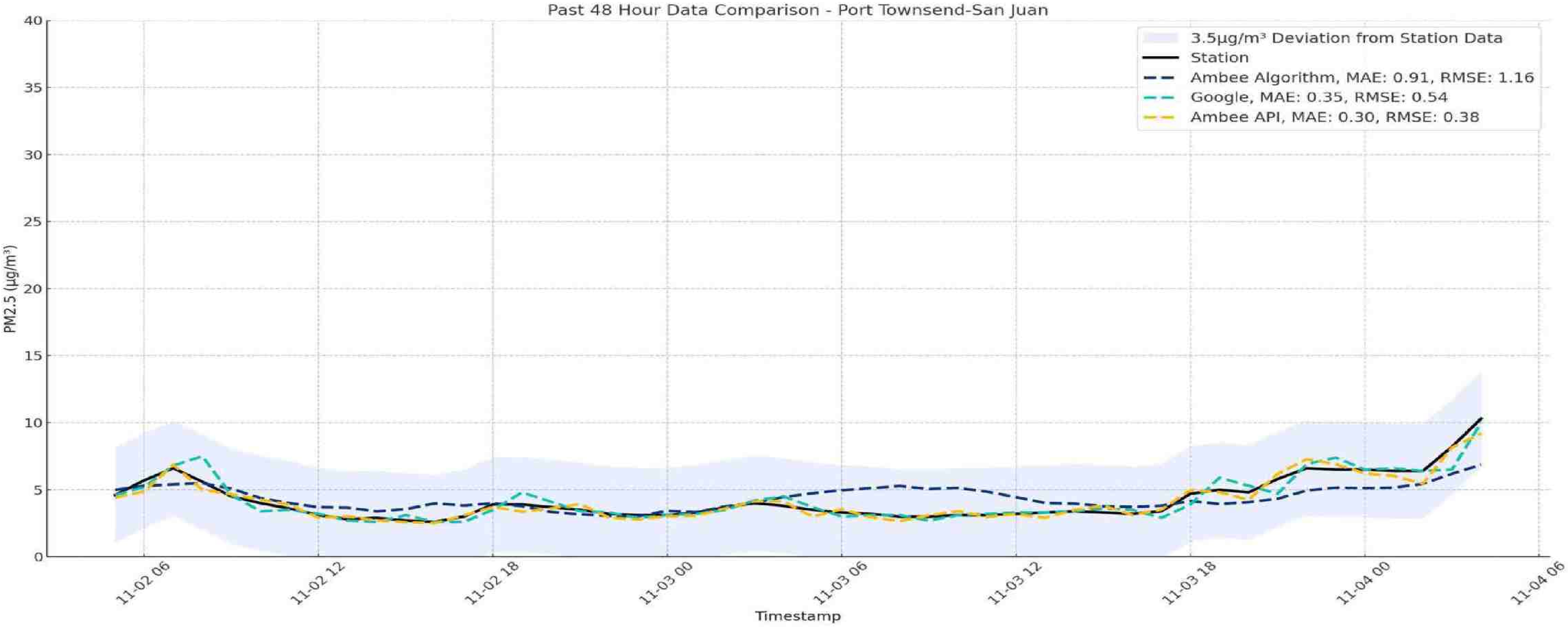


EXHIBIT 36 | *Accuracy comparison between Ambee's live AQ and Google in Port Townsend from 2nd to 4th November 2024*

Comparing Ambee's live AQ: USA - Lake Forest Park, Washington LIVE

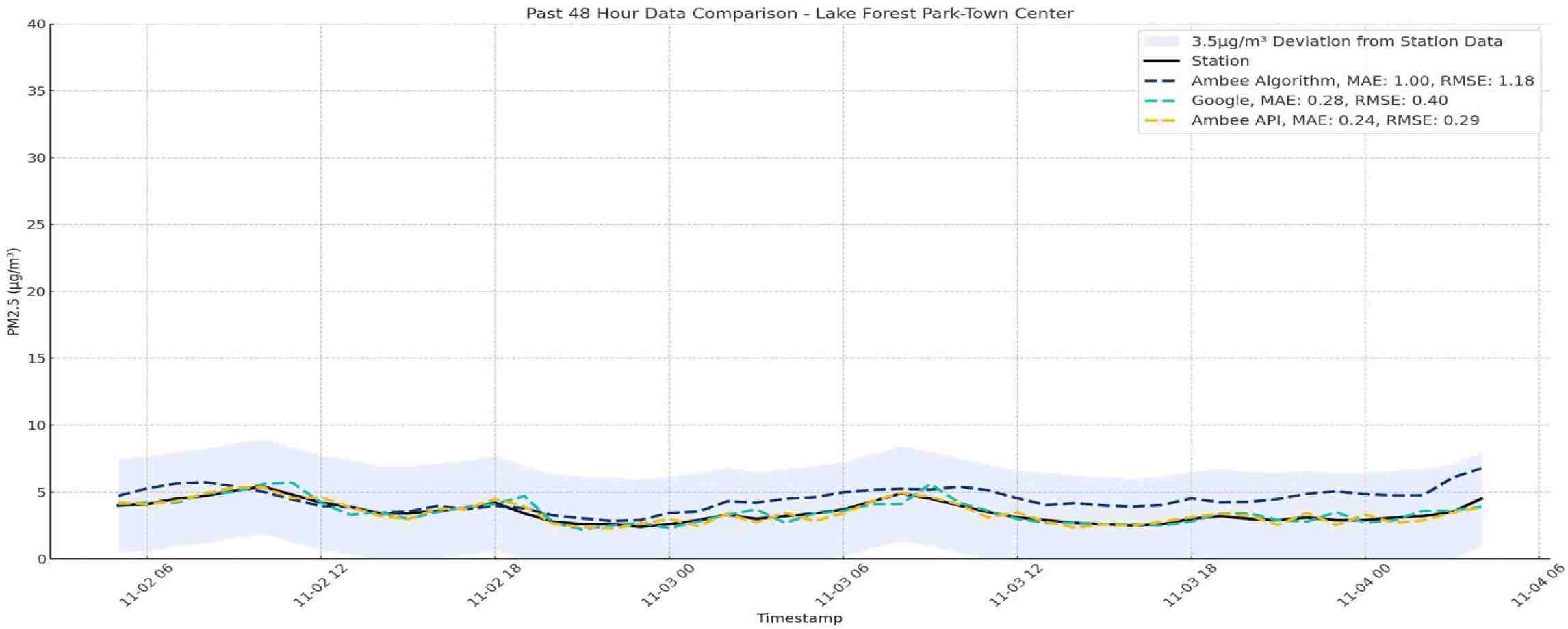


EXHIBIT 37 | *Accuracy comparison between Ambee's live AQ and Google in Lake Forest Park from 2nd to 4th November 2024*

Comparing Ambee's live AQ: USA - Los Angeles, California LIVE

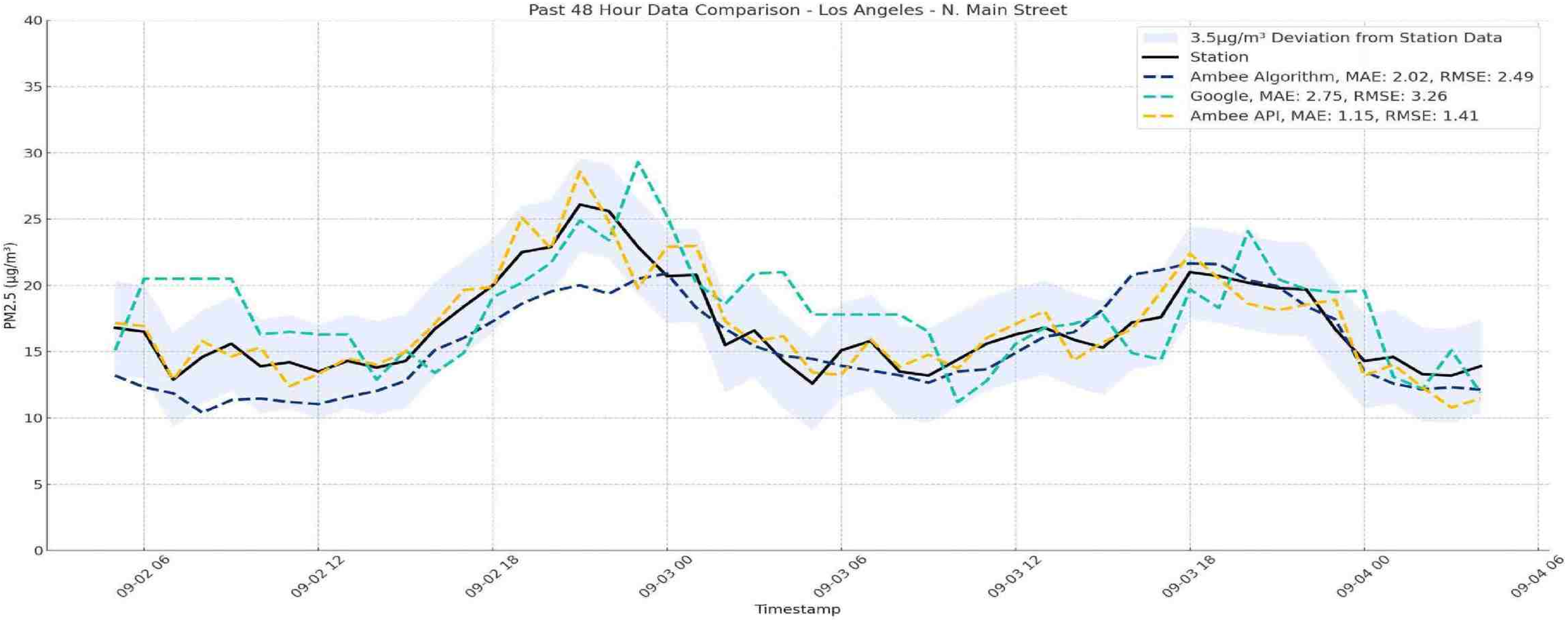


EXHIBIT 38 | *Accuracy comparison between Ambee's live AQ and Google in Los Angeles from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Rahway, New Jersey LIVE

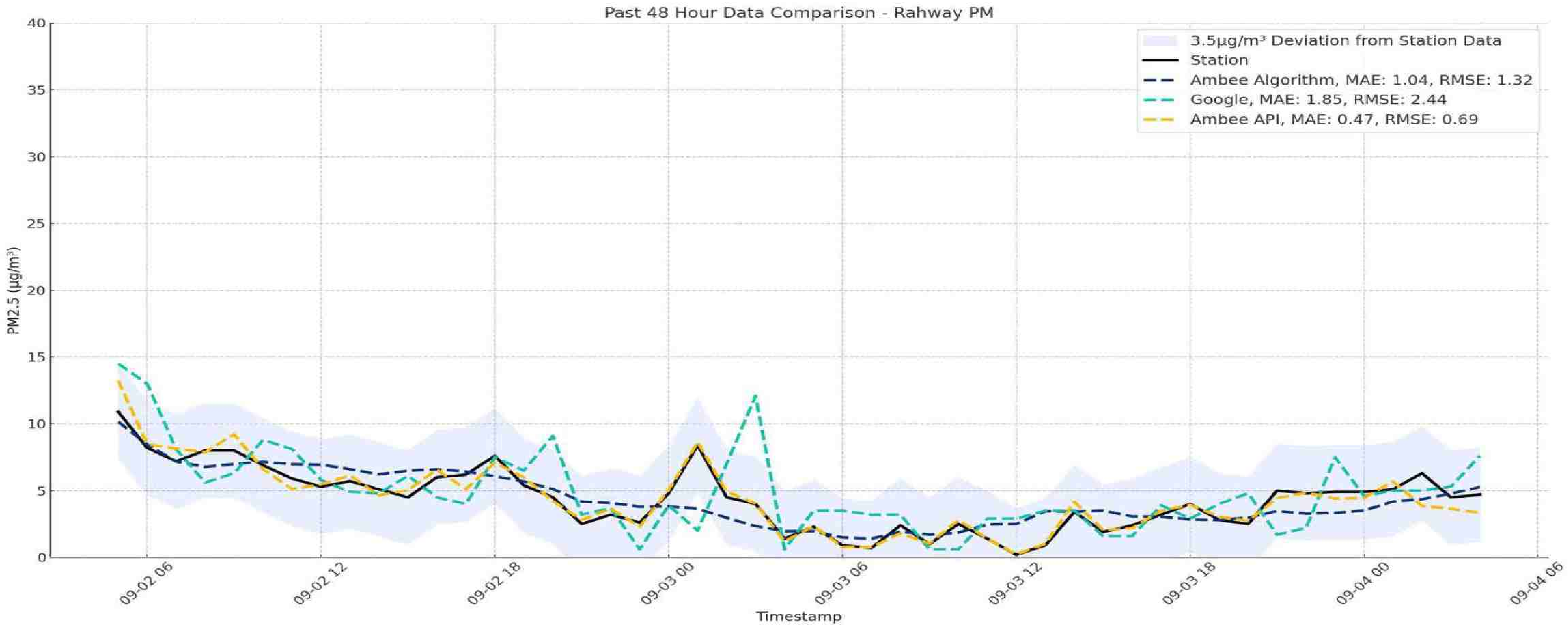


EXHIBIT 39 | *Accuracy comparison between Ambee's live AQ and Google in Rahway from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Paterson, New Jersey LIVE

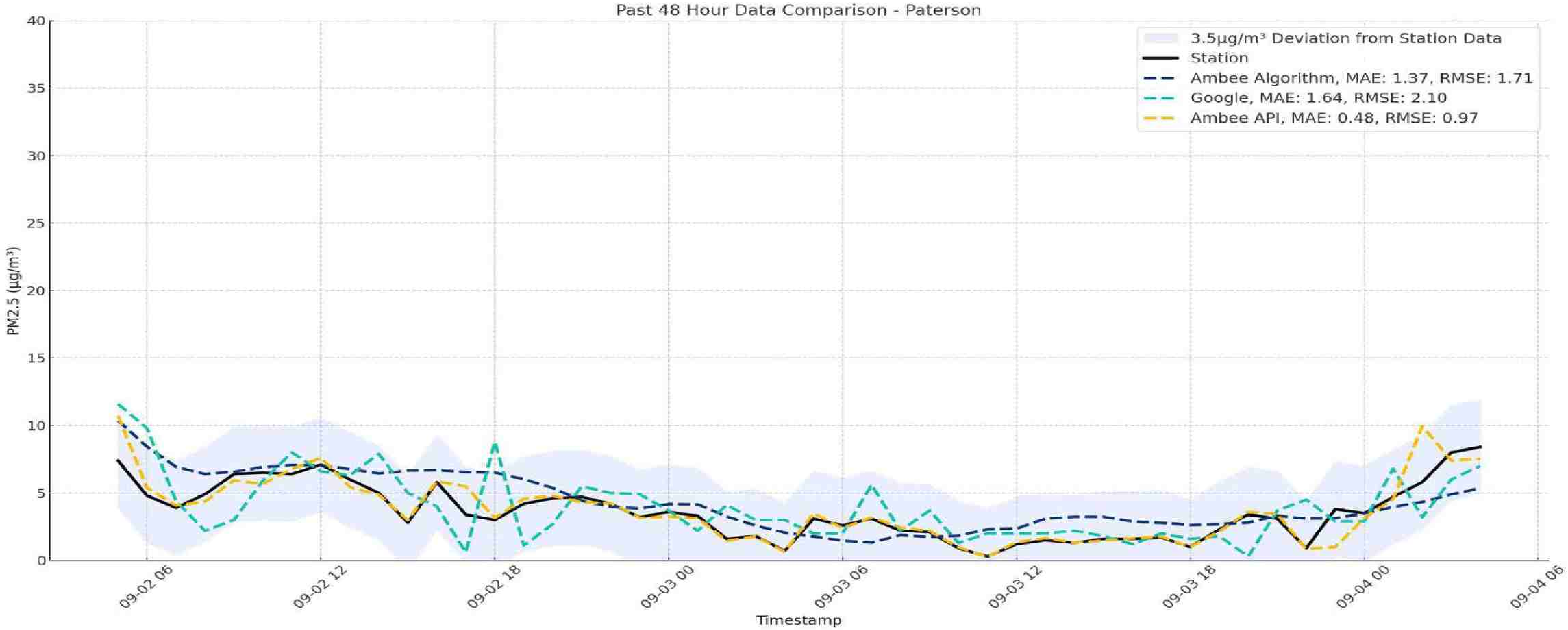


EXHIBIT 40 | *Accuracy comparison between Ambee's live AQ and Google in Paterson from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Chicago, Illinois LIVE

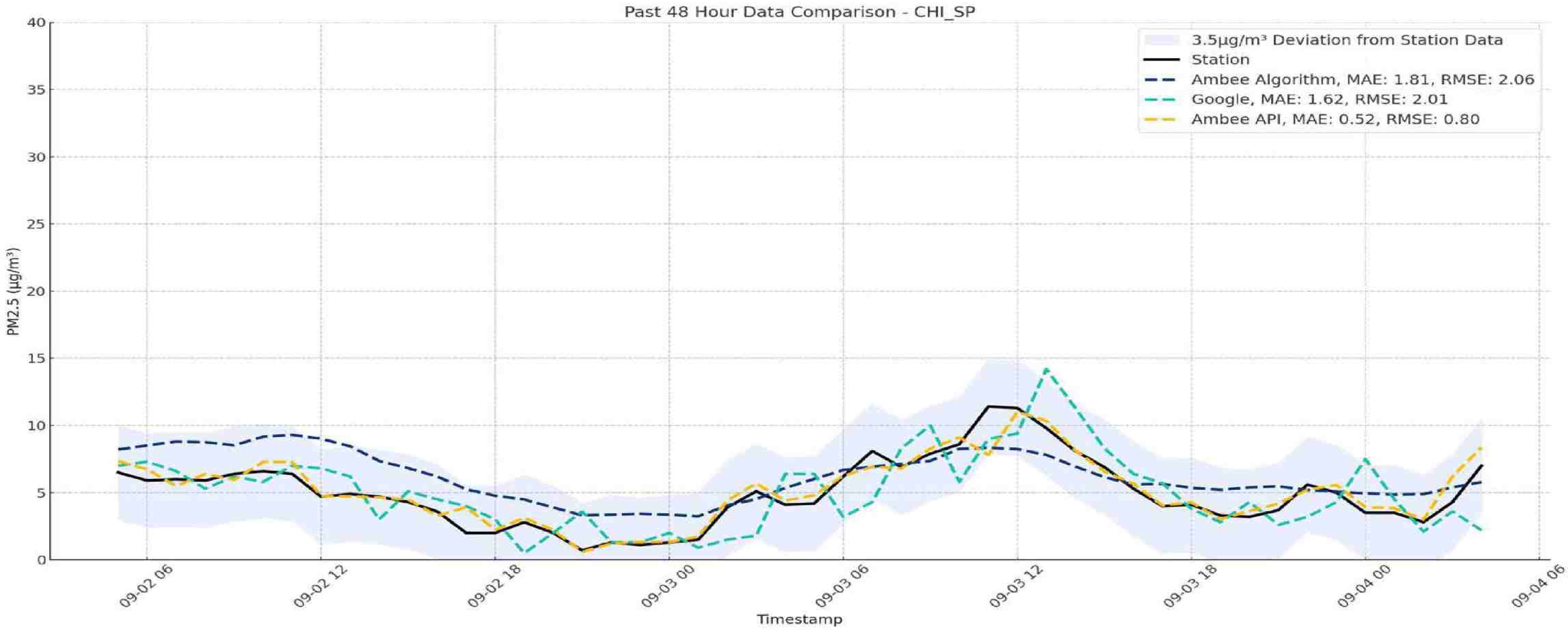


EXHIBIT 41 | *Accuracy comparison between Ambee's live AQ and Google in Chicago from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Kingery, Illinois LIVE

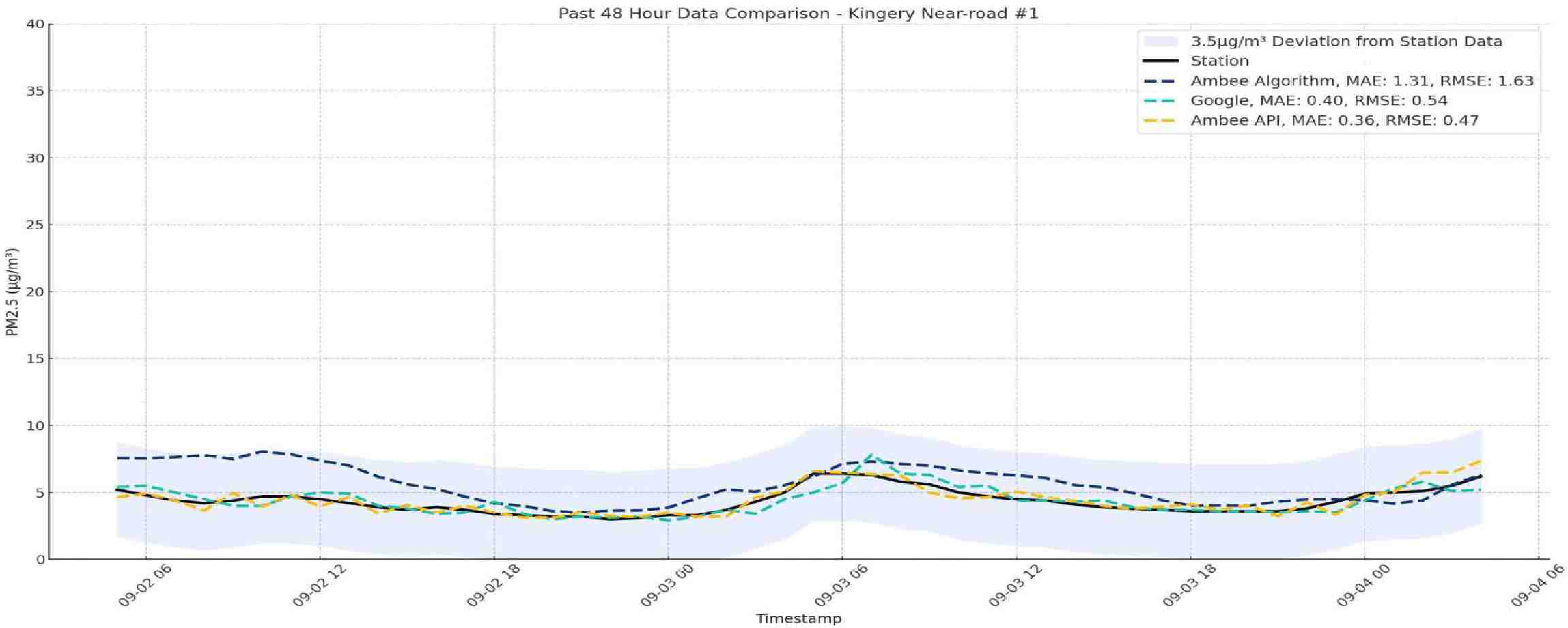


EXHIBIT 42 | *Accuracy comparison between Ambee's live AQ and Google in Kingery from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Northbrook, Illinois LIVE

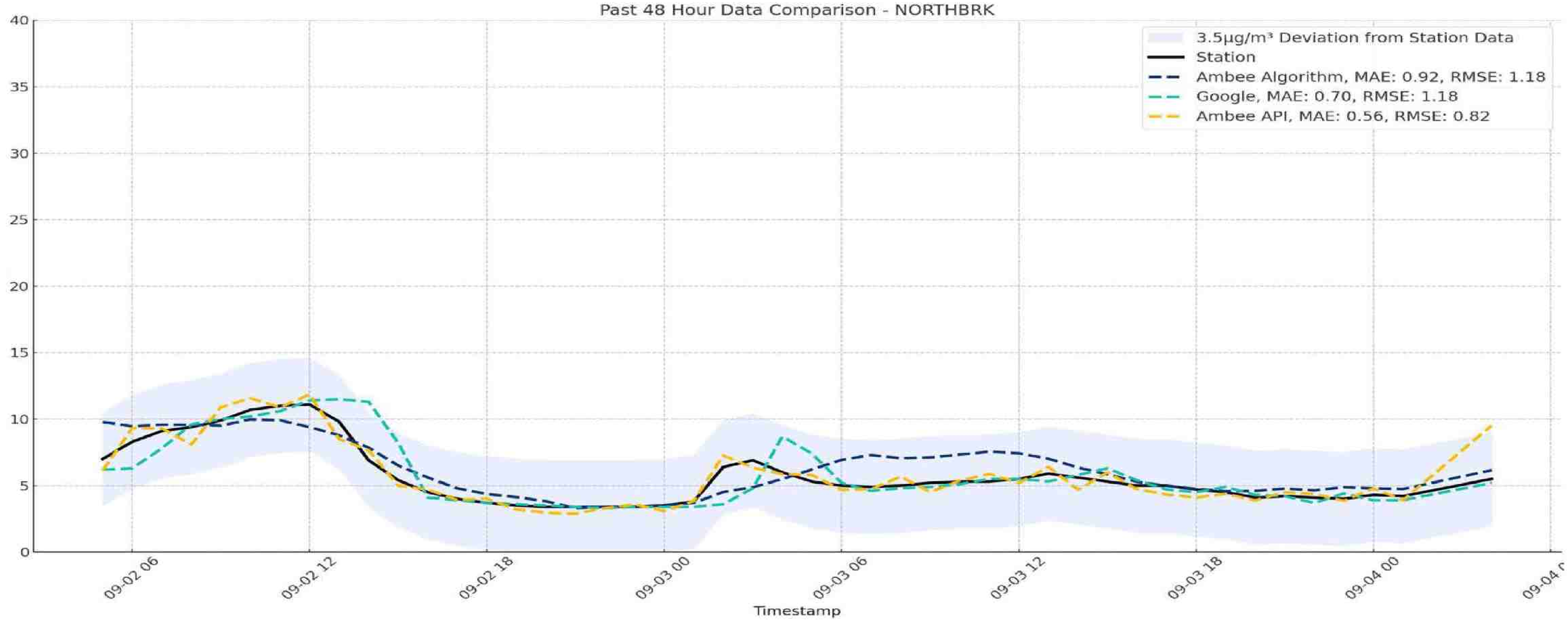


EXHIBIT 43 | *Accuracy comparison between Ambee's live AQ and Google in Northbrook from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Glendale, California LIVE

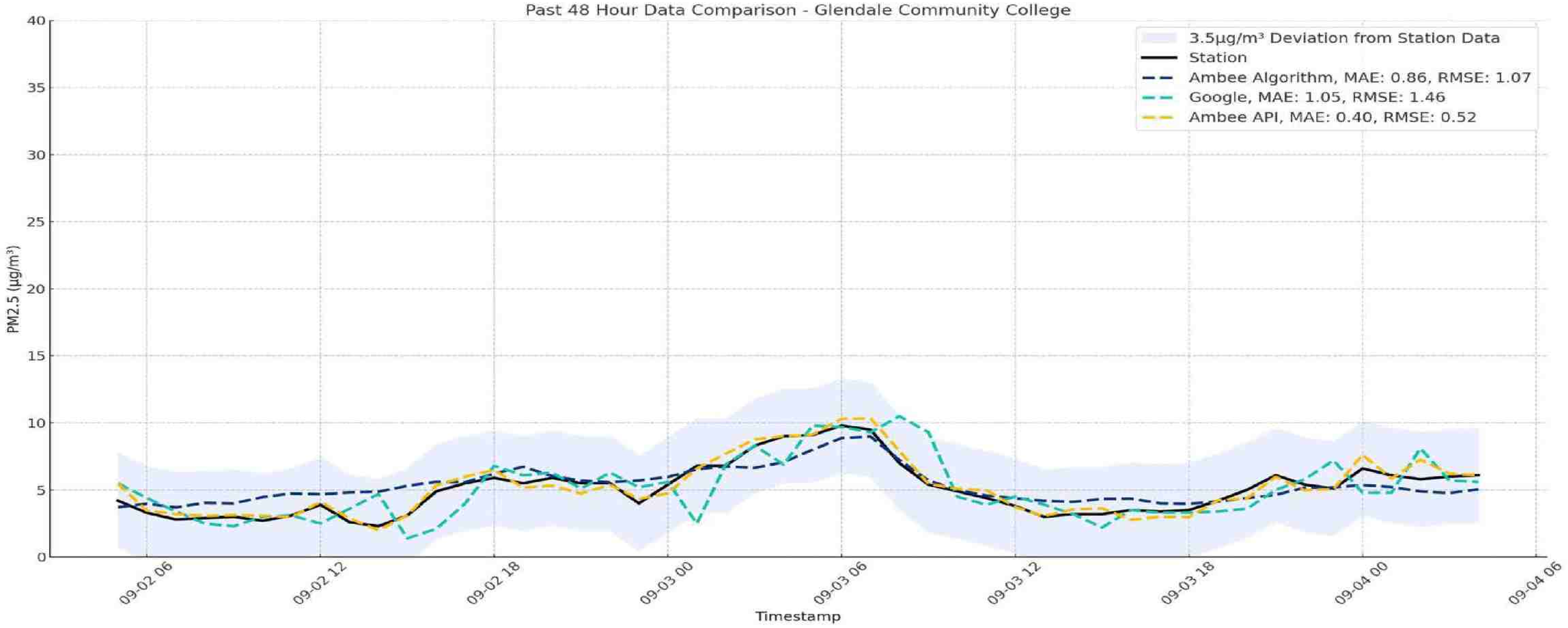


EXHIBIT 44 | *Accuracy comparison between Ambee's live AQ and Google in Glendale from 2nd to 4th September 2024*

Comparing Ambee's live AQ: USA - Houston, Texas LIVE

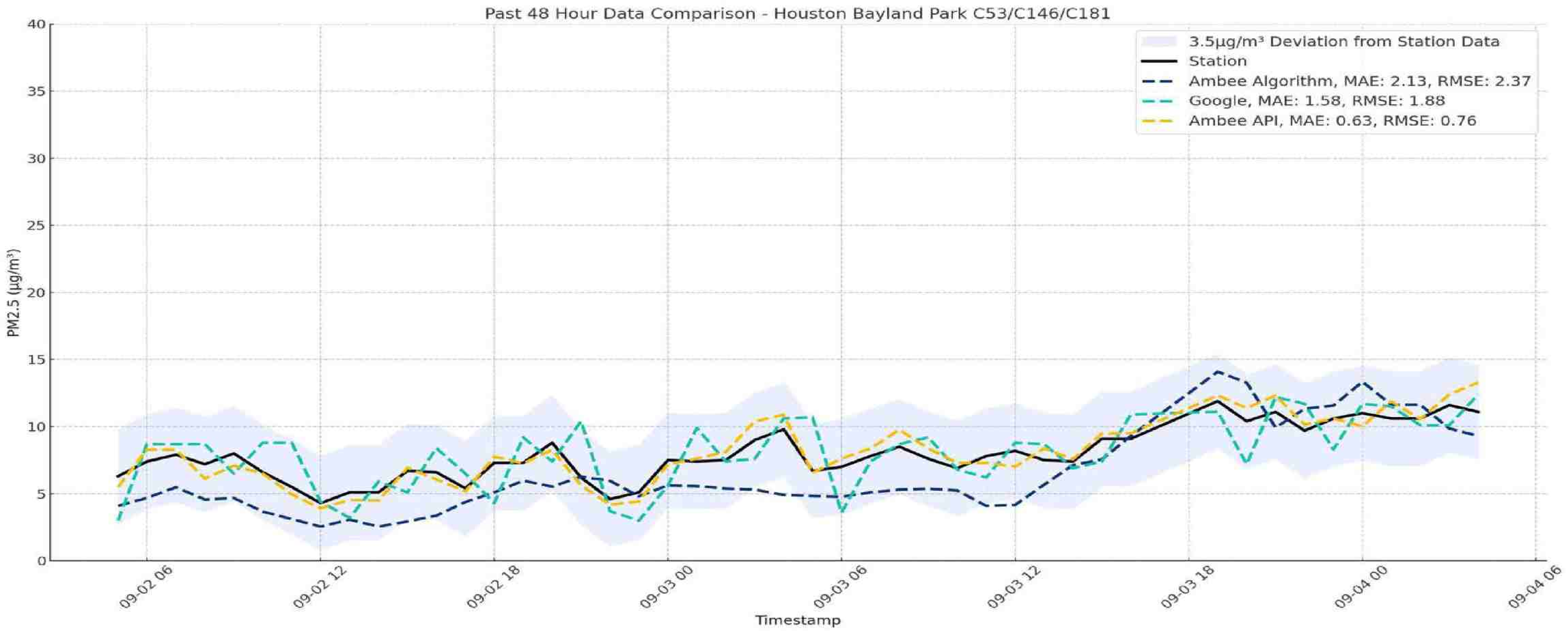


EXHIBIT 45 | *Accuracy comparison between Ambee's live AQ and Google in Houston from 2nd to 4th September 2024*

Comparing Ambee's live AQ: EUR - Paris, France LIVE

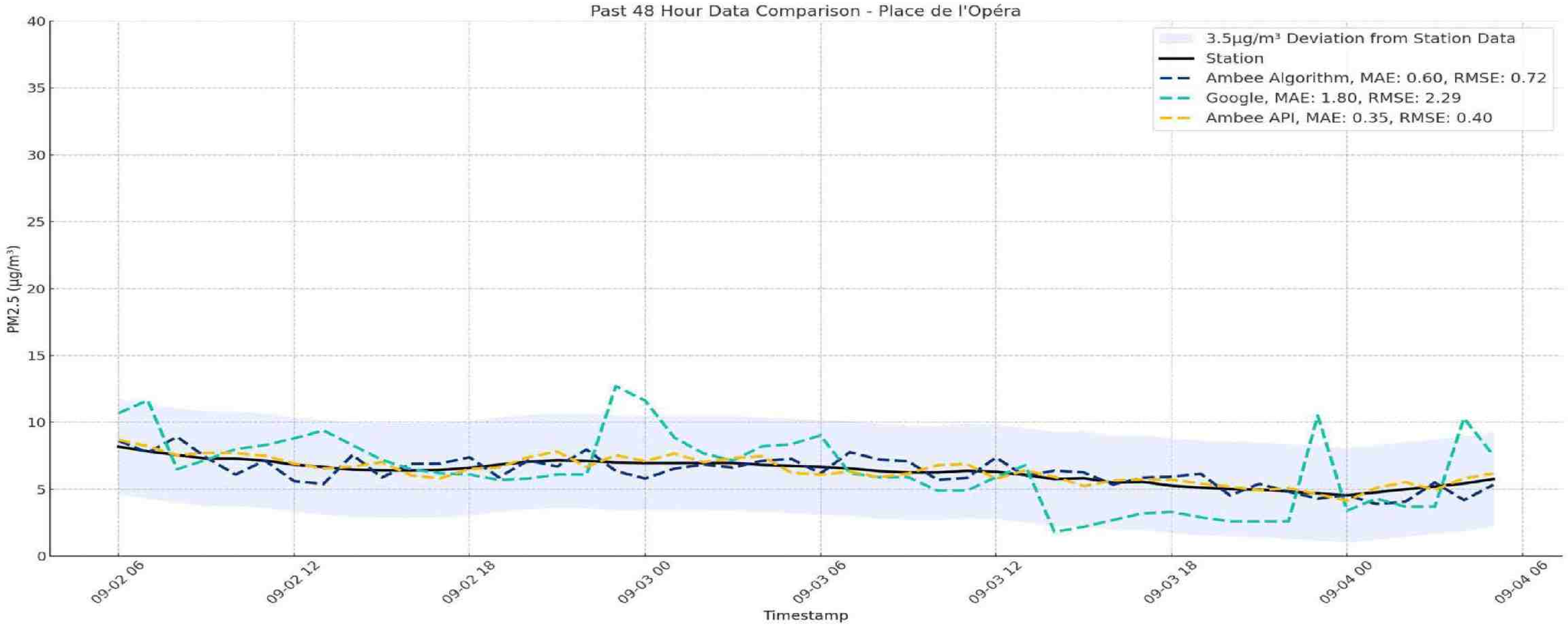


EXHIBIT 46 | *Accuracy comparison between Ambee's live AQ and Google in Paris from 2nd to 4th September 2024*

Comparing Ambee live AQ: EUR - Berlin, Germany LIVE

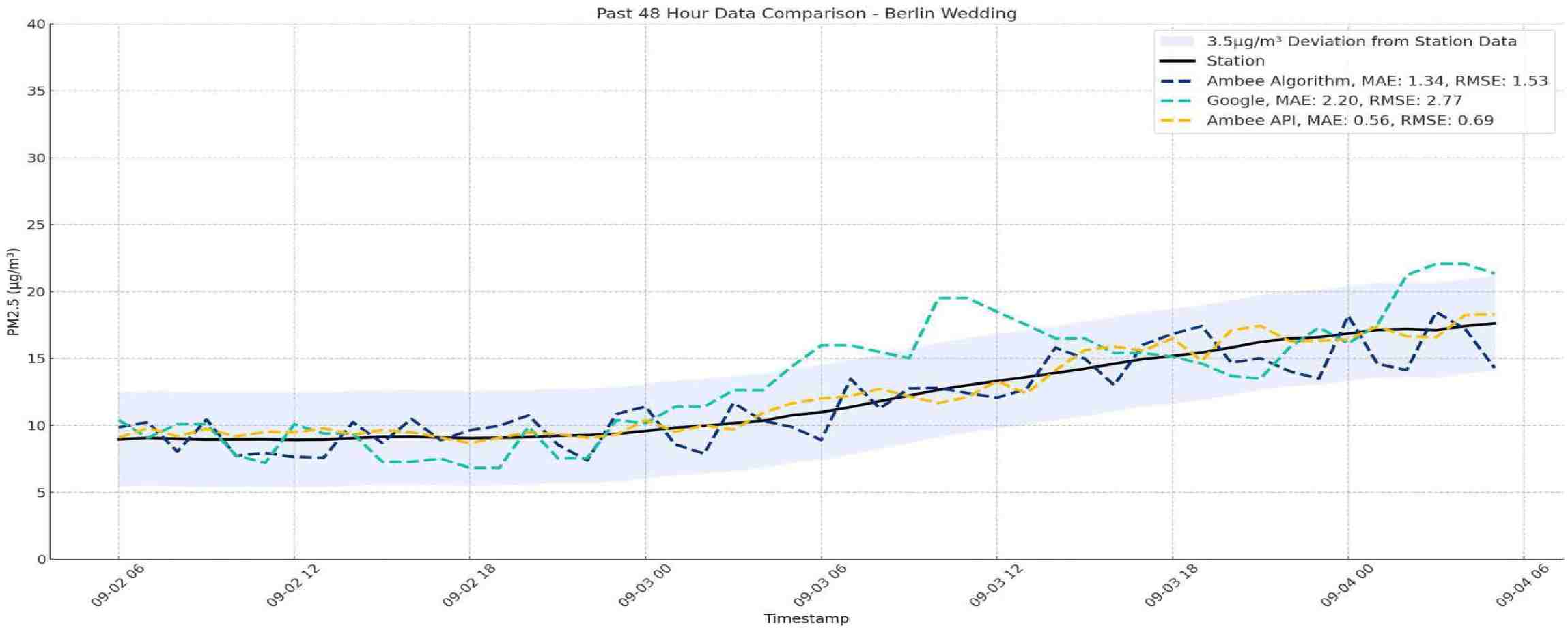


EXHIBIT 47 | *Accuracy comparison between Ambee's live AQ and Google in Berlin from 2nd to 4th September 2024*

Comparing Ambee live AQ: EUR - Brussels, Belgium LIVE

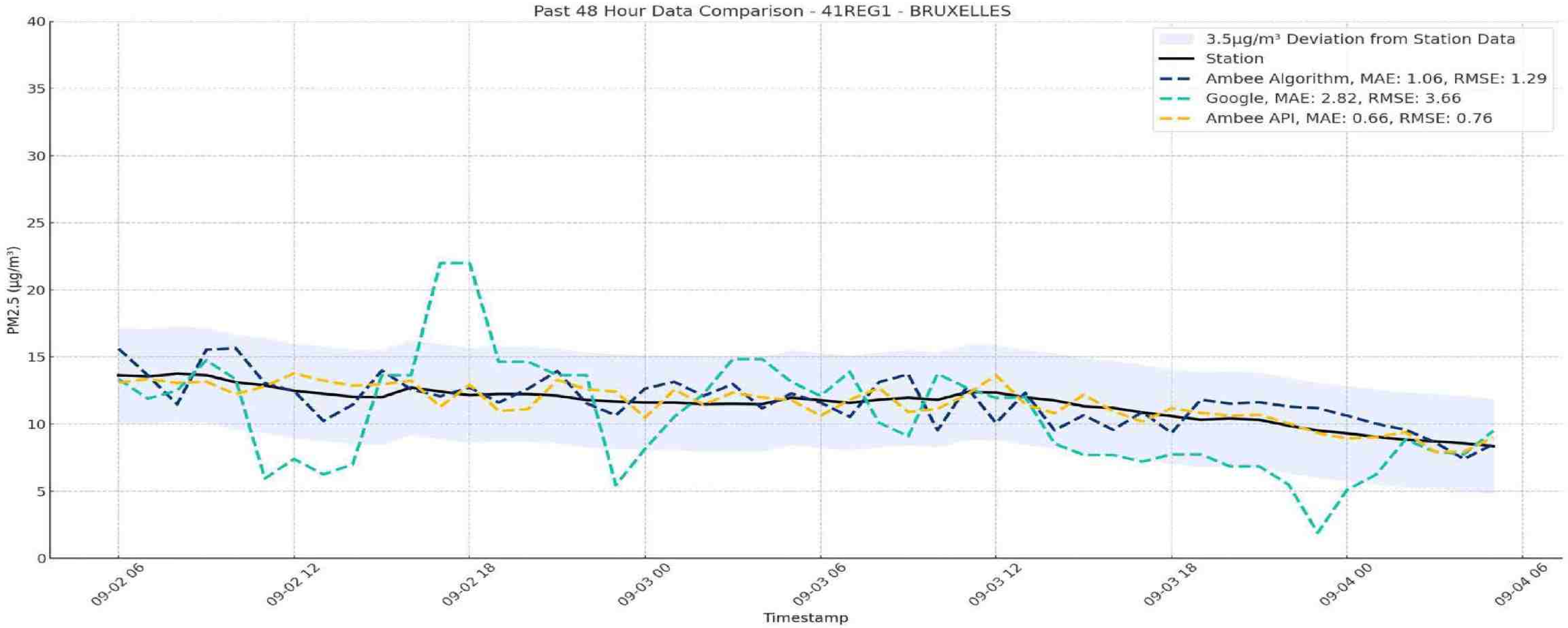


EXHIBIT 48 | *Accuracy comparison between Ambee's live AQ and Google in Brussels from 2nd to 4th September 2024*

Comparing Ambee's live AQ: EUR - Madrid, Spain LIVE

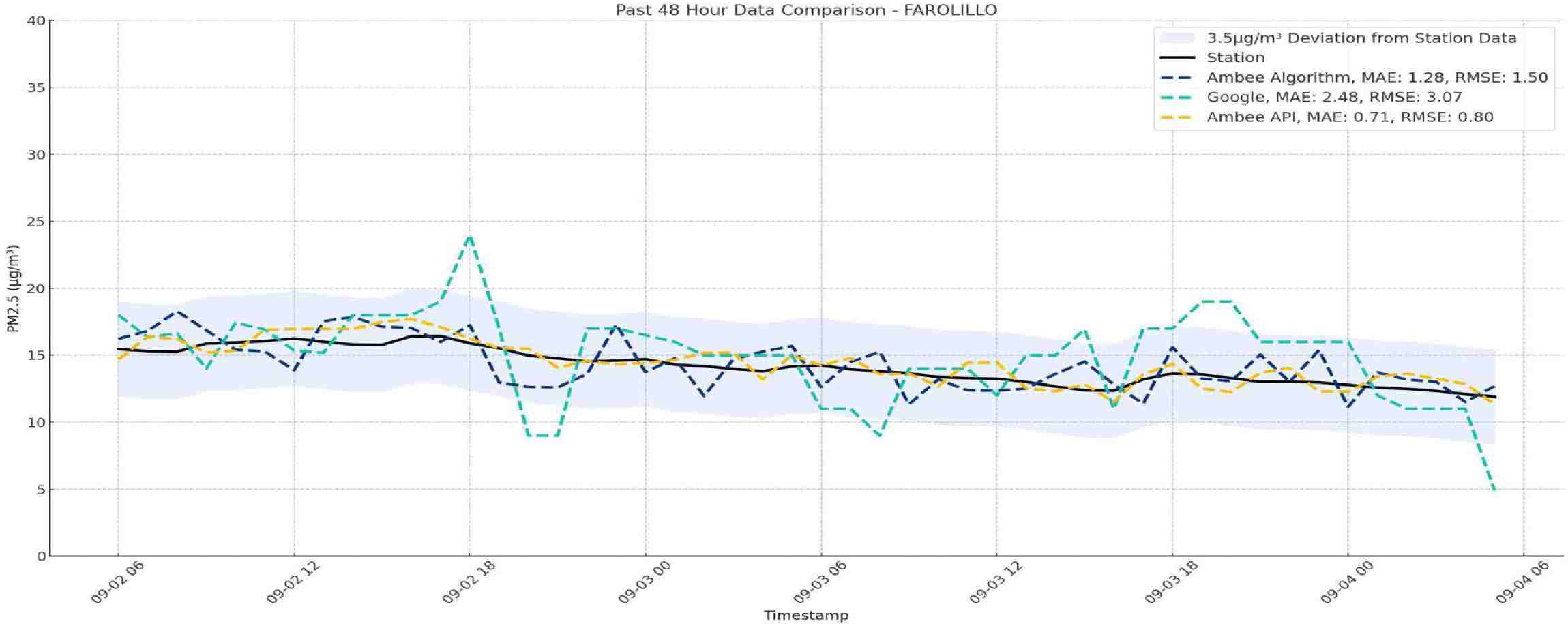


EXHIBIT 49 | *Accuracy comparison between Ambee's live AQ and Google in Madrid from 2nd to 4th September 2024*

Comparing Ambee's live AQ: AUS - Cammeray, New South Wales LIVE

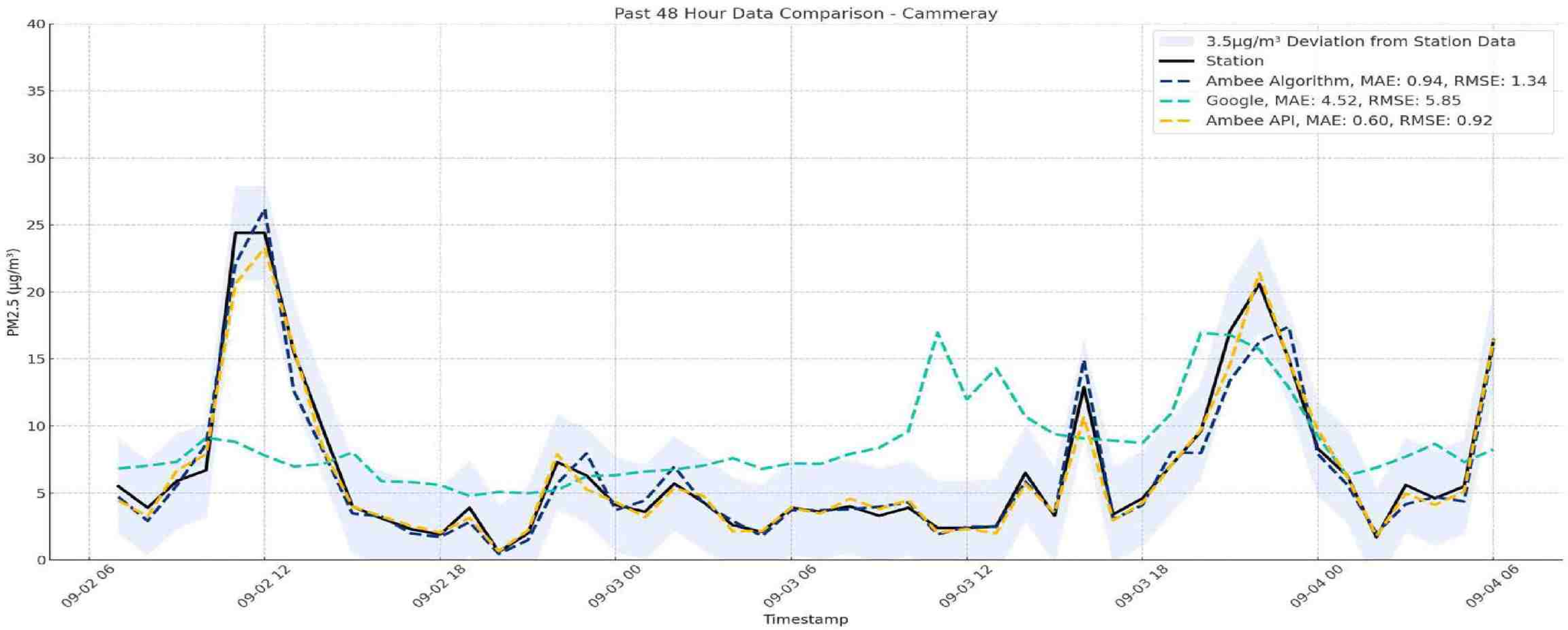


EXHIBIT 50 | *Accuracy comparison between Ambee's live AQ and Google in Cammeray from 2nd to 4th September 2024*

Comparing Ambee's live AQ: AUS - Spotswood, Victoria LIVE

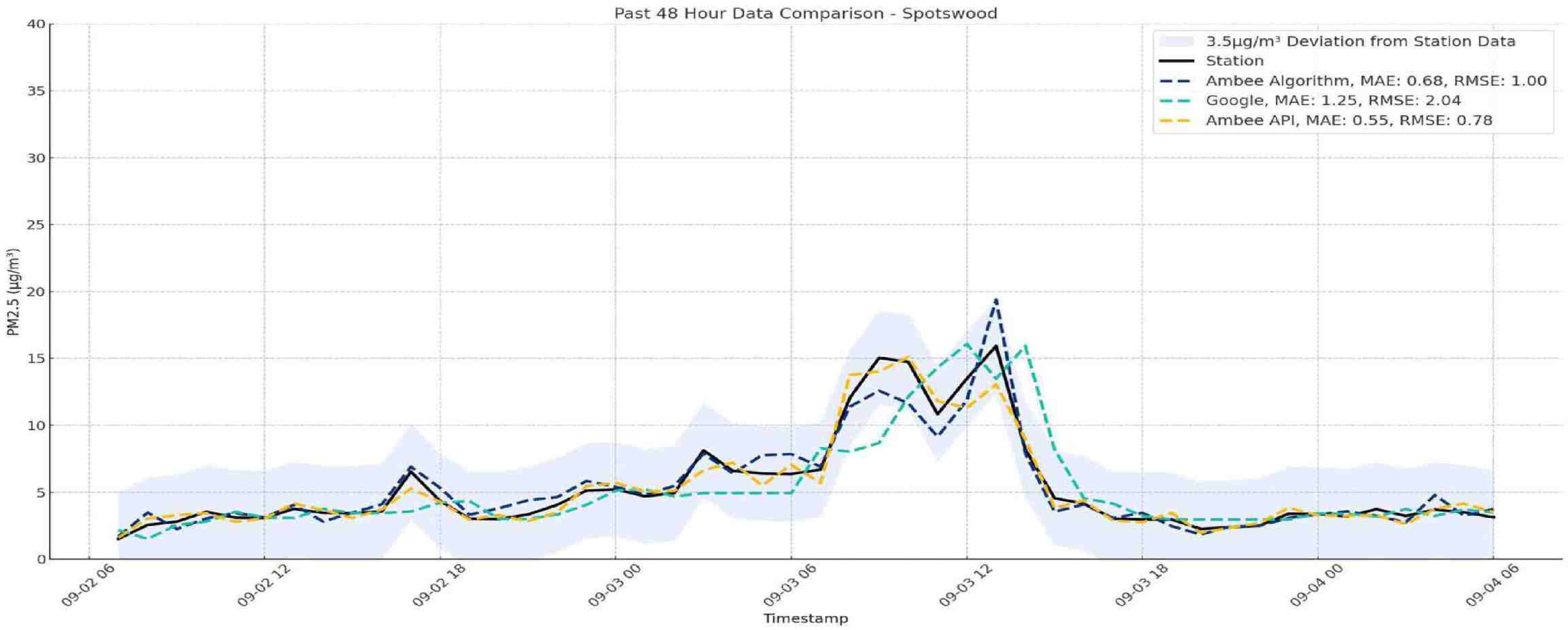


EXHIBIT 51 | *Accuracy comparison between Ambee's live AQ and Google in Spotswood from 2nd to 4th September 2024*

Comparing Ambee's live AQ: AUS - Randwick, New South Wales LIVE

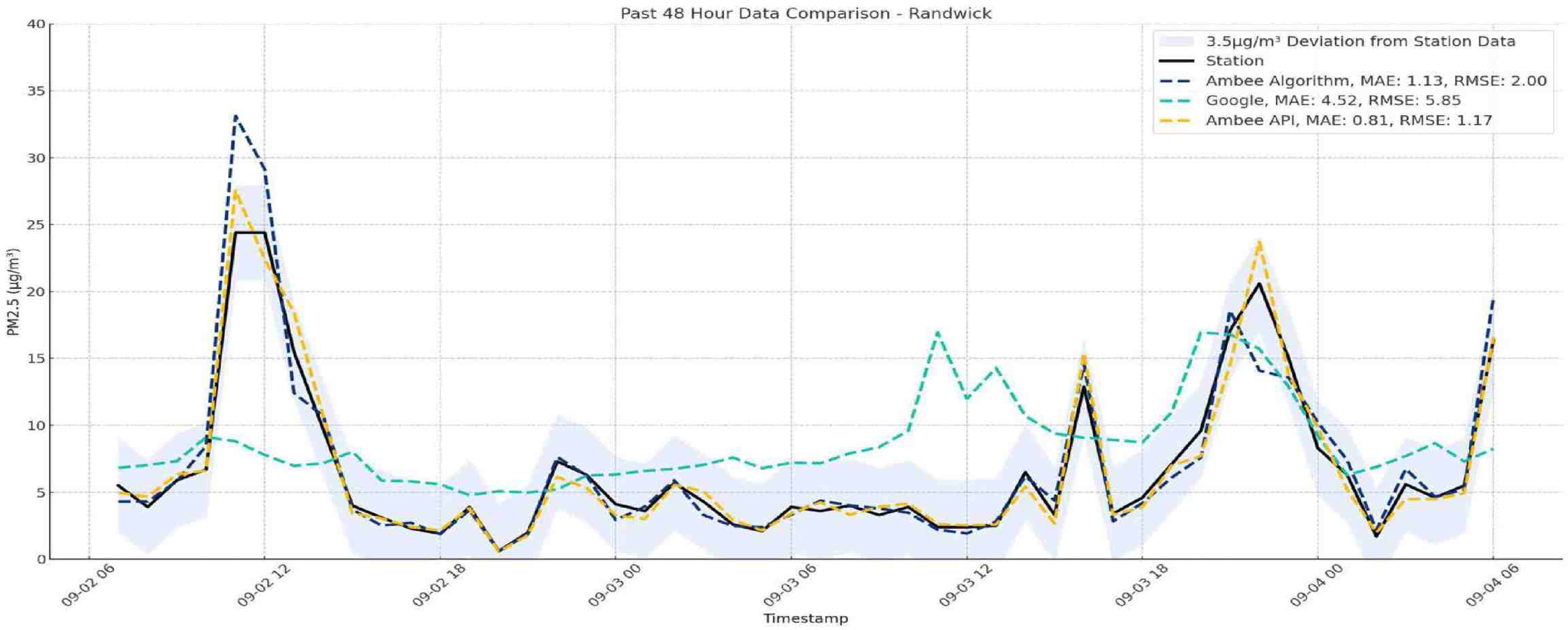


EXHIBIT 52 | *Accuracy comparison between Ambee's live AQ and Google in Randwick from 2nd to 4th September 2024*

Comparing Ambee's live AQ: ASIA - New Delhi, India (1) LIVE

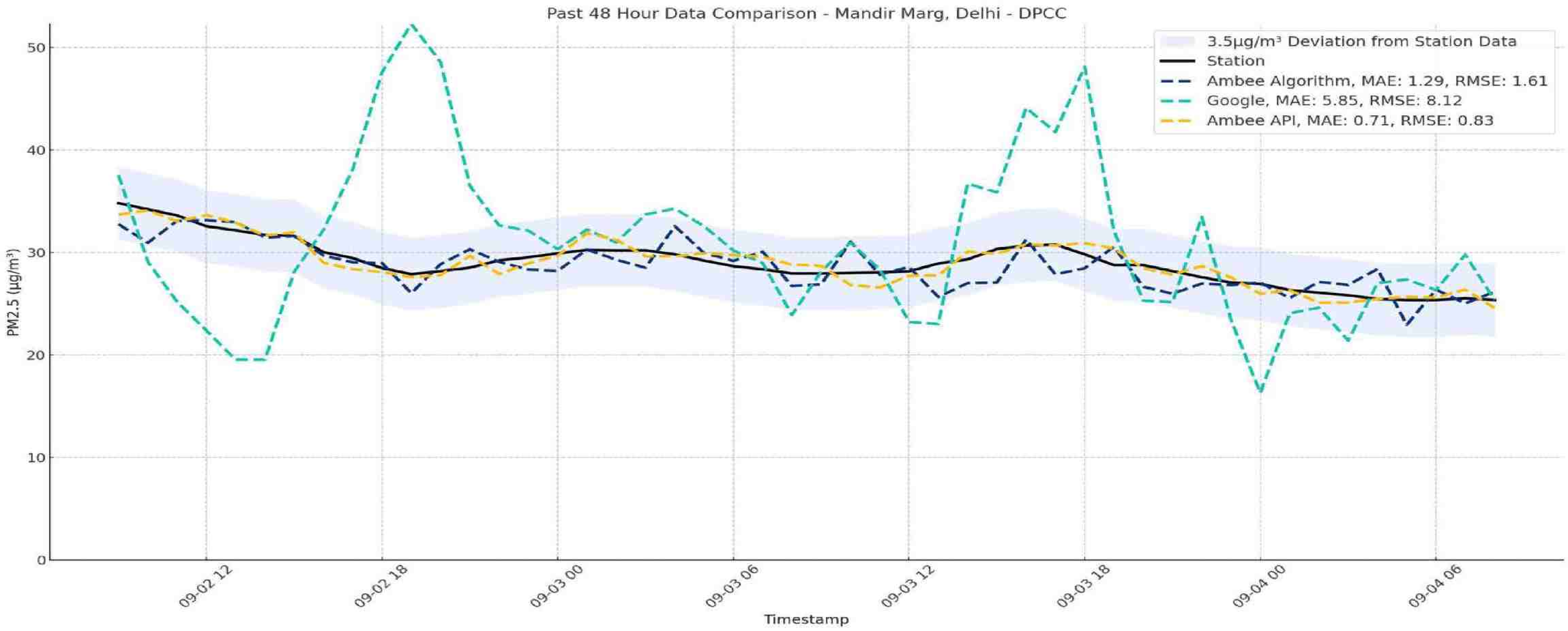


EXHIBIT 53.1 | *Accuracy comparison between Ambee's live AQ and Google in New Delhi from 2nd to 4th September 2024*

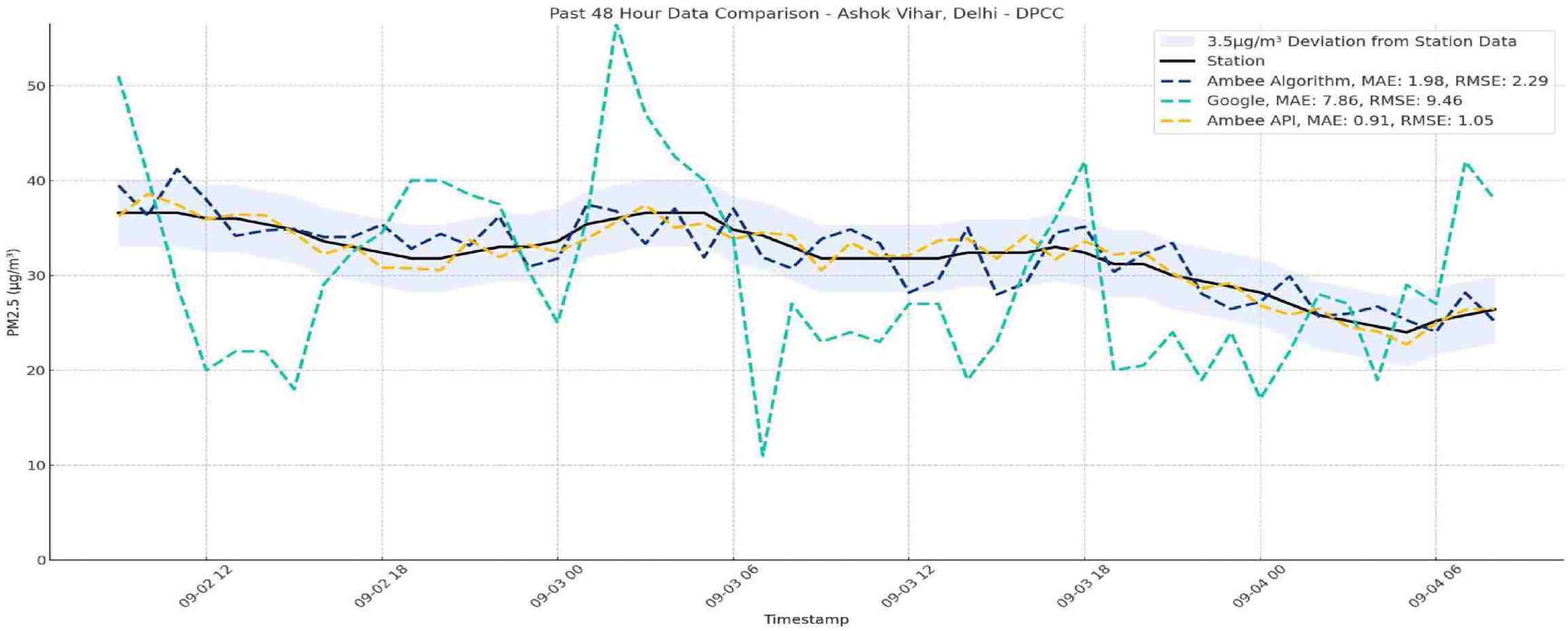


EXHIBIT 53.2 | *Accuracy comparison between Ambee's live AQ and Google in New Delhi from 2nd to 4th September 2024*

Comparing Ambee's live AQ: ASIA - Bangalore, India (1) LIVE

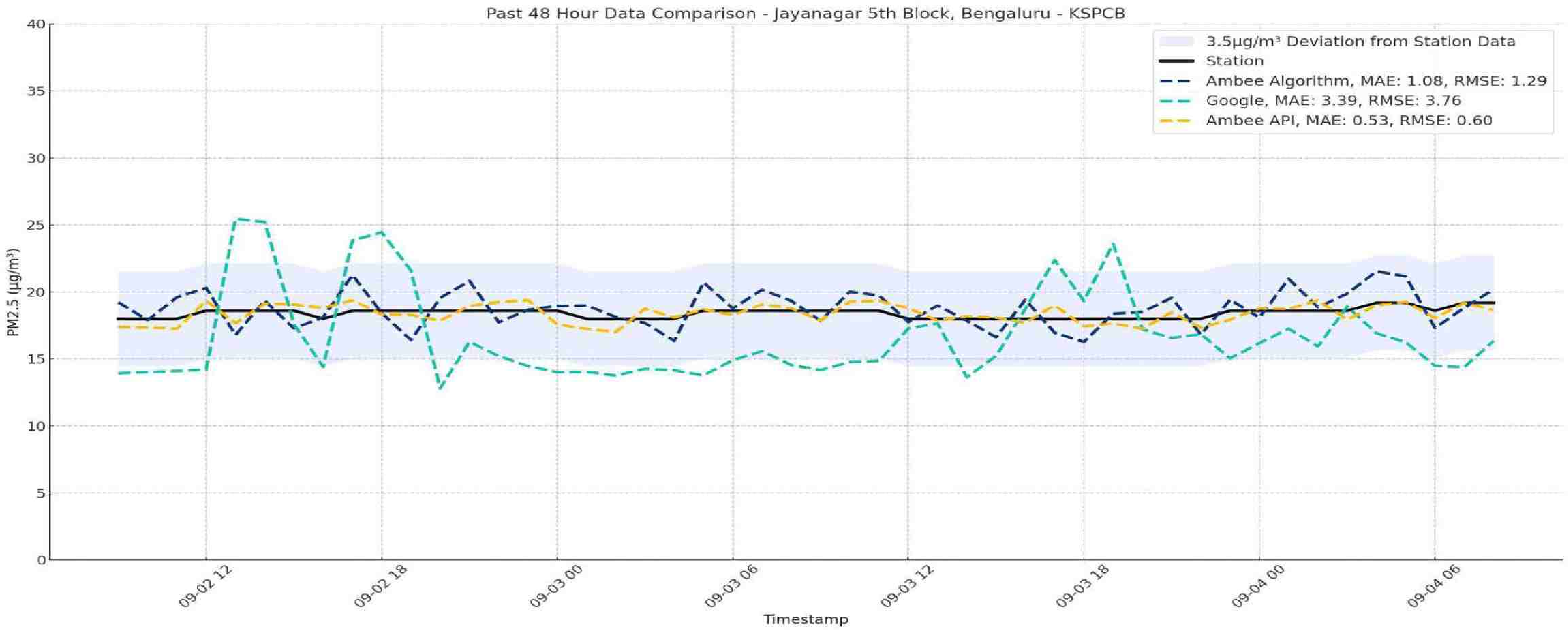


EXHIBIT 54.1 | *Accuracy comparison between Ambee's live AQ and Google in Bangalore from 2nd to 4th September 2024*

Comparing Ambee's live AQ: ASIA - Bangalore, India (2) LIVE

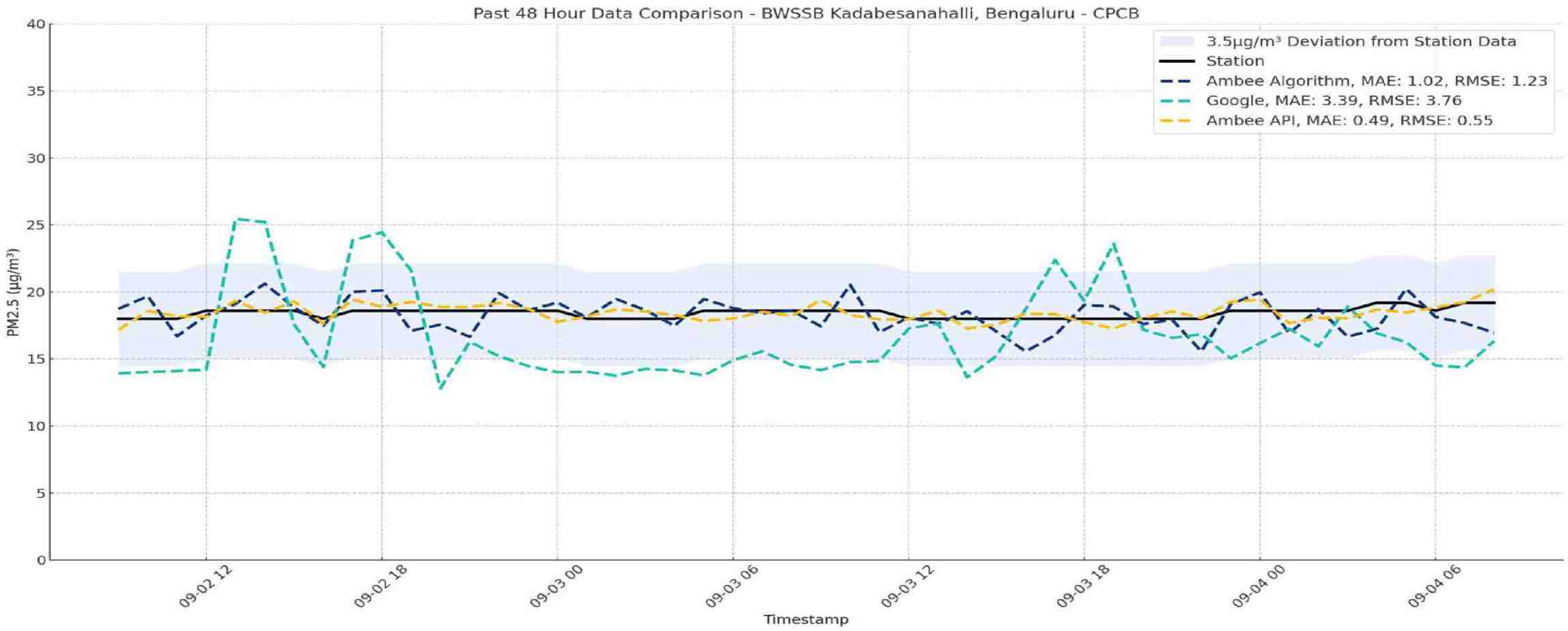


EXHIBIT 54.2 | *Accuracy comparison between Ambee's live AQ and Google in Bangalore from 2nd to 4th September 2024*

Comparing Ambee's live AQ: ASIA - Mumbai, India (1) LIVE

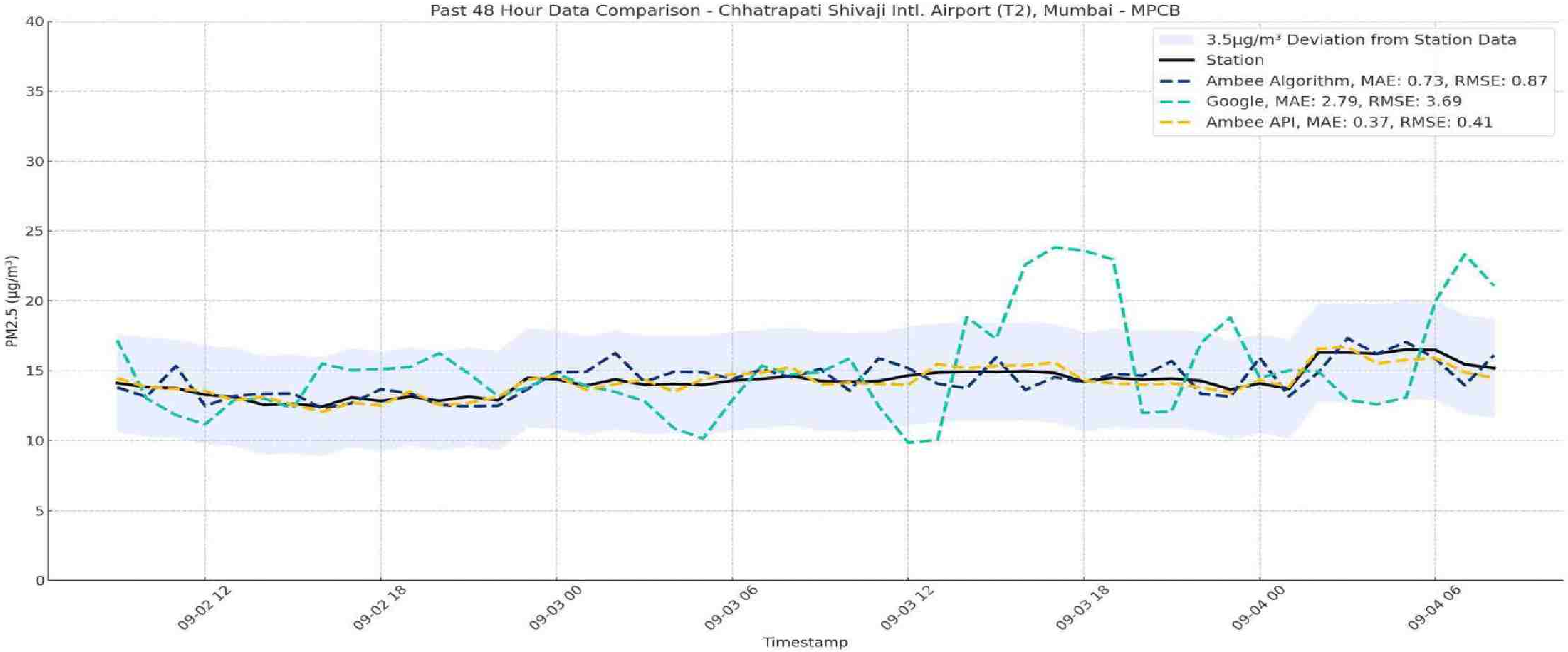


EXHIBIT 55.1 | *Accuracy comparison between Ambee's live AQ and Google in Mumbai from 2nd to 4th September 2024*

Comparing Ambee live AQ v. Google: ASIA - Mumbai, India (2) LIVE

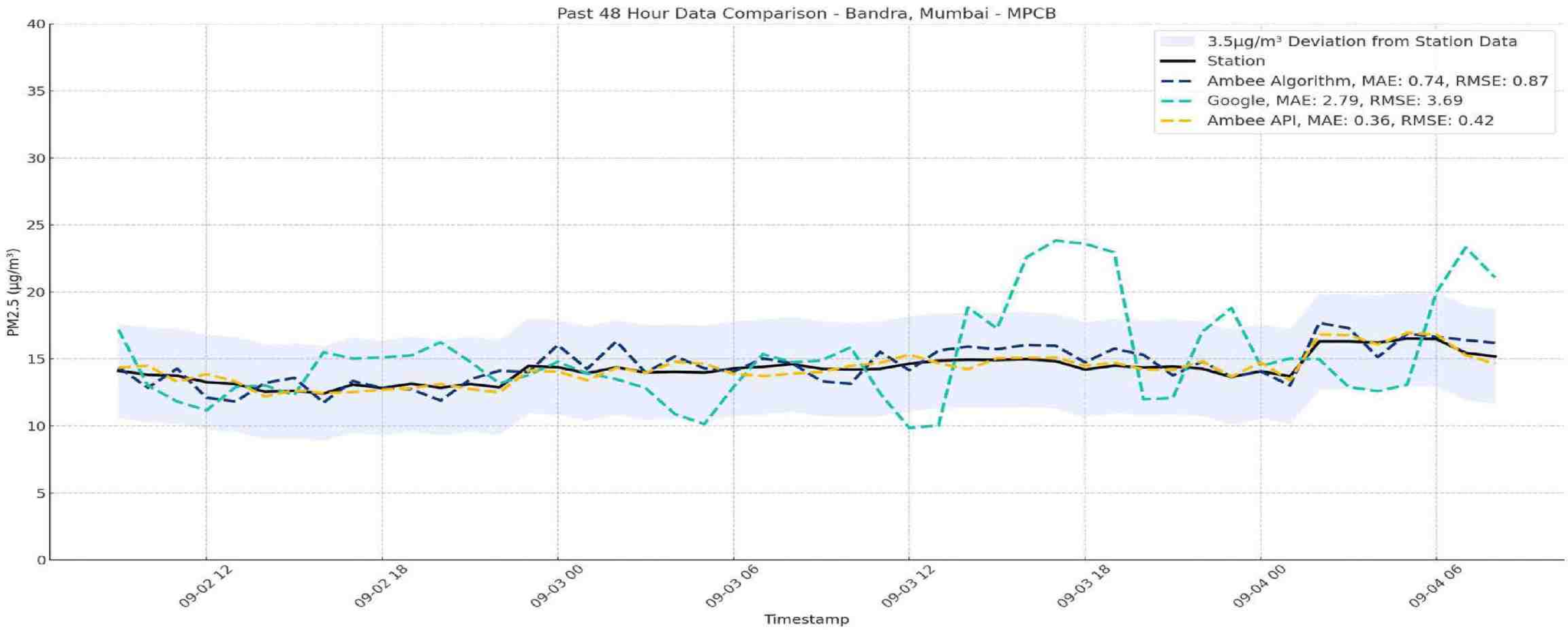


EXHIBIT 55.2 | *Accuracy comparison between Ambee's live AQ and Google in Mumbai from 2nd to 4th September 2024*

Comparing Ambee's live AQ: ASIA - Tokyo, Japan LIVE

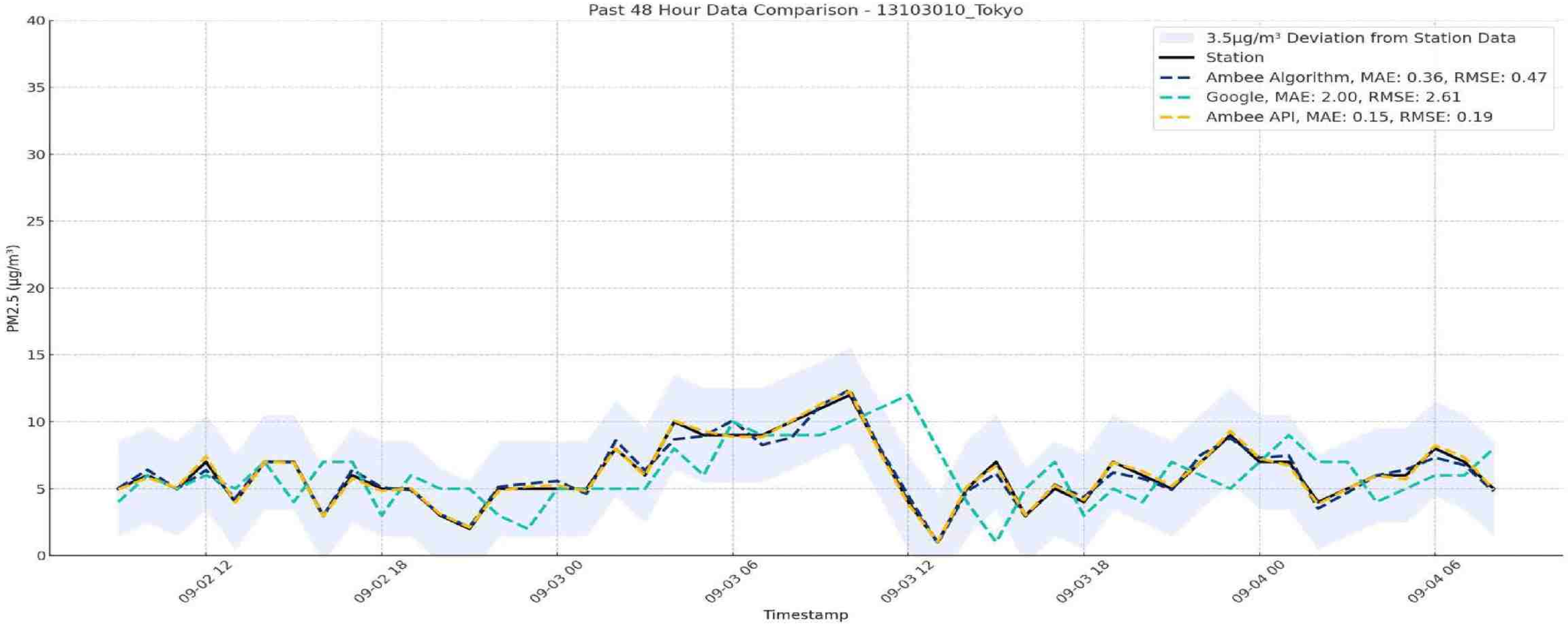


EXHIBIT 56 | *Accuracy comparison between Ambee's live AQ and Google in Tokyo from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: USA - Alamo Lake, Arizona FORECAST

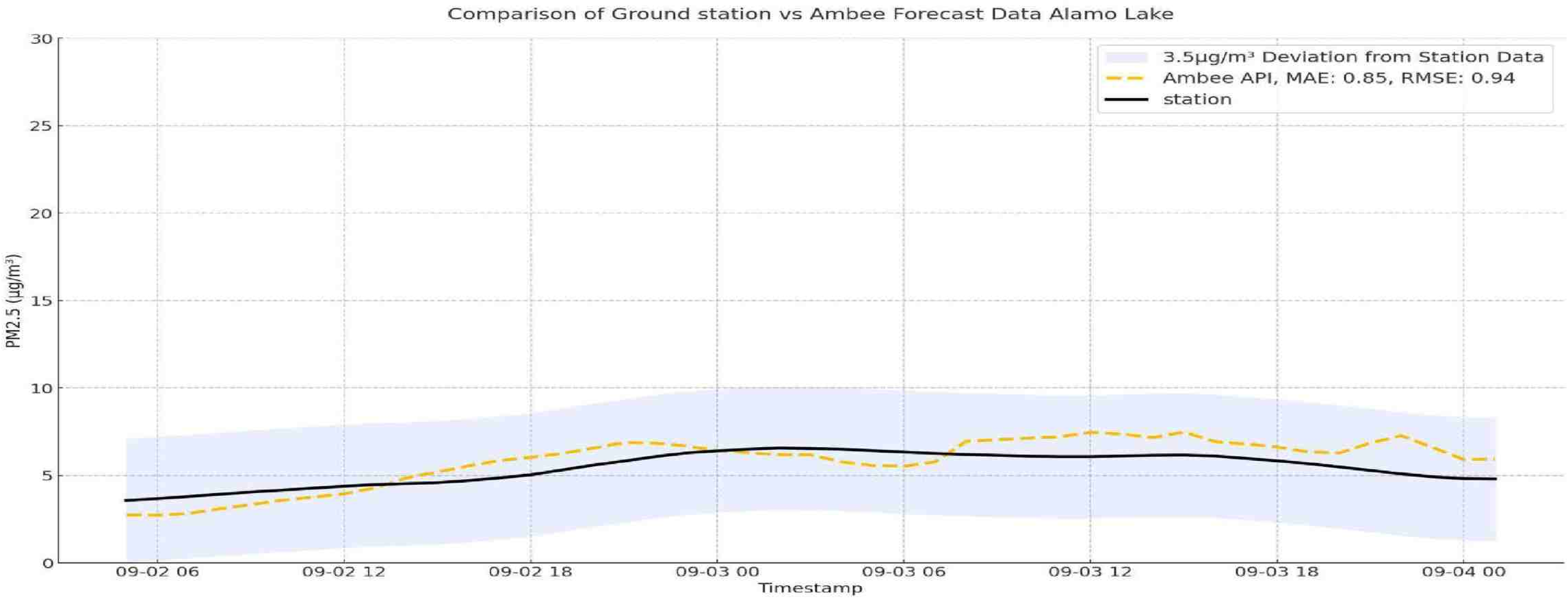


EXHIBIT 57 | *Ambee forecast AQ v. ground station in Alamo Lake from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: USA - Chehalis, Washington FORECAST

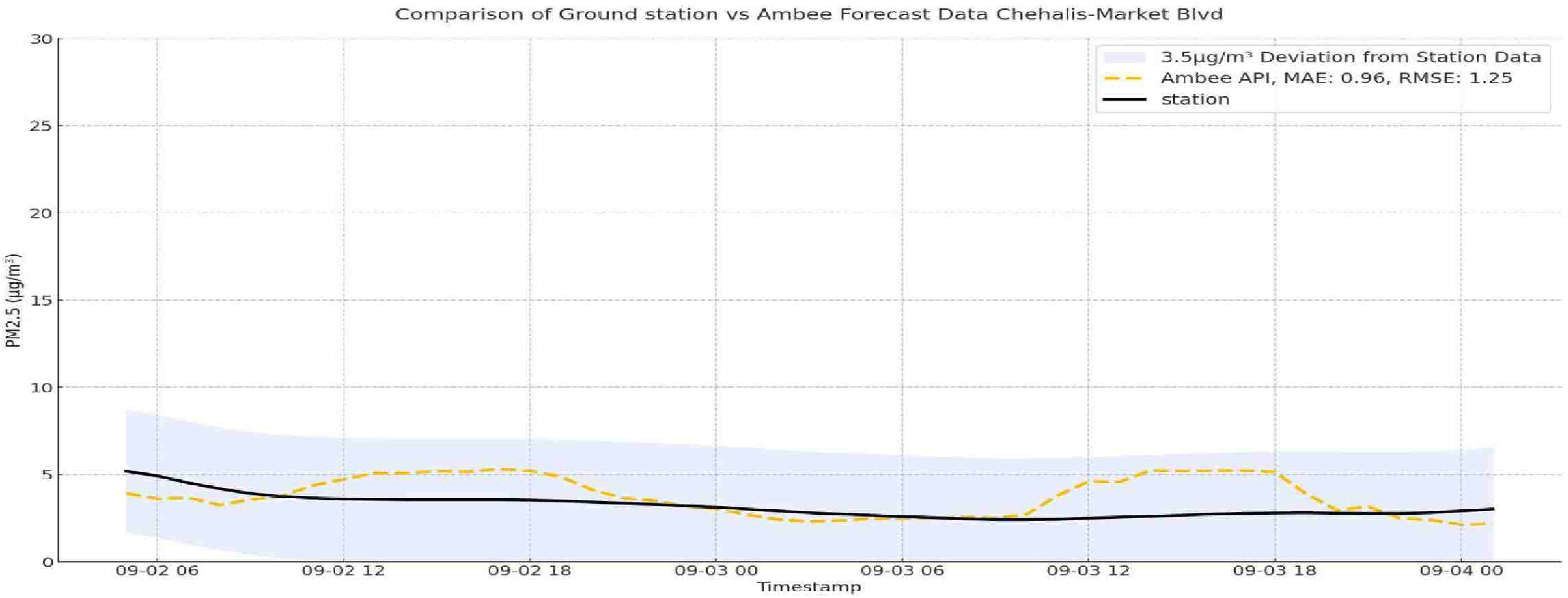


EXHIBIT 58 | *Ambee forecast AQ v. ground station in Chehalis from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: EUR - Kungsgatan, Sweden FORECAST

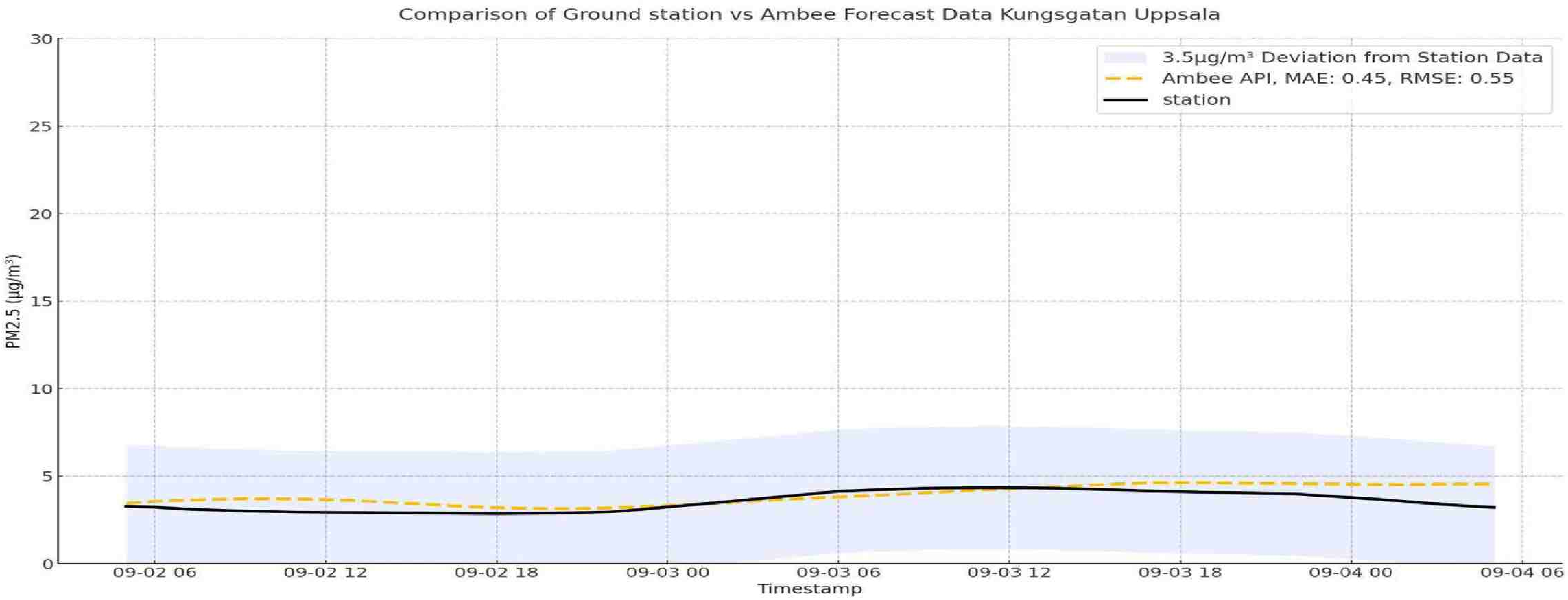


EXHIBIT 59 | *Ambee forecast AQ v. ground station in Kungsgatan from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: EUR - Eriksgatan, Sweden FORECAST

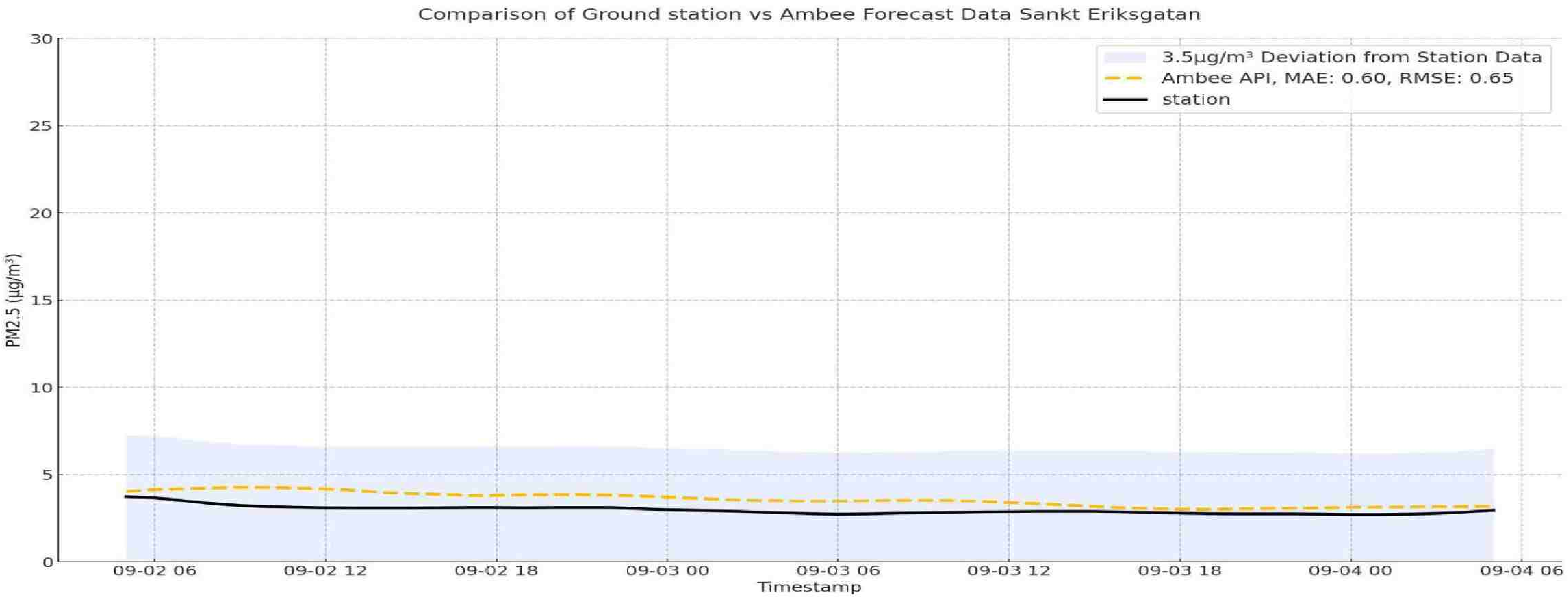


EXHIBIT 60 | *Ambee forecast AQ v. ground station in Eriksgatan from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground-station: EUR - Hornsgatan, Sweden FORECAST

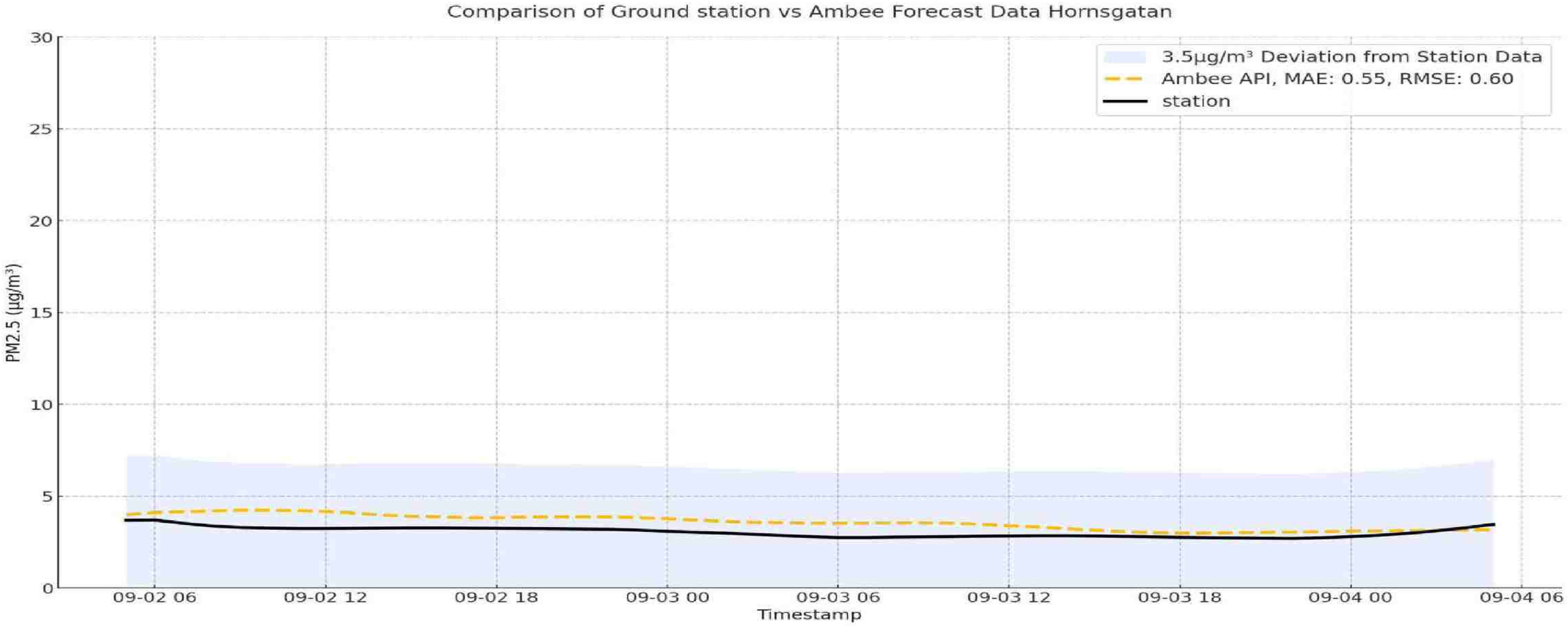


EXHIBIT 61 | *Ambee forecast AQ v. ground station in Hornsgatan from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: EUR - Aylesford, England FORECAST

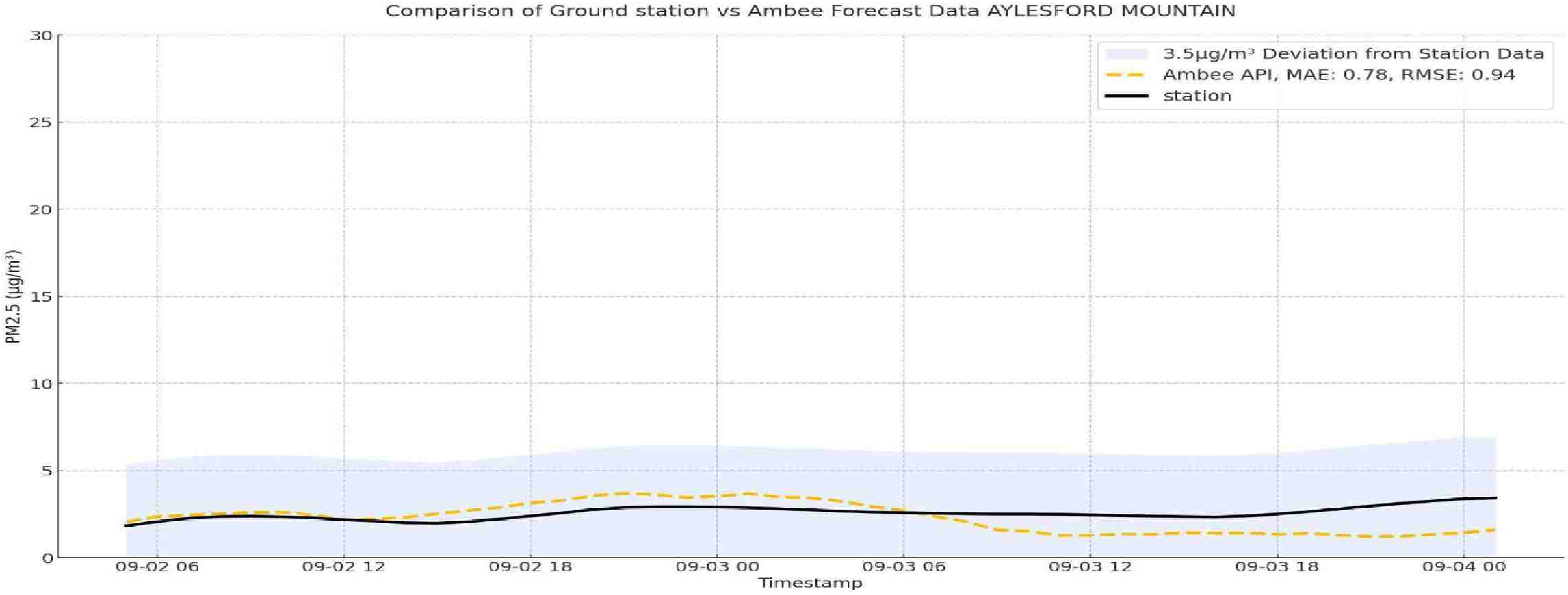


EXHIBIT 62 | *Ambee forecast AQ v. ground station in Aylesford from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: EUR - St Albans, England FORECAST

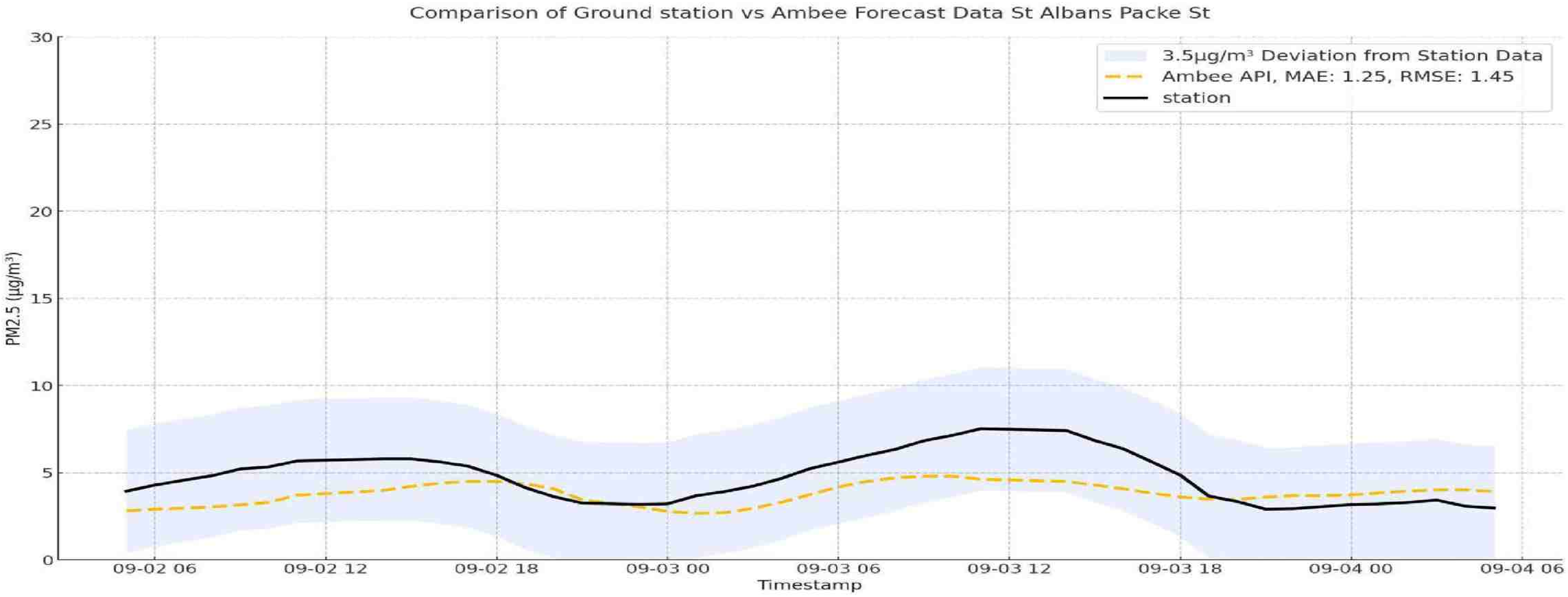


EXHIBIT 63 | *Ambee forecast AQ v. ground station in St Albans from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: EUR - Aberdeen, Scotland FORECAST

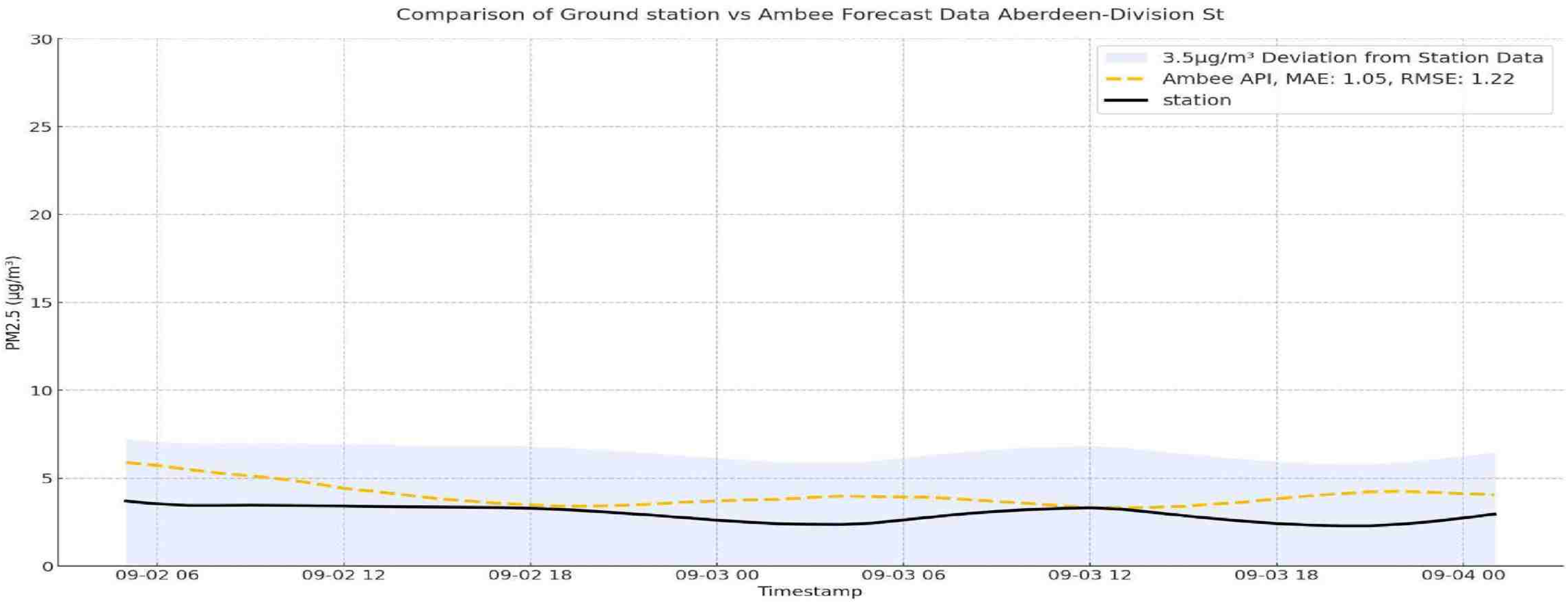


EXHIBIT 64 | *Ambee forecast AQ v. ground station in Aberdeen from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: AUS - Cairns, Queensland FORECAST

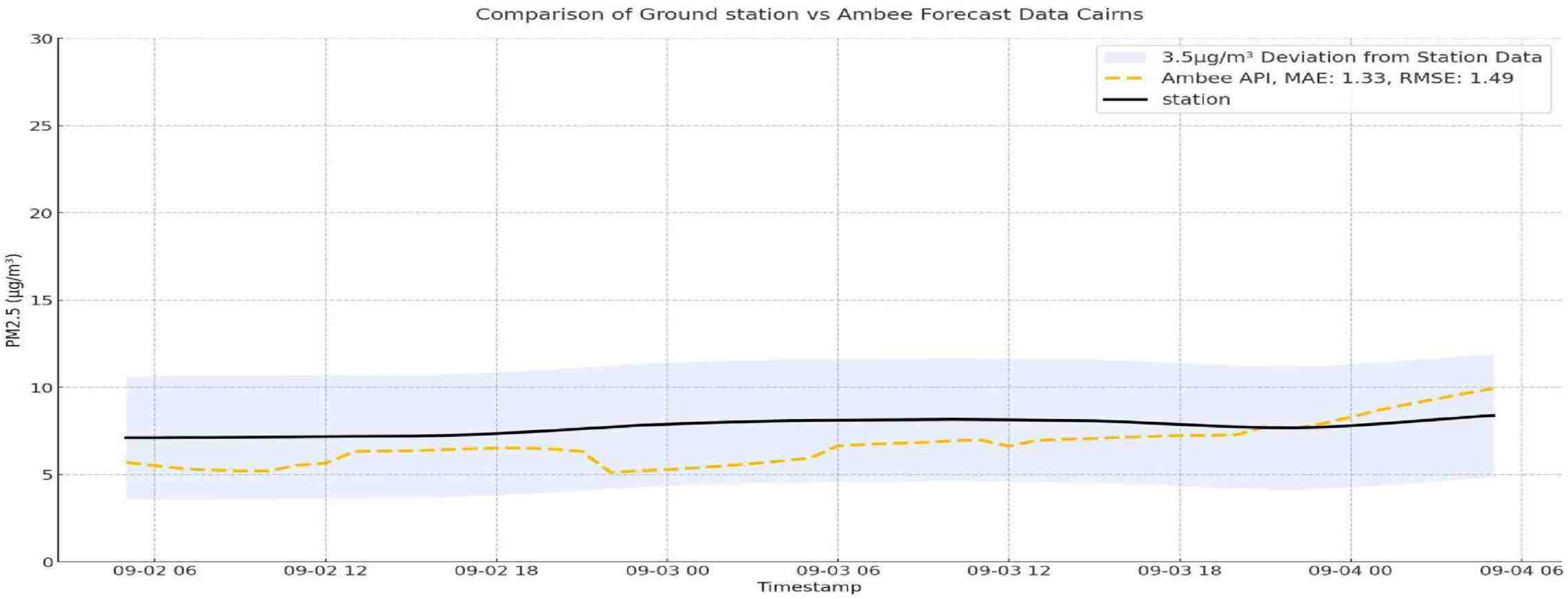


EXHIBIT 65 | *Ambee forecast AQ v. ground station in Cairns from 2nd to 4th September 2024*

Benchmarking Ambee's AQ forecast v. ground station: AUS - Kalgoorlie, Western Australia FORECAST

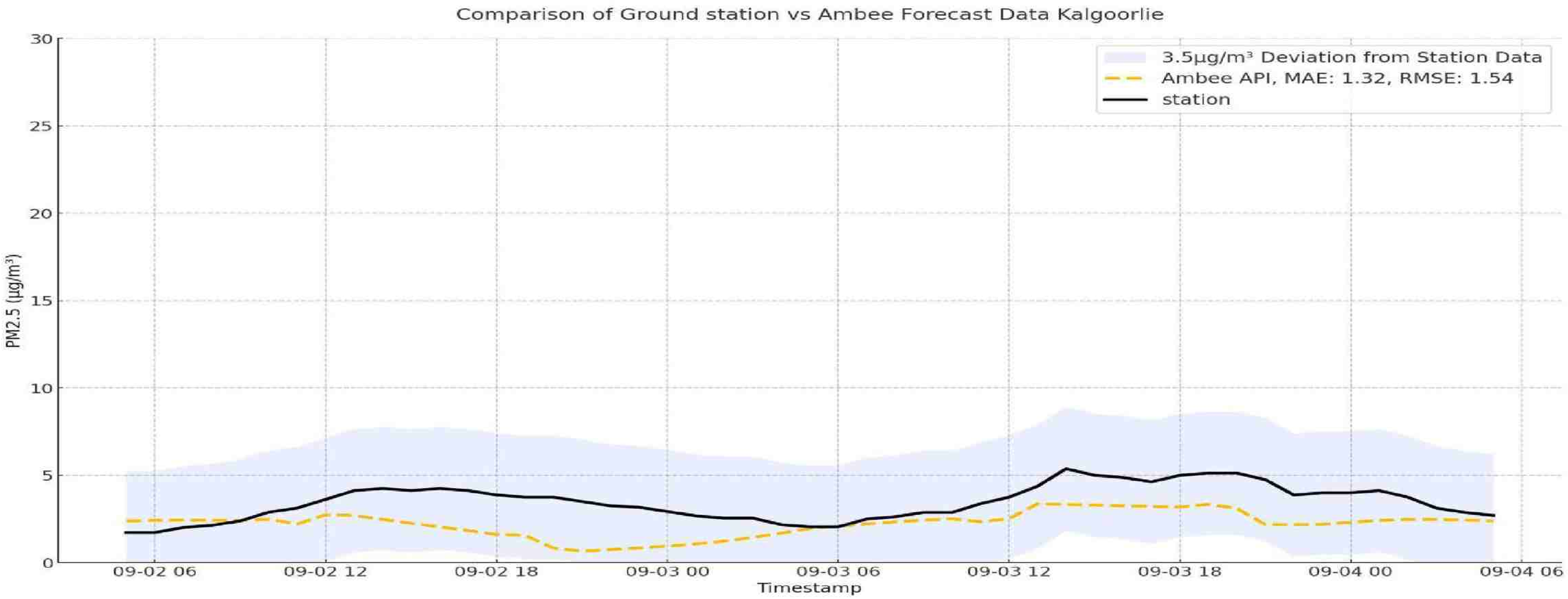


EXHIBIT 66 | *Ambee forecast AQ v. ground station in Kalgoorlie from 2nd to 4th September 2024*

Questions?
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API documentation

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