



HawaDawa

The future of air quality management

Hawa Dawa (hauā' dauā'): Air Quality, Air Medicine

BROUGHT TOGETHER BY CONVICTION

„With my brother suffering from asthma and both my parents doctors specializing in lung diseases, the importance of air quality became so apparent to me that I wanted to create immediate change.“

- Karim Tarraf • CEO & Co-Founder



AIR QUALITY DATA INADEQUACY

Cities and governmental agencies administer legacy hardware assets essentially for threshold monitoring only, and no serious insights - such as correlating air quality with traffic, health, or socio-economic data - can be and is being gained from big data right now.

Lower cost sensors and mobile sensors promise better coverage, but fall short of regulatory requirements for accuracy.



THE FUTURE OF AIR QUALITY MONITORING IS REGULATORY GRADE ACCURACY AT-SCALE

Hawa Dawa offers a unique approach by using hybrid networks. Few very reference devices will be reinforced by many IoT devices enabling the network to measure extremely accurately as well as to cover huge areas.

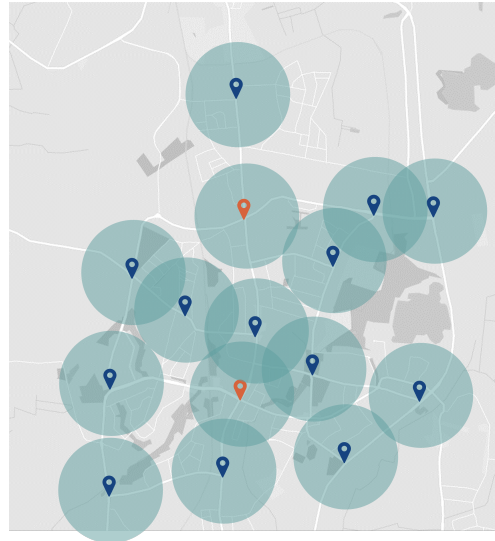
OLD APPROACH

Only few reference devices with low resolution



FUTURE APPROACH

Hybrid networks with high resolution



REGULATORY-GRADE SENSOR NETWORKS

PM10

„Comparison with the gravimetric reference measurement methods results in a relative measurement uncertainty of approximately 22% for suspended particulate matter PM₁₀. Therefore the identified measurement uncertainty of the low cost measuring devices even fulfills the requirements for fixed measurements.“



TUV SUD
Industrie Service

Testing of low-cost devices for air quality measurements from Hawa Dawa GmbH

Measurement parameters for traffic-related immissions of suspended particulate matter PM₁₀, PM_{2.5} and nitrogen dioxide (NO₂)

Report number: 3441527-AB
Client: Hawa Dawa GmbH
Golzinger Strasse 8
81371 Munich
Order date: 29/04/2021 by email from
Chief Product Officer (CPO)
Frank Felten
Investigated object: Low-cost devices for air quality measurements
from Hawa Dawa GmbH
Type of investigation: Evaluation and assessment of comparative
measurements with suitability-tested and quality-
assured air quality measuring equipment
Project team: Wolfgang Angelkötter Phone: +49 89 32950-520
Hans-Jörg Eisenberger Fax: +49 89 32950-530

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SWISS

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NordAllianz

DATA INSIGHTS

Data Insights for easy integration, combination, contextualization and sharing of air quality data and data-driven insights so that air quality managers, practitioners, modellers, traffic operators, researchers, citizens and journalists get the actionable insights they need.



Case study



Landeshauptstadt
Mainz



MAINZER
STADTWERKE



Rheinland-Pfalz

LANDESAMT FÜR UMWELT



CASE STUDY



Landeshauptstadt
Mainz



Rheinland-Pfalz
LANDESAMT FÜR UMWELT



Key Facts

City: Mainz

Area: 98 km²

Target coverage: 25% (inner city)

Total: 10 measuring points

Description

- Installing a sensor network of air quality & traffic sensors in key problem areas
- Integration of more than 60 different data sources on air quality, traffic & weather
- Analyzing data and proposing key adjustments to traffic measures to maximize ecological output
- Spatial & temporal forecasting service



CASE STUDY



Landeshauptstadt
Mainz



Rheinland-Pfalz
LANDESAMT FÜR UMWELT

DATA EXPORT

Station Type

Hawa Dawa × NOx Collector × Official ×
Weather Station × Traffic Counter ×
Point of Interest ×

Station Name

Ballyhackamore ×
Ballyhackamore/Upper Newtownards Road ×
POI: Hospital - Belfast City Hospital ×
POI: Playground - way/146343387 ×
POI: School - Fane Street Primary School ×
POI: Supermarket - way/134752436 ×
Westlink/Roden Street ×

Select Time Period

2022-03-28 - 2022-03-29

< März 2022 >

Mo	Di	Mi	Do	Fr	Sa	So
28	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

Granularity

Hourly

File Type

Excel (XLSX)

Get Customized Data



Download



CASE STUDY



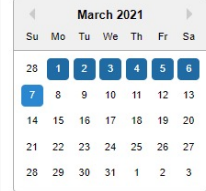
Landeshauptstadt
Mainz



Rheinland-Pfalz
LANDESAMT FÜR UMWELT

VERKEHRSBERICHTE

Zeitraum



Anleitung

1. Wähle einen Zeitraum.
2. Wähle den gewünschten Verkehrssensor.
3. Optional: Wähle einen geeigneten Luftqualitätssensor.

Verkehrssensor

BERNARD Mobility Analyser MA01, Parcusstr.

Intervall

Stündlich

Verkehrsstrom

Alle Verkehrsströme

Fahrspur

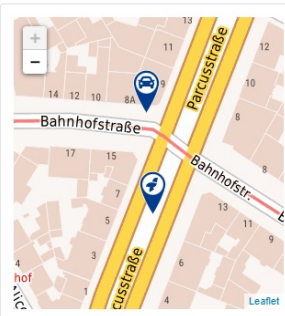
Alle

Fahrzeugtyp

Alle

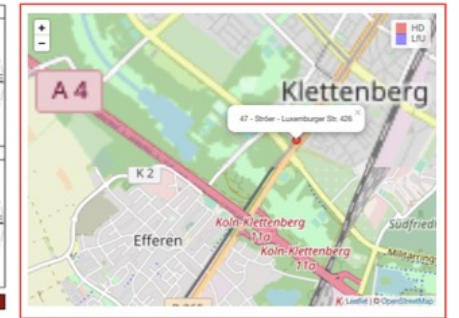
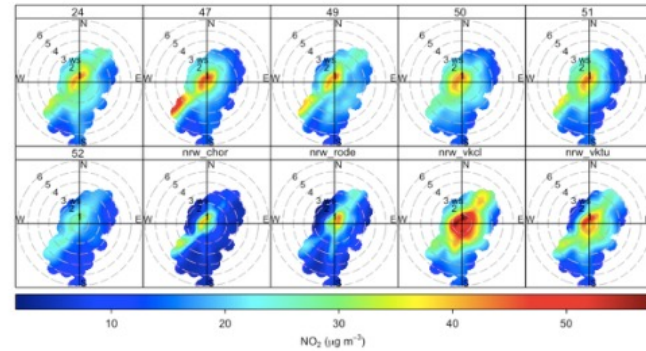
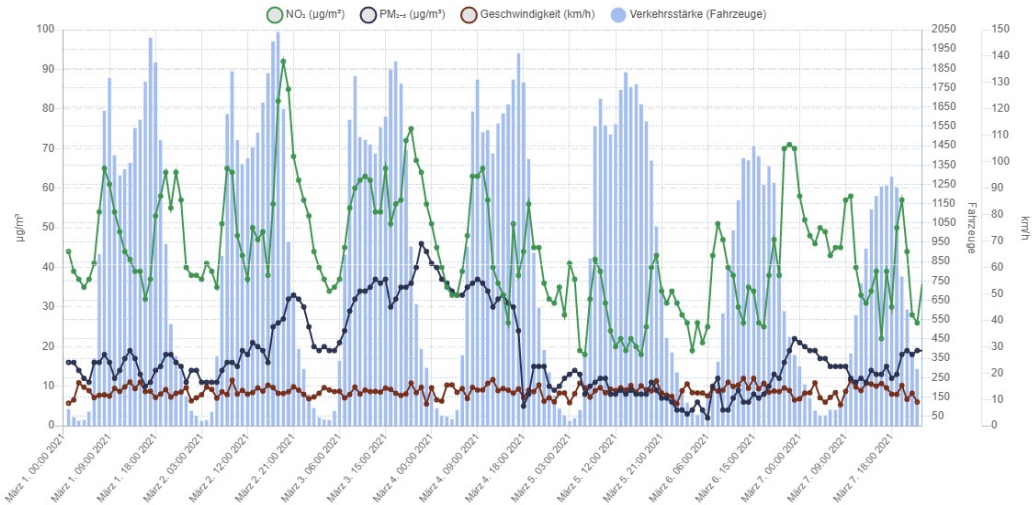
Luftqualitätssensor

Parcusstr. (HD)



Individuelle Daten sichern

Laden





Case Study



Department of
Health

www.health-ni.gov.uk



Department for the
Economy

www.economy-ni.gov.uk



CASE STUDY



Health information via public screens, ozone telephone

Target group:

Citizens, tourists, at-risk groups (cardiovascular, asthma, COPD)

Added value:

Citizen service, health protection and prevention

Characteristics:

- Integration of data points on population density, health indicators, medical purchases relevant for diabetes and asthma on a postal code scale together with city-owned NO₂ data.
- Mapping historic & averaged exposure risks for myriad of POIs: clinics, schools, playgrounds for urban health planners
- Display of a current exposure index for asthmatics and COPD patients (similar to a traffic light, current average/reduced/increased risk)
- COVID Health Risk index

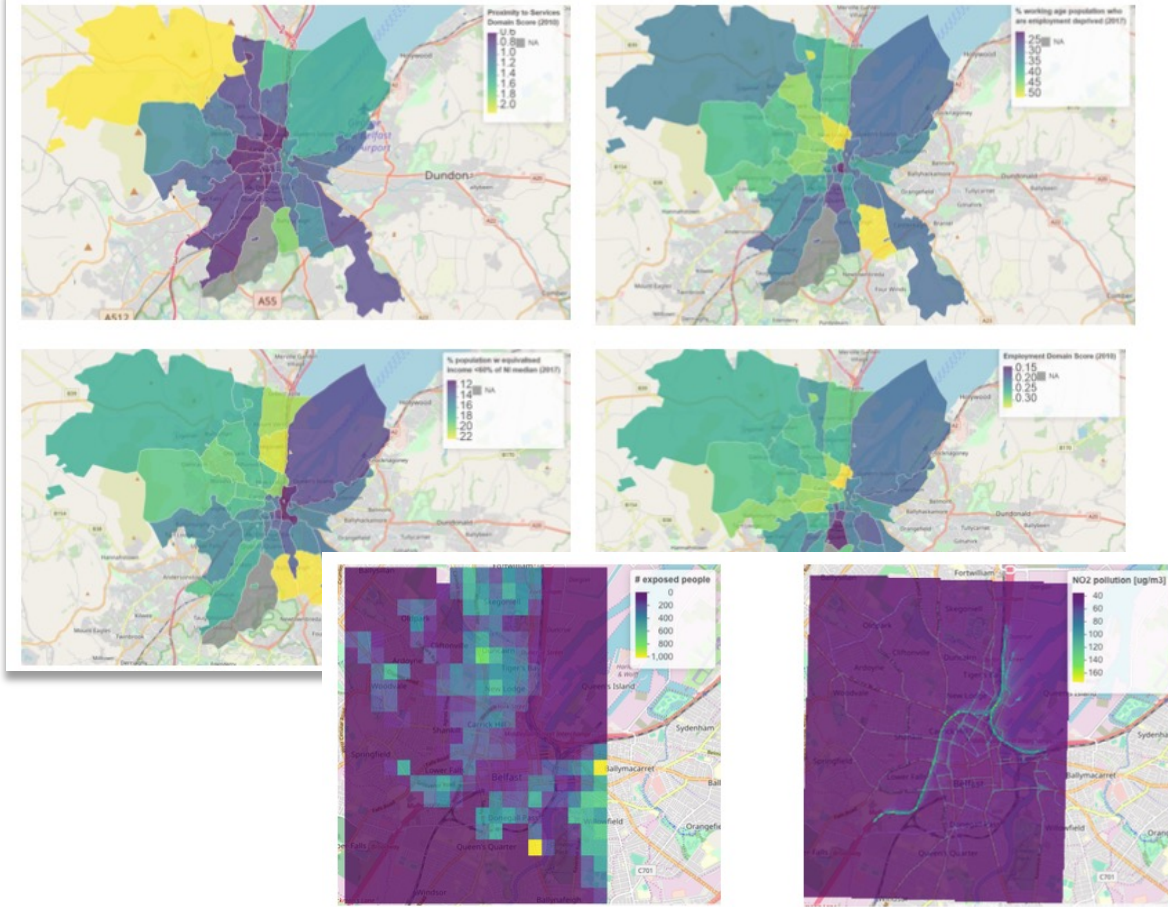


Figure 1. Heatmap displaying the number of people exposed to more than 40 $\mu\text{g}/\text{m}^3$ at that hour.



CASE STUDY



NO2 pollution at schools - timeseries

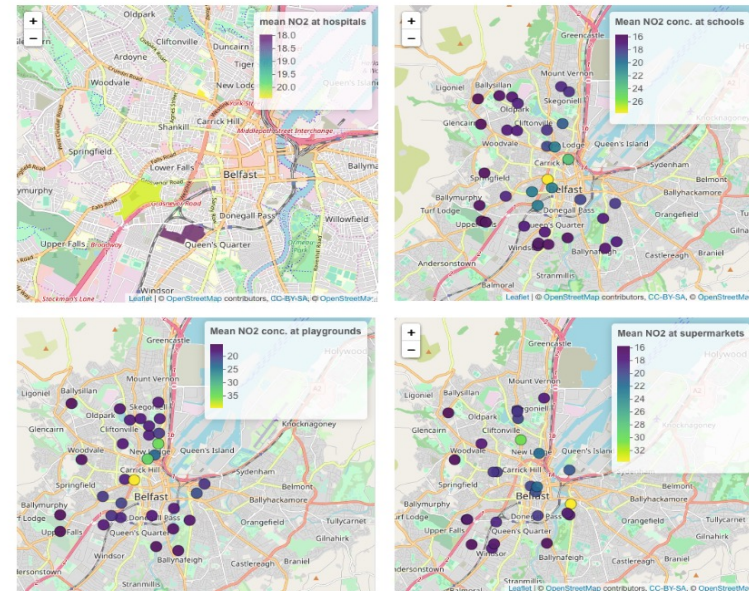


Figure 5. Average NO₂ concentrations for different points of interest. Top left: hospitals, top right: schools, bottom left: playgrounds, bottom right: supermarkets



OUTLOOK

Our next steps

- Provide sensor network for a pilot deployment to test and demonstrate accuracy.
- Assess the possibility of using regulatory grade sensors network to enhance existing monitoring to cover air pollution blind spots.
- Our system can be deployed at random roadside locations, schools, hospitals, playgrounds, etc. & can be powered by a simple small solar power.



Thank you!

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