Bundesministerium
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SmartAQnet

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Das Startkapital für die Mobilität 4.0

Project consortium SmartAQnet – Aerosol Akademie

Newsletter SmartAQnet

May 2018




Newsletter May 18
Smart Air Quality Network

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Aerosol Akademie

WP 5: Data oriented dissemination and application

- Partner Aerosol Akademie attended the GRIMM annual meeting with technicians and scientists at Bad Reichenhall on 15th of April 2018 (see https://twitter.com/AerosolAkademie/status/986609224519159808).
- Partner Aerosol Akademie prepared a project leaflet. The leaflet will be soon available as PDF on the website; furthermore partner Aerosol Akademie can send out a hardcopy (please let AA (mailto: sh@aerosol-akademie.de) know, how many leaflets you need.
- In collaboration with all project partners, AA organized the first workshop for external partners. The workshop, which took place 07th May 2018 at the WZU Augsburg, was intended to associate partners at Augsburg, mainly official authorities in and around Augsburg. The aim was to inform these partners about our project, to allay fears related to our PM-measurements and to get personally in contact with the responsible person in charge. Furthermore, the consortium wanted to involve these partners in the project by providing data for our modelling on the one hand and on the other hand the consortium can as well provide e. g. information and PM-maps based on our modelling.
  Please find enclosed some impressions from the workshop:

Figure 1: Josef Cyrys within his presentation about the history of (medical) research at Augsburg (Picture Aerosol Akademie)

Figure 2: Matthias Budde presenting the project SmartAQnet

Figure 3: Open discussion at the workshop

GRIMM

WP 2: Data collection / Devices

Intercomparison at Chengdu University started in End of April

The 3rd intercomparison measurement point for the scientific scouts (EDM80NEPH) was put into operation on 27th of April (5 x EDM80NEPH and 1 x EDM164 reference).

The measurement field at Chengdu University (China) was identified in end of 2017 as a helpful region for testing field calibration and performance of the scientific scouts. High particle concentrations (mean values > 100 µg/m³ PM10) and dynamics in meteorology provide a good background for validation. Further instrumentation of the University (dust monitoring, meteorology) will complement the comparison of the devices by further reference data.

Thanks to our cooperation partners at University of Chengdu and the personal support of Dr. Klaus Schäfer who made the contact.

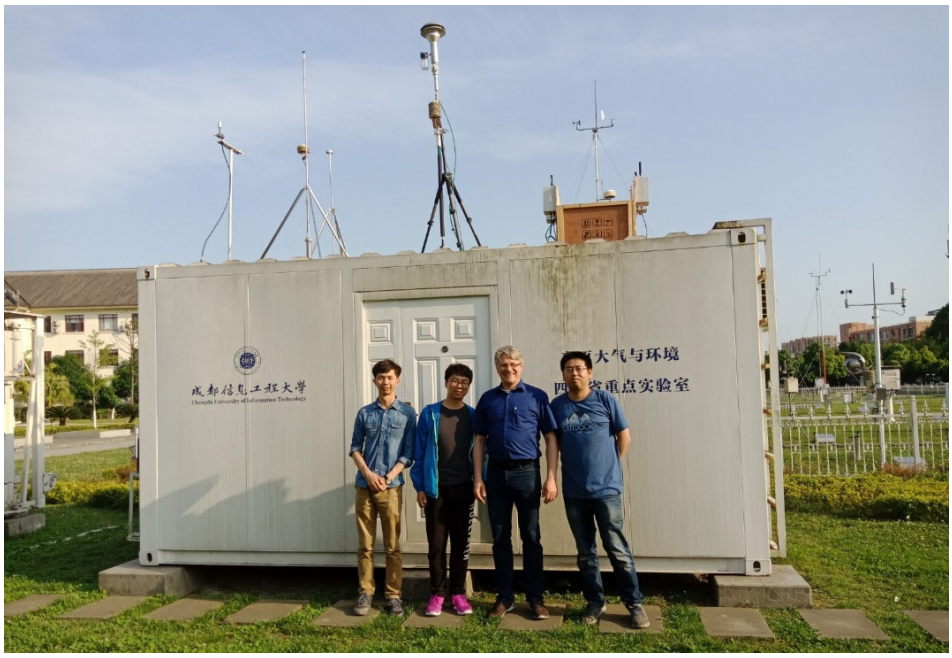

Figure 4 Student n.n. (University of Chengdu), Dr. Ping Kang (University of Chengdu), Volker Ziegler (GRIMM), Yinsong Zhang (GRIMM) at measurement site Chengdu/China (from left to right; Picture GRIMM)

Figure 5: Similar to the intercomparison setup at Augsburg measurement site the installation at Chengdu was carried out (Picture: GRIMM)

WP 5: Data oriented dissemination and application

At Bad Reichenhall on 15th of April 2018, Volker Ziegler and Dr. Markus Pesch presented Smart Air Quality Net project and the development process of the scientific scouts to partners and customers of GRIMM Company. As a part of the annual meeting with technicians and scientists of official and non-governmental dust monitoring networks, new data driven approaches for a smart measurement network have been discussed. Further partners of SmartAQnet from Helmholtz Zentrum München and Aerosol Akademie participated in the conference as well.

Figure 6: Dr. Markus Pesch (left) and Volker Ziegler (right) presented an overview about the actual progress in the project SmartAQnet (Picture GRIMM)

Volker Ziegler presented *SmartAQnet* to members of the Department of Environment (Government of Nepal) at Kathmandu on 25th of April 2018.

Helmholtz – CMA and EPI

WP 1: Data mining / Campaigns

Preparation of measurement campaigns:

- Discussion about the principal requirements for installation of five Scientific Scouts (EDM80NEPH) at network monitoring sites and two EDM 164 (first stage of city-measurements, start in May/June 2018)
- Definition of SOPs for searching of location for the additional sampling sites (IOM planned in September/October 2018)
- Meeting with GRIMM about documents and SOPs from earlier study (ESCAPE), describing guidelines for urban measurements and location of devices

Reference measurement station

- On the measurement station, the following aethalometers were installed (loan from HMGU CMA):
    - Second, twin MAGEE AE33 aethalometer,
    - Two portable microAeth® MA200 aethalometers.
- Preparation of automated script for fetching the LFU data (PM10 hourly mass concentrations) from four network-sampling sites in Augsburg (LfU, Königsplatz, Bourges-Platz and Karlstraße) are being queried daily, earlier this has been done manually. Database is complete from 19th February.
- Ongoing comparison of the LÜB (Lufthygienisches Landesüberwachungssystem Bayern) data with the data from the reference site.
- Validation of the reference site data

KIT/IMK-IFU

WP 3: Data aggregation and analyses

Ulrich Uhrner from Technische Universität Graz is included in the project work to develop an emission inventory: discussion of necessary geo data and household heating data from Schornsteinfegerinnung.

WP 5: Data oriented dissemination and application

Preparation of a phone conference on 02nd May to prepare the regional workshop on 07th May: partnership with Ulrich Uhrner, Technical University Graz and Nicolas Moussiopoulos, Aristoteles University Thessaloniki, draft presentations.

KIT-TECO

WP 3: Data aggregation and analyses

For the Fraunhofer OpenSource SensorThings Server (FROST-Server: https://www.iosb.fraunhofer.de/servlet/is/80113/), TECO has programmed a new feature that allows users to set defined IDs. The code has been integrated into the main development thread of FROST.

TECO uses the FROST server for its Big Data infrastructure. SensorThings is standardized by the OGC (http://www.opengeospatial.org/standards/sensorthings). FROST is the first open source implementation of this standard – which has been certified by the OGC – and it allows to aggregate large amounts of data from measurement networks with high diversity (keyword: IoT).

Further Information

The new “Earth System Knowledge Platform” (ESKP) special “Metropolises under pressure" is ready and online available (see https://themenspezial.eskp.de/metropolen-unter-druck). The online dossier deals with the development of Megacities, the urban climate and the quality of life, the question of resources and the threat of natural hazards. In addition, current options for increasing the resilience of cities are shown. Scientists from various Helmholtz centers participated in the development. In addition to KIT, HZG (Climate Service Centers Germany, GERICS), UFZ and DLR also participated. However, most of the articles for this dossier were created at KIT (16 of 33 articles are from the KIT).

Uni Augsburg

WP 1: Data mining/Campaigns

- News from our workshop: The new laser cutter was put into operation after initial software problems. Hereby parts for our aircraft construction can be cut precisely. The first X6 shell is completed. Here, the entire measuring devices and the flight controller will be installed.
  A new sensor box for the copter has been designed. Now one of the propellers is used for the ventilation of the sensors. Test flights still have to be made.
- Since 07th May 2018, we have an ascent permission for flights up to 1000 m for our operational flights on the sports grounds of the University of Augsburg.

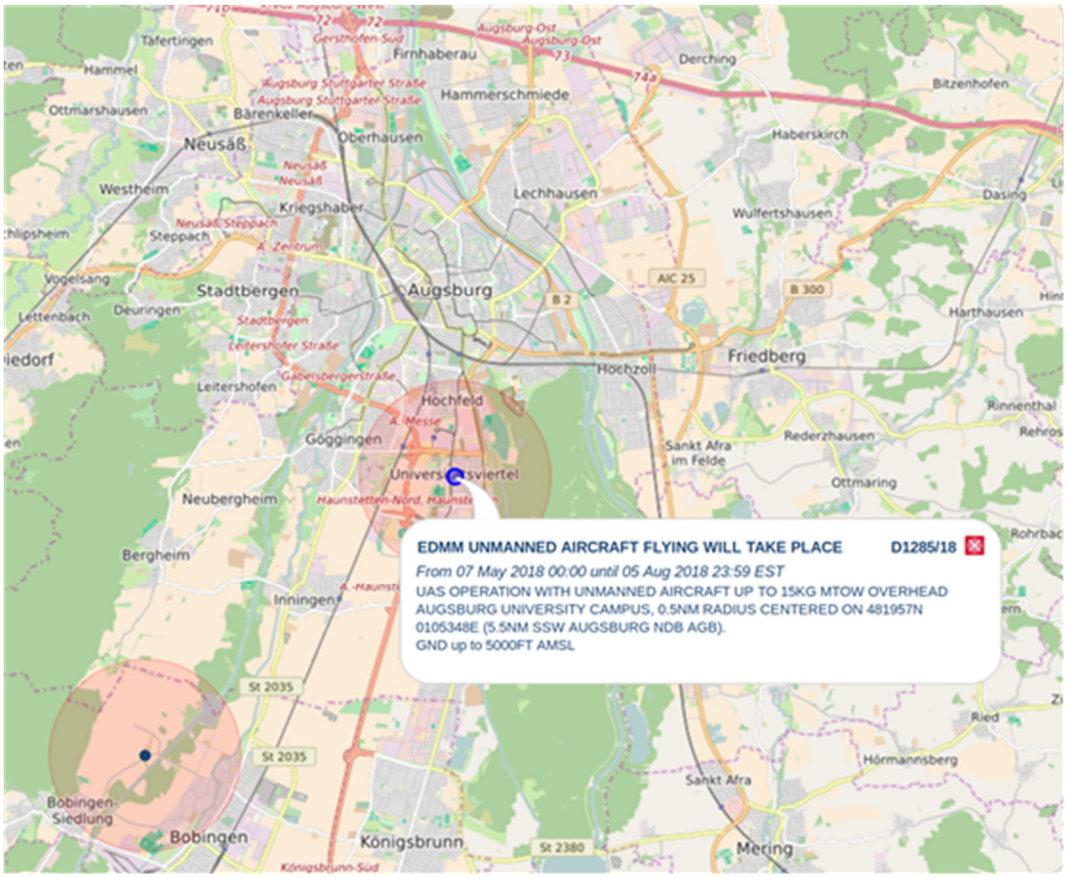

Figure 7: Map showing the flight zones of the unmanned aircrafts of the University Augsburg

WP5: Data oriented dissemination and application

- Participation in the EGU General Assembly 2018 (04/09. – 04/13/2018 in Vienna). Exhibition of two posters concerning the *SmartAQnet* project (see Newsletter 4).
- Participation in the meeting Climate Aerosol and Health (KAG) and Augsburg Aerosol Research on 2nd May 2018 in Augsburg. Here also the project *SmartAQnet* was discussed.
- Presentation of our working group and the *SmartAQnet* project at the Long Night of Science on 05th May 2018 in Augsburg. Here, various particulate matter sensors, various UAV models, and the associated software were demonstrated. A photo and video presentation and two posters have been presented.

Figure 8: Picture taken at the Long Night of Science in Augsburg

- Participation in the SmartAQnet workshop on 07th May 2018 in Augsburg. For this purpose, two talks to the planning state of the measuring network in Augsburg were prepared.