**FIELD ACTIVITIES REPORT: Cycle 2, Year 3, Week 19.**

**14TH May 2024**

**Air Quality Monitoring**

1. **BAM**.

* BAM is currently running well. The team has been collecting data for about 5 years now, however the BAM lost about 9 months of data during the breakdown

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***Figure 1: Time series Line graph of Daily PM2.5 Averages from the BAM.***

**BAM Descriptive**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PM2.5 Descriptives from BAM (Generated from data running from 1st May 2024 to 13th May 2024)** | | | | | | | | |
|  | N  (hrs.) | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| Lower Bound | Upper Bound |
|  |  |  |  |  |  |  |  |  |
| BAM | 298 | 18.20 | 8.670 | .502 | 17.21 | 19.19 | 3 | 64 |

1. **E-Sampler**

See the table below for the current status of all E-samplers in the field;

**Status of the E - samplers**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **School** | **Status** | **Action** |
|  | Moi Avenue | Running well | Routine monitoring |
|  | James Gichuru | Experienced power outage | The power outage error was corrected through technical maintenance. Routine Monitoring was done |
|  | Riruta | Running well | Routine monitoring |
|  | St. Bakhita | Running well | Routine monitoring |

* The E-Samplers are currently running well, However James Gichuru experienced power outage which was corrected through technical maintenance

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **PM2.5 Descriptives from E-samplers (Generated from data running from 1st April 2024 to 29th April 2024)** | | | | | | | | | |  | | | | | | | | | |  | N  (hrs.) | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum | | Lower Bound | Upper Bound | | James Gichuru | 538 | 10.16 | 9.352 | .403 | 9.36 | 10.95 | 3.00 | 73.00 | | Moi Avenue | 554 | 13.83 | 10.544 | .448 | 12.95 | 14.71 | 3.00 | 75.00 | | Riruta Satellite | 546 | 9.13 | 7.060 | .302 | 8.54 | 9.73 | 3.00 | 74.00 | | St Bakhita | 448 | 8.12 | 8.473 | .400 | 8.54 | 8.90 | 3.00 | 92.00 | | Average | 2,086 | 10.43 | 9.226 | .202 | 10.03 | 10.82 | 3.00 | 92.00 | |
|  |

1. **AirQO Samplers**

* All the AirQo sensors are running well

|  |  |  |  |
| --- | --- | --- | --- |
|  | **AirQO Location sites** | **Status** | **Action** |
| 1 | Karen C | Running well | Routine monitoring |
| 2 | Baba Dogo | Running well | Routine monitoring |
| 3 | Nairobi Primary | Running well | Routine monitoring |
| 4 | Embakasi | Running well | Routine monitoring |
| 5 | UoN Parklands | Running well | Routine monitoring |

**PM2.5 Descriptive from AirQO sensors (Generated from data running from 1st May 2024 to 13th May 2024)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | |
|  | N  (hrs.) | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| Lower Bound | Upper Bound |
| Baba Dogo | 141 | 15.14 | 10.268 | .864 | 13.43 | 16.85 | 1.52 | 58.02 |
| Embakasi | 143 | 16.24 | 13.698 | 1.145 | 13.97 | 18.50 | 1.86 | 69.48 |
| Karen C | 97 | 9.70 | 6.692 | .679 | 8.36 | 11.05 | 5.68 | 69.69 |
| Nairobi | 97 | 11.98 | 3.332 | .338 | 11.31 | 12.65 | 7.15 | 20.68 |
| UoN Parklands | 137 | 20.71 | 11.860 | 1.013 | 18.70 | 22.71 | 5.13 | 80.45 |
| Average | 615 | 15.28 | 5.159 | .443 | 14.41 | 16.15 | 1.52 | 80.45 |

1. **QuantAQ Sensors**

* All the Samplers are running well, however, 3 QuantAQ sensor still experiences delay in data relaying real-time data.
* The team managed to change the sim card for 3 QuantAQ sensors and are currently monitoring the progress in cloud data recording.
* So far, the response is positive for Karen C and James Gichuru recorded however a negative response from James Gichuru sampler as no data was recorded in the cloud even after inserting the sim card
* Team is still in consultation with the vender on the best solution.

**PM2.5 Descriptive QuantAQ sensors (Generated from data running from 1st May 2024 to 13th May 2024)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | |
|  | N  (hrs.) | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| Lower Bound | Upper Bound |
|  |  |  |  |  |  |  |  |  |
| UoN Parklands | 211 | 17.47 | 7.776 | .535 | 16.41 | 18.52 | 2.37 | 47.10 |
| St Bakhita | 299 | 14.30 | 12.075 | .698 | 12.93 | 15.68 | 1.10 | 91.19 |
| Moi Avenue | 299 | 16.90 | 9.825 | .568 | 15.78 | 18.02 | 1.21 | 52.57 |
| Olympic | 276 | 14.16 | 11.856 | .713 | 12.76 | 15.57 | .91 | 113.81 |
| Embakasi | 9 | 9.56 | 4.137 | 1.379 | 6.38 | 12.74 | 2.48 | 15.45 |
| James Gichuru | 145 | 22.79 | 13.047 | 1.083 | 20.65 | 24.93 | 4.88 | 57.613 |
| Riruta Satelite | 45 | 16.41 | 11.223 | 1.673 | 13.04 | 19.78 | 2.06 | 46.04 |
| Baba Dogo | 300 | 21.14 | 13.004 | .750 | 19.67 | 26.34 | 1.73 | 77.31 |
| Karen C | 14 | 5.93 | 3.407 | .910 | 3.96 | 7.90 | 1.09 | 11.94 |
| Nairobi Primary | 299 | 9.84 | 6.468 | .374 | 9.10 | 10.57 | .61 | 39.75 |
| Heshima Road | 299 | 27.75 | 16.857 | .974 | 25.83 | 29.67 | 3.53 | 159.47 |
| Average | 2,196 | 17.63 | 12.937 | .276 | 17.09 | 18.17 | .61 | 159.47 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Gases Descriptive (Generated from data running from 1st May 2024 to 13th May 2024)** | | | | | | | | |
|  | | | | | | | | |
|  | N  (hrs) | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| Lower Bound | Upper Bound |
|  |  |  |  |  |  |  |  |  |
| co | 211 | 463.07 | 245.728 | 2.336 | 458.49 | 467.65 | 50.72 | 1990.37 |
| no | 211 | 3.89 | 13.109 | .124 | 3.65 | 4.14 | 1.21 | 209.81 |
| no2 | 211 | 10.40 | 8.052 | .076 | 10.25 | 10.55 | .75 | 45.96 |
| o3 | 211 | 2.76 | 11.379 | .108 | 2.54 | 2.97 | -38.02 | 41.05 |
| co2 | 211 | 562.28 | 25.998 | .247 | 561.79 | 562.76 | 503.24 | 644.41 |
|  |  |  |  |  |  |  |  |  |

**Hospital Report**

* Data collection from the 5 hospitals is ongoing for April 2024. Data collection is complete for March 2023 for 4 hospitals. Data cleaning for the month of March is ongoing
* Mbagathi hospital data is complete up to March 2024. Data collection for April is ongoing
* For Nairobi Hospital, OP data is complete up to July 2023 and up to April 2023 for IP and mortality data. In patient data collection is ongoing for May 2023.

**Data Management and Analysis**

* Data cleaning and management for the hospital data sets is ongoing.
* Cleaning, management, and analysis of the data from the E-Samplers, AirQO samplers, and the QuantAQ monitors are ongoing.
* The team reached a consensus that if there's a failure in cloud data, data retrieval should be from the USD card. This process will be reviewed monthly to verify the integrity of the SD cards, ensuring they remain intact and operational.

**Stakeholder Engagement**

* We convened a meeting with the Clean Air Fund to review the concept note and explore the available data sets for the upcoming pilot project. The highlights from the meeting include:
  + Considering the available resources and the project timeline, it is advisable to leverage the existing nutritional data sets from CIFF or Nairobi City County
  + GEOHealth should contemplate incorporating nutrition as a confounding factor in the data analysis.
  + The concept note should be revised based on the available data and submitted within a month
* Additionally, we met with the Child Investment Foundation Fund to discuss their nutrition data sets stemming from the Food for Education Program. Key points from the discussion include:
* The Food for Education Program commenced two years ago, initially covering three sub-counties: Kibra, Embakasi, and Kamukunji.
* Six months ago, the project expanded to encompass all counties within Nairobi City.
* The primary aim of the Food for Education initiative is to provide nutritious meals to students in public primary schools, enhancing both their nutritional intake and educational outcomes, ultimately fostering school retention.
* During the initial phase, the Child Investment Foundation Fund did not prioritize the collection of key nutritional indicators such as BMI, MUAC, obesity rates, and levels of acute malnutrition, which are targeted by the pilot project. However, they expressed a commitment to gathering this data from the subsequent cohorts of children starting in June, marking the beginning of the next phase.
* They emphasized that the feeding program caters to children aged between 6 and 14 years attending primary schools.
* Furthermore, the Child Investment Foundation Fund recommended utilizing an open data source, proposing a repeated cross-sectional approach at three intervals: 2024, 2025, and 2026, for our reference. https://dhsprogram.com/

**Graduate Trainee Program**

* The team did the advertisement for the 3 scholarship programs and a call on 3 programs including:
  + MPH
  + MSc. 2nd year student from Department of Chemistry
  + MSc. Environmental Policy
* We have started receiving application which should be concluded 31st July

**Papers for Publication**

* The 1st paper for publication “**Fine Particulate Pollution Concentration in Nairobi Exceeds WHO Guideline Value**” was published. Disseminated to the public
* The publication “**Spirometry of School-going Children as an Indicator of Exposure to Fine Particulate Matter (PM2.5) in Nairobi City, Kenya**. “Analysis is complete and currently working on the first draft ahead of the presentation to RiP and Journal Club
* The publication “**Effects of Household Characteristics and socioeconomic determinants on Childrens’ respiratory symptoms**.” Analysis is complete, awaiting discussion on the tables and figures to start working on first draft.