

# DUST VR

MICHAEL SAUP

MOBILE +49 178 455 32 95

DUSTVR@1001SUNS.COM

[HTTPS://1001SUNS.COM/DUST](https://1001suns.com/dust)

[HTTPS://WWW.INSTAGRAM.COM/MICHAEL.SAUP](https://www.instagram.com/michael.saup)





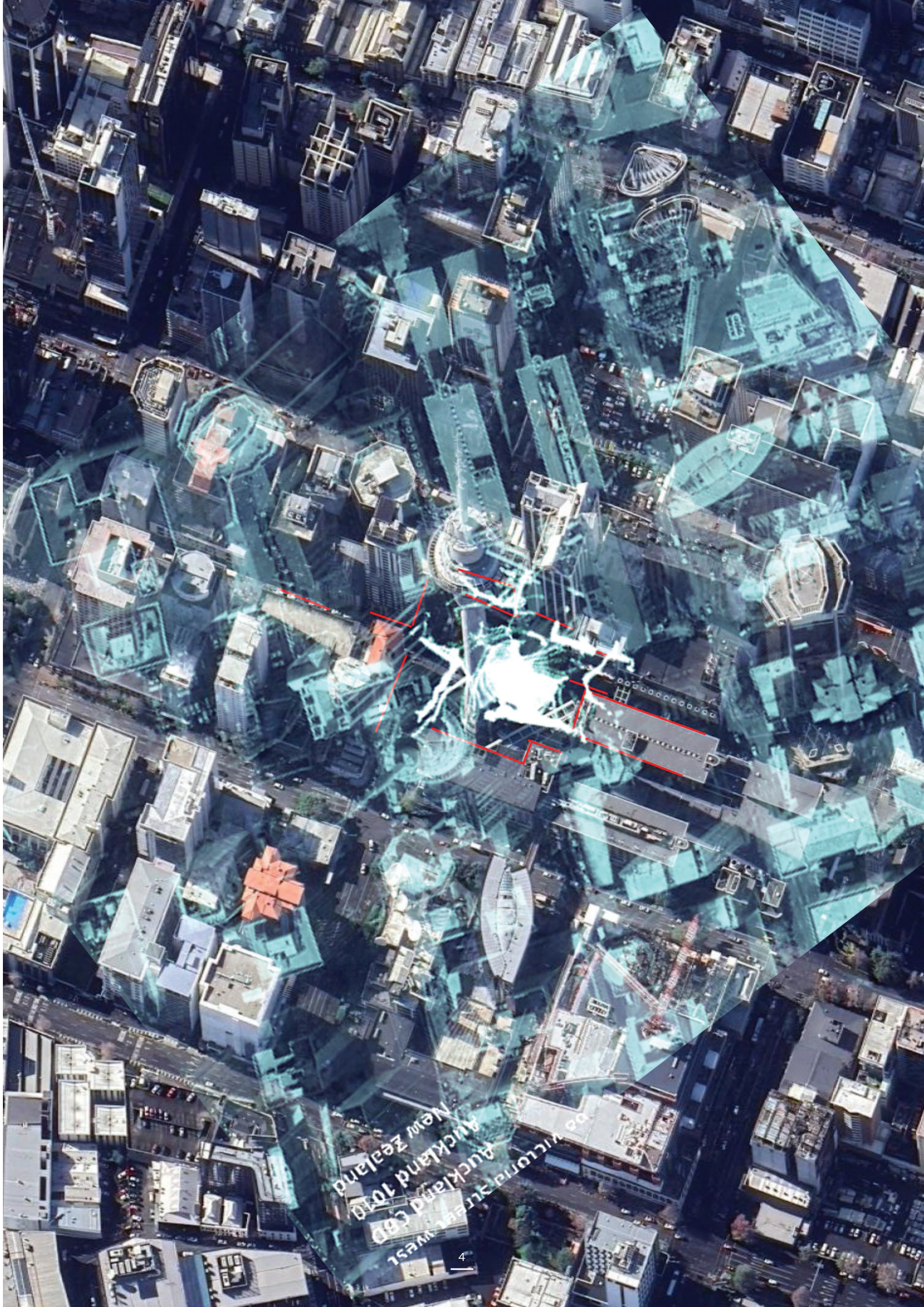
SENSOR : COMMUNITY





**DUST VR – A ENVIRONMENTAL VIR-  
TUAL REALITY PROJECT THAT UN-  
VEILS THE HIDDEN REALM OF UR-  
BAN PARTICULATE MATTER, DRIVEN  
BY SENSOR.COMMUNITY’S GLOBAL  
NETWORK OF CIVIC TECH. EXPLORE  
THE PROFOUND IMPACT OF DUST  
AND DATA ON OUR DAILY LIVES AND  
SURROUNDINGS.**





100 Victoria Street West  
Auckland CBD  
Auckland 1010  
New Zealand



## ABOUT

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The twenty first  
century (is) the  
century of dust

Jussi Parikka

DUST VR uses virtual reality to represent and investigate the invisible sphere of urban particulate matter, which is gathered and shared by Sensor.Community, our global sensor network driven by civic tech dedicated to generating Open Environmental Data. We aim to shed light on the latest advancements in open data, dispelling the common lack of awareness regarding the significant impact that both dust and data have on our personal lives.

It is estimated that one human life is lost prematurely every 5 seconds due to exposure to dust. Furthermore, it is estimated that one human life is lost prematurely every 8 minutes due to the exposure to dust originating from the production, delivery and consumption of digital data.

Particulate matter, also known as airborne dust, is universally familiar. Volcanic ashes, sandstorms, forest fires, construction residue, vehicle and industrial emissions are among the largest contributors today, but the origins of the planet, all known species and the universe itself derive from dust borne by interstellar dust clouds.

The singularity and omnipresence of dust is no longer unrivaled. In the new world, interstellar dust clouds may be overshadowed by virtual data clouds. Data has become the new essential building block.

Much like dust, data is amorphous: sometimes filtered, sometimes free flowing. Like dust, data passes through us and all around us.

People have long understood dust may be harmful and have sought to avoid undue exposure. But until recently the definition and monitoring of the threat level depended on governments and institutions and the biases they bring to their assessment of costs and benefits.

Curiously, data now empowers people to do their own cost-benefit analysis: individuals can carry out environmental tests privately with low cost sensors and distribute the results on the internet, bringing about a culture of civic tech. Our work DUST VR enables viewers to experience virtual exposure to microscopic matter suspended in the atmosphere.

Vast amounts of data are not comprehensive as the majority of people don't know how to apply such data and either wouldn't have the time or inclination to use it. Therefore we aim to establish an open platform for monitoring, experiencing and communicating environmental data as meaningful information.

Many of us will produce, curate and consume such data in the very near future, promoting democratic benefits such as education, transparency and civic engagement.



**1 SPACE**

**2 SCREENS**

**4 VR STATIONS**

**X  $\mu\text{g}/\text{m}^3$  PM2.5**

**Y  $\mu\text{g}/\text{m}^3$  PM10**

**57 COMMUNITY LABS**

**79 COUNTRIES**

**13,000 SENSORS**

**2,000,000**

**PARTICLES**

**23,770,879,251**

**DATA POINTS**



Welt

Europa

Nordamerika

Südamerika

Afrika

Asien

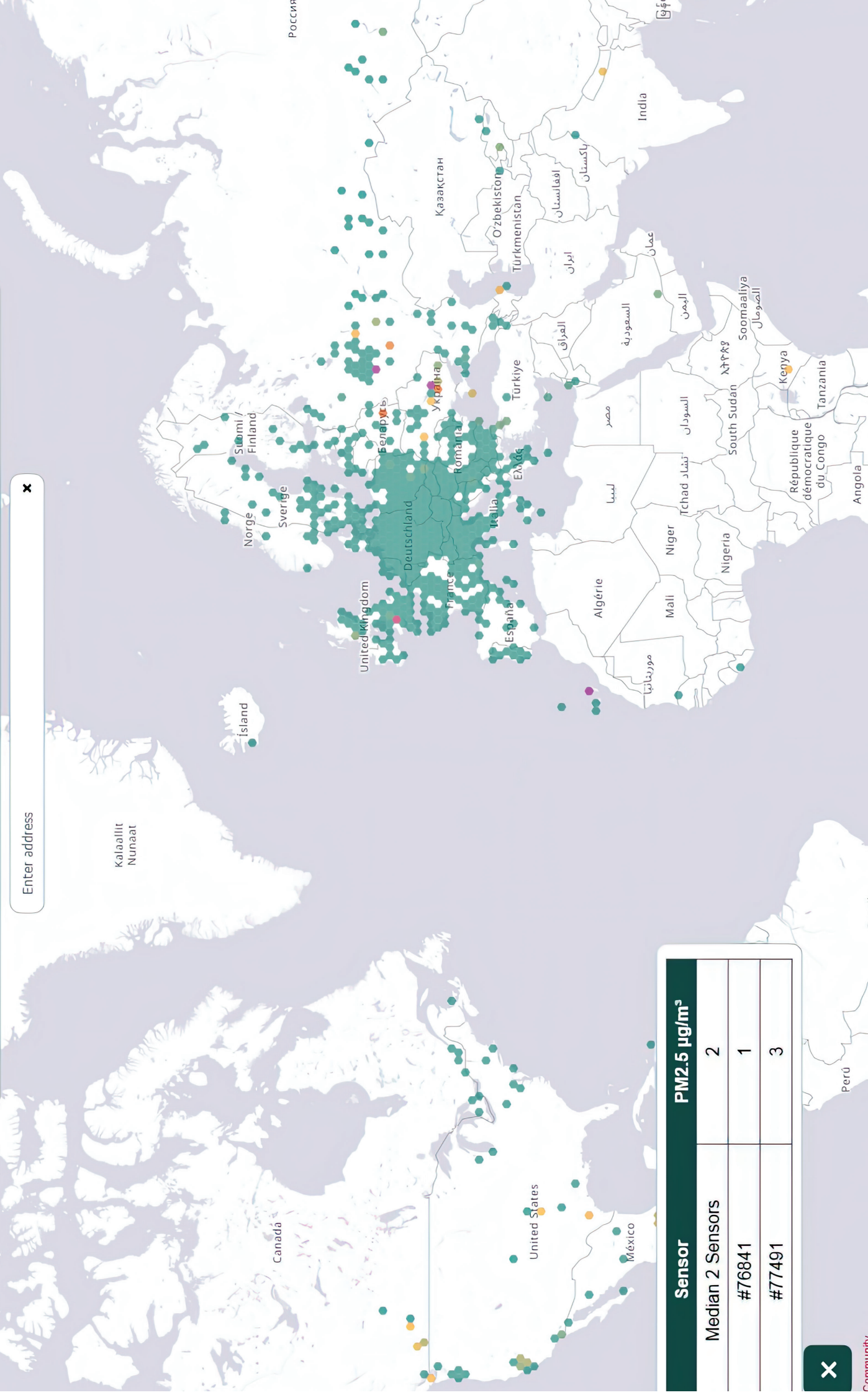
Ozeanien

Letztes Update 31.08.2023 22:30

11431 visible sensors out of 11515

Measurements by **Sensor.Community** contributors

Enter address X



Sensor	PM2.5 $\mu\text{g}/\text{m}^3$
Median 2 Sensors	2
#76841	1
#77491	3





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# INTER ACTIVE DATA

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## SENSOR NETWORK

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The core interactive element of DUST VR is the real-time data overlay. Users wearing the VR headset witness sensor locations from Sensor.Community, each equipped with an overlay that constantly updates with the latest measurements of particulate matter. This real-time data provides users with a dynamic and ever-evolving view of environmental conditions.

Dust VR is a groundbreaking environmental exploration of the unseen world of urban particulate matter. Powered by Sensor.Community's global network of civic tech, this virtual reality (VR) experience offers a captivating and thought-provoking encounter with the impact of dust on our lives and cities.

Users enter an uncanny landscape that seamlessly blends street locations with real-time data collected by citizen. The result is a mesmerizing and, at times, unsettling experience. Matevž Kolenc's haunting score adds depth, creating a dystopian sci-fi atmosphere that underscores the very real threat of dust pollution on our future.

The VR journey includes the ability to explore over 13,000 sensor locations worldwide, each contributing to real-time environmental data displayed as digital particles. These sensors offer a global perspective on the accumulation of particulate emissions in different locations.

As users delve into this immersive environment, virtual agents mimic the behavior of cars, people, bikes, and wind, disturbing the dust and revealing astonishing causal effects.

Beyond its technical complexity, DUST VR invites contemplation. It prompts reflection on mortality, dissolution, and the fleeting nature of existence. The installation also celebrates the beauty that emerges and fades in our brief moments of existence.

As festivalgoers experience DUST VR, they will be transported to a realm where reality and data converge, where the impermanence of life meets the enduring presence of dust.

This experience challenges perceptions, offering a glimpse of the profound and eternal within the ephemeral, ultimately leaving audiences with a renewed sense of wonder about the world we inhabit.

we disappear,  
but dust is  
forever

Dorothy Woodend



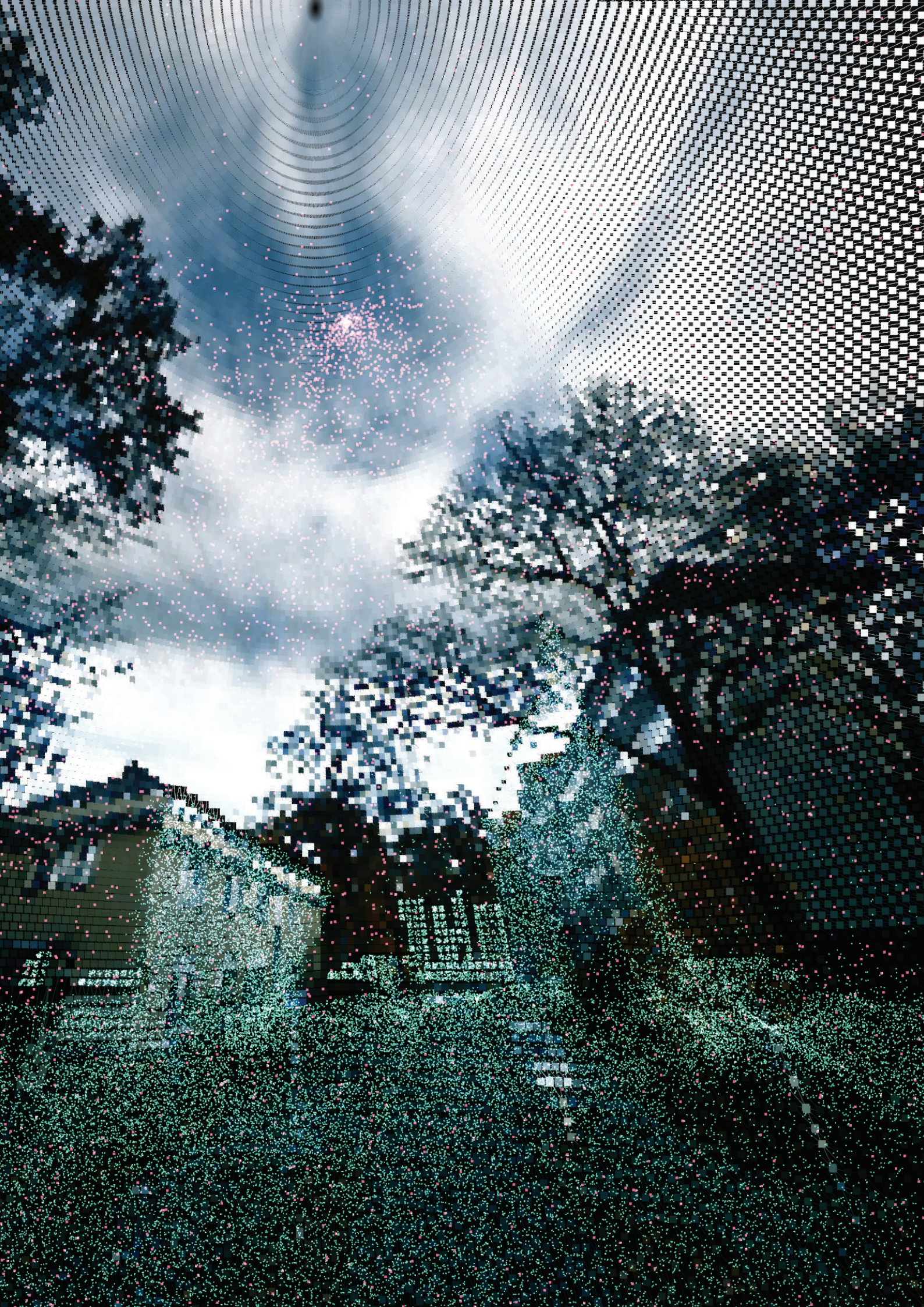
**AS THE USER ENTERS THE DESIGNATED SPACE, THEY ENCOUNTER A CAPTIVATING SETUP. FOUR LARGE PROJECTED TILES DRAW THEIR ATTENTION. THESE TILES DISPLAY VARIOUS ZOOM LEVELS OF **SENSOR.COMMUNITY**, A GLOBAL **CIVIC TECH** SENSOR NETWORK. THE VISUALS INCLUDE A CONTINENTAL SENSOR LOCATION, A GEOGRAPHICAL OVERVIEW OF THE SENSOR'S NEIGHBORHOOD, A CLOSE-UP VIEW OF THE AREA, AND A VR-MIRROR THAT EXPOSES THE CURRENT PARTICULATE DUST CONDITIONS IN THE SENSOR'S CITY-SCAPE.**

**THE USER PROCEEDS TO MOUNT THE **VR HEAD-MOUNTED DISPLAY** (HMD). THIS MOMENT MARKS THE TRANSITION FROM THE PHYSICAL WORLD INTO THE VIRTUAL REALM OF **DUST VR**.**



Alt quality: 4k used  
6.30 9914' 00 2.5  
11.00 9915' 00 10  
Hospital Klaus  
41300 Hospital  
Germany











**“THE ARTWORK **DUST** DELVES INTO THE WORLDWIDE MOVEMENT OF DUST AND ATMOSPHERIC PARTICLES, INTERTWINING THEM WITH PRECISE URBAN AND GEOGRAPHICAL DETAILS, RESEMBLING A MICROSCOPIC APOCALYPSE INFILTRATING THE HUMAN REALM.**

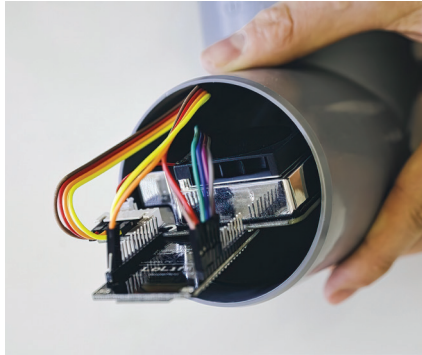
**USING VR, A VIRTUAL SPACE, ARTIST MICHAEL SAUP HAS CONSTRUCTED AN **INCREDIBLE REALM OF WONDER**, A WORLD WHERE REALITY AND DATA MERGE. THERE ETERNITY AND INSTANT COEXIST, VIRTUALITY AND REALITY COEXIST, ALONG WITH MIRACLE AND DISILLUSION.”**

**LIU CHANG, 2023**





# THE NETWORK



## SENSOR.COMMUNITY

Lukas Mocek, Pierre-Jean Guéno, Rajko Zschiegner and David Lackovic of *Sensor.Community* established a contributors driven *global sensor network* that creates Open Environmental Data. The mission of *Sensor.Community* is to *inspire* and enrich people's lives by offering a platform for the collective curiosity in nature that is genuine, joyful and positive. The network consists of sensors that are built by individuals and communities around the world. These sensors are used to measure *environmental data* such as temperature, humidity, air pressure, and air quality. The data collected by these sensors is then made available to everyone through an *open data platform*. The platform allows users to access real-time environmental data from around the world. This data can be used for research, education, and advocacy purposes.

<https://sensor.community/de/contributors/>



LUKAS MOCEK

**HTTP 200 OK**

**ALLOW: GET, HEAD, OPTIONS**

**CONTENT-TYPE: APPLICATION/JSON**

**VARY: ACCEPT**

**{**

**“PUSH-SENSOR-DATA”:**

**“https://api.**

**sensor.community/v1/  
push-sensor-data/”**

**}**



# THE ARTISTS



**MICHAEL SAUP**  
**ARTIST**

Michael Saup is a German artist, researcher, instrumentalist, filmmaker and coder, pioneering the use of software as an artistic medium. He has acted as professor at HfG/ZKM in Germany and as the founding director of the Oasis Archive of the European Union. He is the co-founder of the Open Home Project, a humanitarian initiative to help people being affected by the Fukushima nuclear crisis in Japan. Michael Saup's work focuses on the underlying forces of nature and society; an ongoing research into what he calls the "Archaeology of Future". Among his works are sound driven computer animations, interactive concerts and interactive site-specific light installations. He shows in major museums, festivals and theatres worldwide, and has produced collaborative works with diverse, contemporary artists. He is based in Berlin.

<https://1001suns.com/>



**MATEVŽ KOLENC**  
**COMPOSER**

Matevž Kolenc is a Slovenian composer, arranger, producer and instrumentalist. He started his career as a music composer for theatre performances, but later became a driving force behind the band Melodrom with whom they released four full length studio albums between 2004 and 2010 (Nika records). Since 2012 he is also an active member of Laibach, for whom he writes, arranges and produces music. Most notably, he collaborated with Laibach on their albums "Spectre" and "Also sprach Zarathustra" (2017, Mute records), last being entirely his work, originally created for the purpose of a theatre performance by the same name (directed by Matjaž Berger), and later released as a full length album and also performed in rearranged version by Laibach with Lviv Philharmonic Orchestra (2018).

<https://matevzkolenc.com/>



**IN DUST VR, WE EMBARK ON A METAPHYSICAL JOURNEY INTO THE ESSENCE OF EXISTENCE ITSELF. THIS IMMERSIVE EXPERIENCE, FUSING RAW REALITY WITH THE DIGITAL REALM, COMPELS VIEWERS TO CONFRONT THE PARADOX OF OUR TRANSIENT LIVES AGAINST THE EVERLASTING DUST THAT SHAPES OUR WORLD. THROUGH ETHEREAL LANDSCAPES AND HAUNTING SOUNDSCAPES, WE TRAVERSE THE LIMINAL SPACE BETWEEN THE TANGIBLE AND THE VIRTUAL, UNVEILING THE PROFOUND INTERPLAY BETWEEN HUMANITY, DATA AND DUST.**



# VIDEOS

## **0.1 TRAILER 3 MIN**

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<https://www.youtube.com/watch?v=eOC7II6ZdFw>

## **0.2 SUSTAINABLE CITIES - THE SCOURGE OF PARTICULATE MATTER**

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<https://www.youtube.com/watch?v=HIEyc25H7qY>

## **0.3 PLANETARIUM**

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<https://www.youtube.com/watch?v=07ryydr3Qrg>

## **0.4 DEEP DATA DOME**

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<https://www.youtube.com/watch?v=xABzFcmDT9Y>











## CREDITS & SHOWS

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Sensor.Community  
<https://sensor.community/en/>

Co-produced by Drehmoment – KulturRegion  
Stuttgart curated by Benjamin Heidersberger  
<https://www.kulturregion-stuttgart.de/was/rueckblick-projekte/drehmoment>

Supported by High Performance Computing Center  
Stuttgart (HLRS)  
<https://www.hlrs.de/>

Supported by Oval Office / Schauspielhaus  
Bochum curated by Tobias Staab  
<https://www.schauspielhausbochum.de/de/stuecke/208/michael-saup>

St Maria Kirche Stuttgart  
<https://www.st-maria-als.de/>

Planetarium Bochum  
[https://planetarium-bochum.de/de\\_DE/home](https://planetarium-bochum.de/de_DE/home)

created with C++, meshlab, QGIS, python and  
openframeworks  
<https://openframeworks.cc/>

Barnaby W.V. Stewart, Foresight & Perspective

with the help of Andrea Winter, Andreas  
Erhart

Dietmar Offenhuber  
<https://offenhuber.net/>

Drehmoment, St Maria Kirche Stuttgart  
October 10, 2018

Oval Office, Schauspielhaus Bochum  
December 13, 2018

Citylab Berlin  
June 13, 2019 – 2021

The Future of Technology for  
Sustainable Development, GIZ, Berlin  
October 22, 2019

Glowing Globe, Rijeka  
November 13, 2019

Transport & Climate Change Week, Berlin  
March 5, 2020

Laibach 40th Anniversary,  
Trbovlje, Slovenia  
(cancelled due to covid pandemic)

speculum artium, Trbovlje, Slovenia  
October 15, 2020

Deutsche Welle TV – Eco India –  
The Environment Magazine Sustainable Cities  
December 18, 2020

Particles EP, Matevz Kolenc,  
Nature scene records, Ljubljana & London  
July 23, 2021

DIVE Festival, Planetarium Bochum  
November 4, 2021

Generalkonsulat Wroclaw  
September 3, 2022

Ein Wochenende fürs Klima,  
Planetarium Bochum  
November 19, 2022

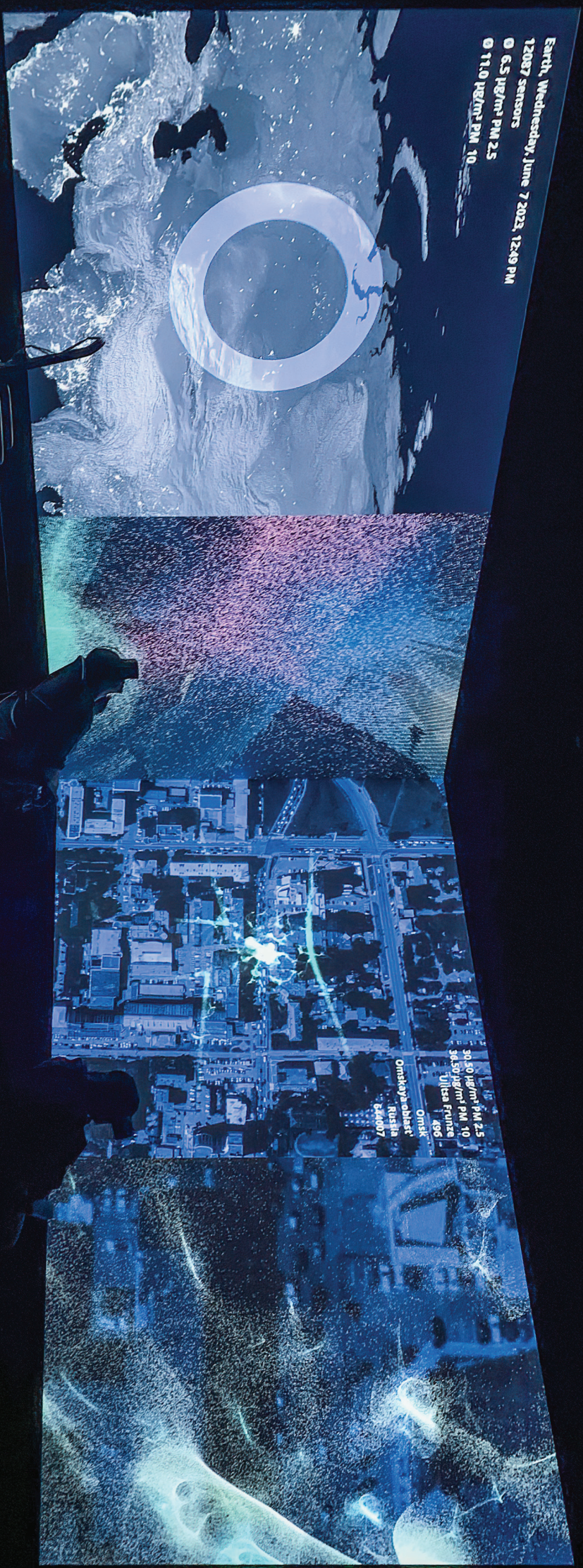
Pochen Chemnitz  
September 29, 2022

New Media Gallery, New Westminster,  
Vancouver, Canada  
June 4, 2023

For dust we are  
and to data we  
shall return.

#319





Earth, Wednesday, June 7 2023, 12:49 PM  
12087 sensors  
O 6.5 µg/m³ PM 2.5  
O 11.0 µg/m³ PM 10

Onisk  
Omskiy oblast'  
Russia  
844007  
496  
30.50 µg/m³ PM 2.5  
34.50 µg/m³ PM 10  
Ulitsa Frunze