#### **Doctoral Dissertation**

Tracking atmospheric chemical components in accordance with the Sustainable Development Goals (SDGs)

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Graduate School of Engineering Chubu University

# A Doctoral Dissertation submitted to Graduate School of Engineering, Chubu University in partial fulfillment of the requirements for the degree of Doctor of ENGINEERING

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# Tracking atmospheric chemical components in accordance with the Sustainable Development Goals (SDGs)\*

#### Phan Anh

#### Abstract

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#### **Keywords:**

 $\pi$ , astronomy, mathematics, computer, algorithm

<sup>\*</sup>Doctoral Dissertation, Graduate School of Information Science, Nara Institute of Science and Technology, November 14, 2023.

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## 1 Introduction

1.1 Background

# 2 Background

#### 2.1 Air pollution

#### 2.2 Greenhouse gas

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# AIR POLLUTIOM INDUCED BY INTERVENTION EVENTS

### 3 Ukraine's case study

#### 3.1 Introduction

Nitrogen dioxide  $(NO_2)$  is a key air pollutant that can have harmful effects on human health. An increase in nitrogen oxide (NOx = NO + NO2) concentrations contributes to global warming through a chemical reaction that leads to the formation of ozone (O3), a short- lived climate pollutant with a potent warming effect (Stocker et al., 2013). The lifetime of NO2 is strongly influenced by photochemical reactions and meteorological parameters

- 3.2 Data
- 3.3 Business-as-usual (BAU) modelling
- 3.4 NO2 changes induced by COVID-19 lockdown
- 3.5 NO2 changes induced by the armed conflict
- 3.6 Conclusion

# 4 Japan's case study

# GREENHOUSE GAS ESTIMATION, FORECASTING AND MONITORING

# 5 Plant functional types mapping based on scared data

# 6 Global upscaled of carbon fluxes

# 7 CO2 monitoring and net zero modelling platform

### 8 Conclusion

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