

# **CHAPTER 4**

## **ANTHROPOGENIC AND NATURAL SOURCES OF AIR POLLUTANTS AND STUDIES ON THEIR DETECTION BY UAV**

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### **INTRODUCTION**

Air pollution is the pollution of the environment because of the change of the natural properties of the atmosphere by chemical, physical or biological agents. World Health Organization (WHO) data show that almost all of the world's population (99%) exceeds the WHO guideline limits and breathes air containing high levels of pollutants [1]. Air quality is closely related to climate and ecosystems, and one of the reasons that negatively affect air quality is greenhouse gas emissions. For this reason, studies on both reducing air pollution and related health problems and climate change are carried out in parallel. The risk of death increases by 20% when air pollution and the extremely hot weather caused by climate change are combined [2]. Only 31% of the countries have just started to fight against air pollution, while 43% have no work yet [2]. The sources of pollutants that cause air pollution can be of natural sources such as volcanic activities, dust storms, forest fires and anthropogenic sources such as coal-fired thermal power plants, gasification of coal, shale gas production, industrial use, domestic heating vehicles, transportation vehicles. Among the most important reasons for air pollution and global climate change is the use of fossil-based energy sources (oil, coal, bituminous shale). Among the fossil-based energy sources, natural gas is a cleaner energy source than coal, and the amount of harmful gas (such as SO<sub>x</sub>,

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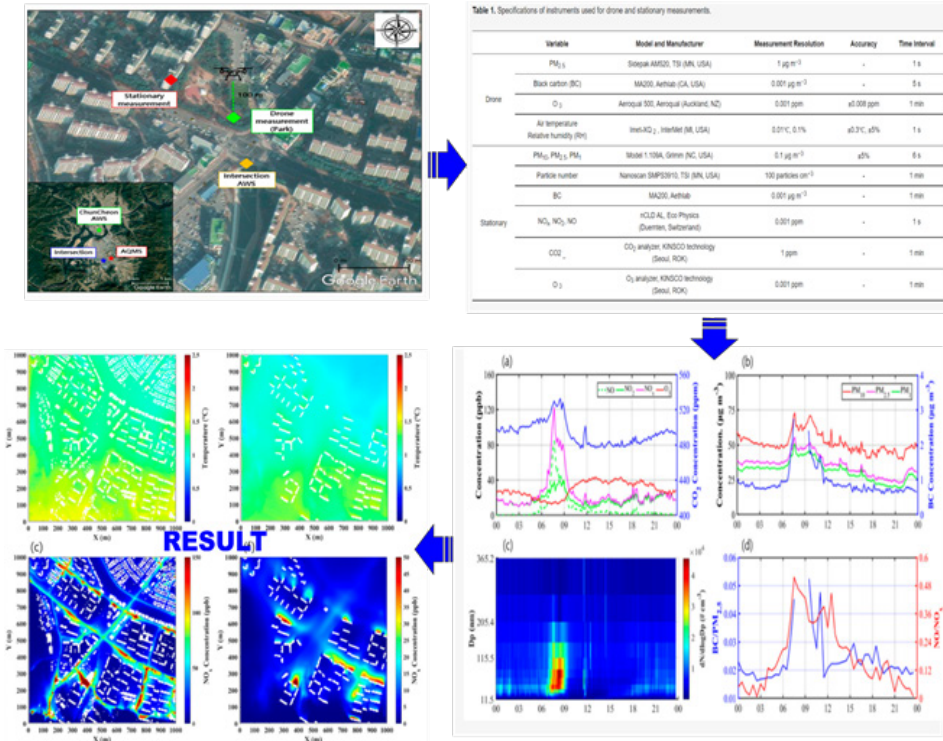


Figure 11. Example of 2D/3D Air pollutant modeling study [58]

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