

Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2022-121
Project Title:	Environment and Conservation Fund - Optimal planning of greenhouse gas monitoring sites in Hong Kong
Principal Investigator:	Dr Gao Meng, Department of Geography, Hong Kong Baptist University
Total Approved Grant:	\$464,000
Duration:	1/6/2023 to 31/5/2025
Project Status/Remarks:	On-going
Project Scope:	<p>This project aims to provide optimal planning of greenhouse gases (GHGs) monitoring sites in Hong Kong based on model simulation and machine learning and sparse reconstruction techniques. GHGs play an important role in climate change. With the development of urbanisation, GHGs emissions released from urban areas have continued to increase. However, the current monitoring of GHGs is limited in Hong Kong. There is an urgent need for more GHGs monitoring stations, which is essential for satellite evaluation, inversion of GHGs emissions estimation, data assimilation and reconstruction of GHGs concentrations. Optimal site planning can improve the efficiency of their applications. Specific objectives of this project include:</p> <p>(a) To simulate the GHGs concentrations in China based on Weather Research and Forecasting model (WRF) enhanced with a GHG module (WRF-GHG) and satellite observation constrained emissions, and evaluate the simulation results;</p> <p>(b) To recognize the significance of monitoring sites in GHGs reconstruction and explore the optimal algorithm to identify the distribution of monitoring sites; and</p> <p>(c) To provide theoretical guidance for the selection of the GHGs monitoring site locations.</p>
Summary of the Findings/ Outcomes:	To be available upon completion of the project