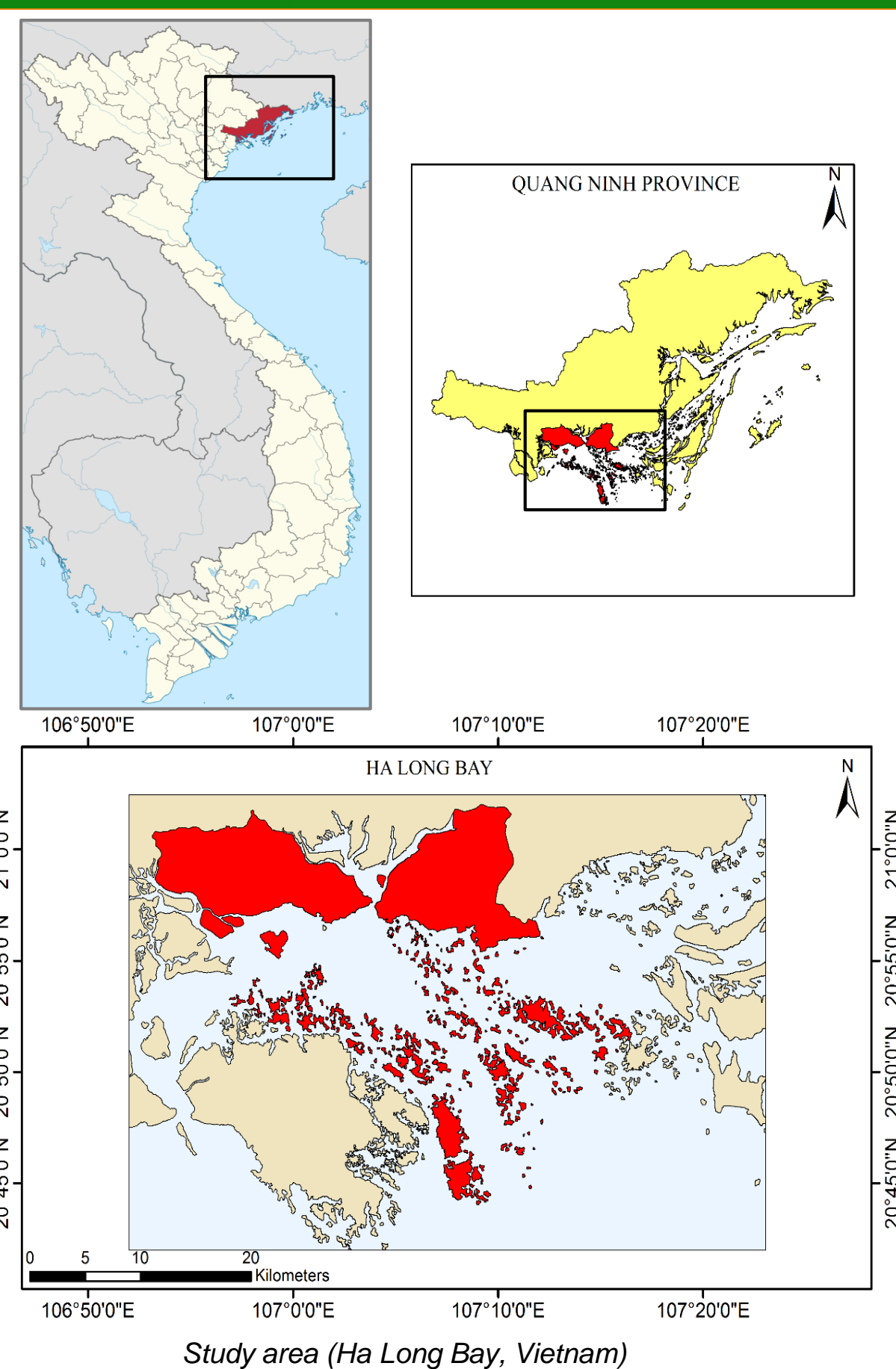


INTRODUCTION

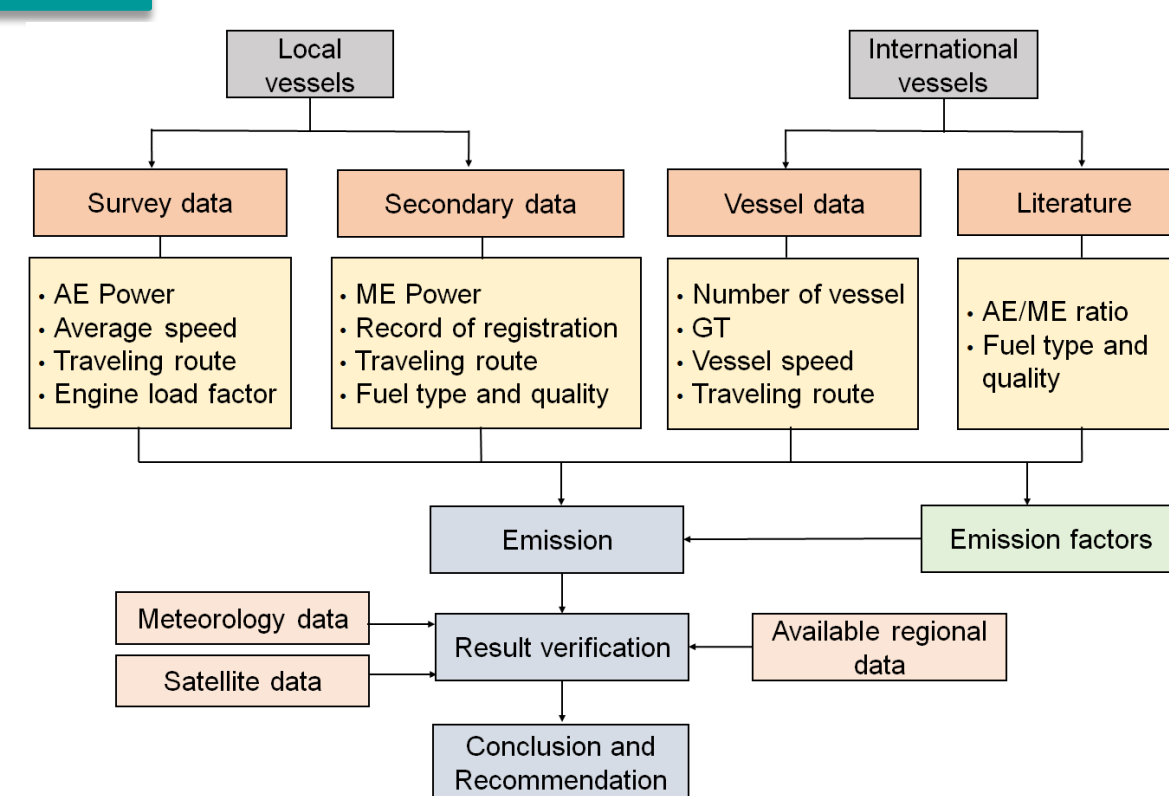
- ✦ Air pollution is a severe issue in Vietnam.
- ✦ Globally, several studies revealed that shipping activities contribute considerably to the pollution load
- ✦ None of the studies have produced any comprehensive shipping emission inventory in Vietnam.
- ✦ This study attempts to fill in the gap of emission inventory for shipping activities in Ha Long Bay which is the famous tourist attraction of Vietnam.



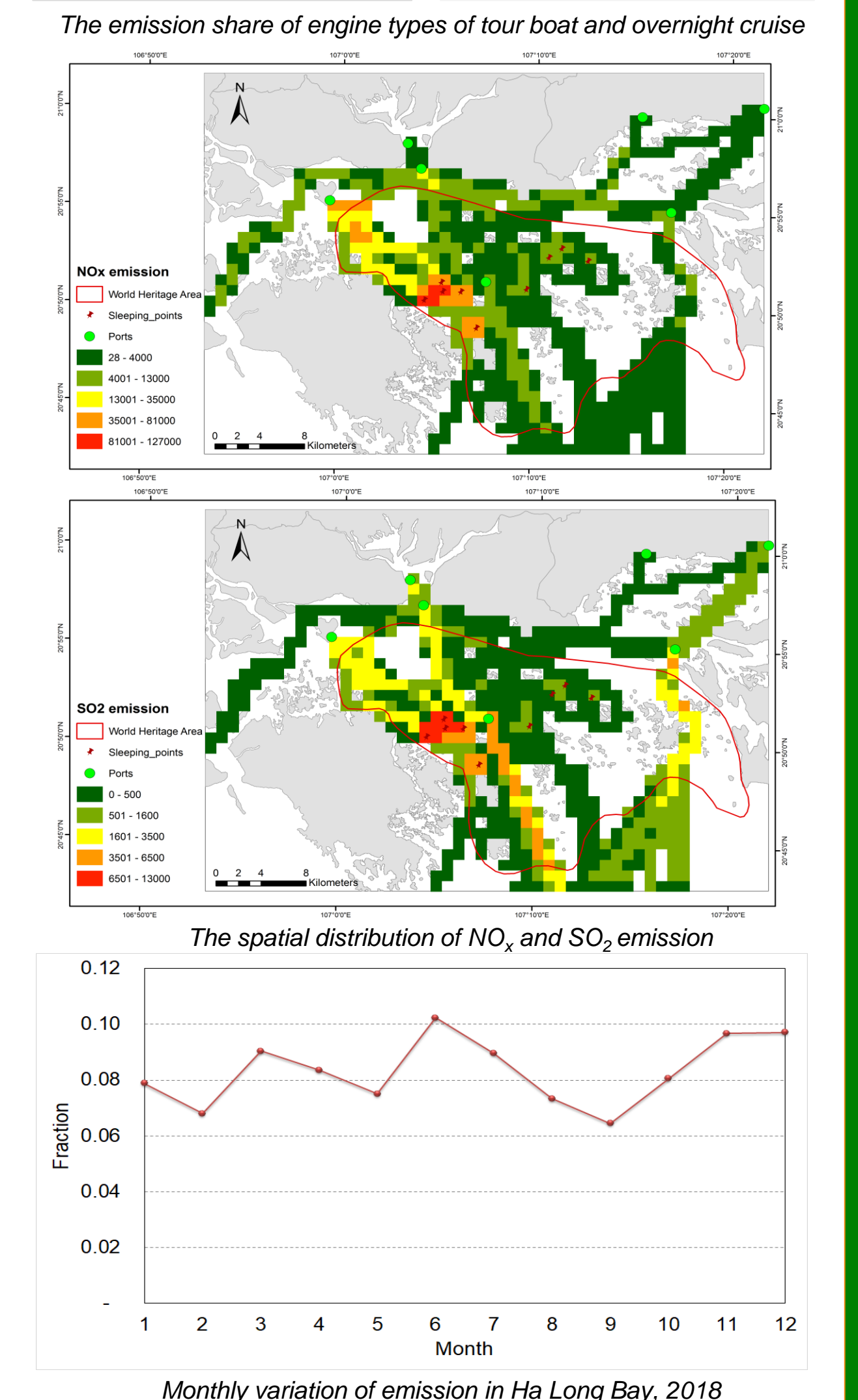
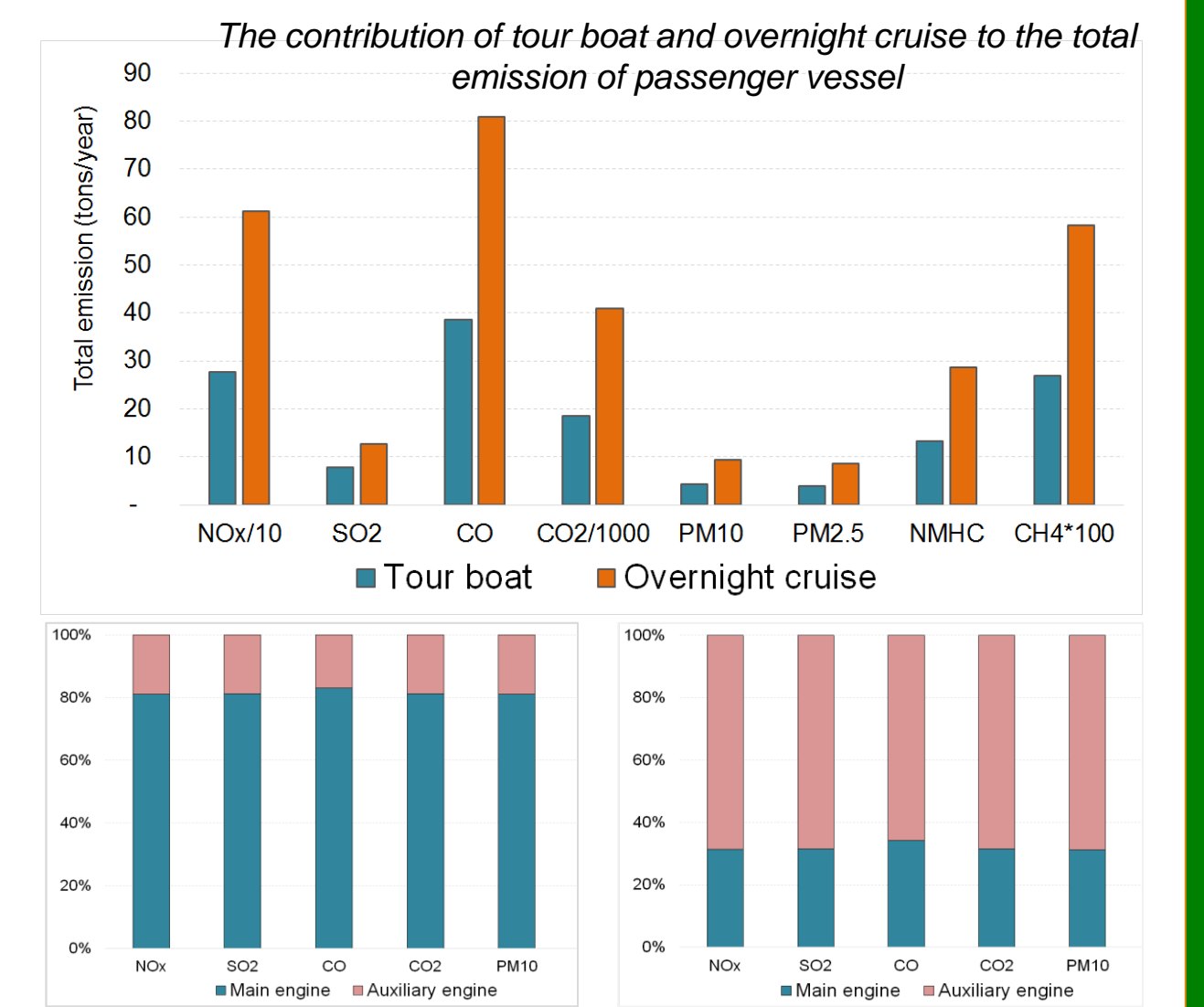
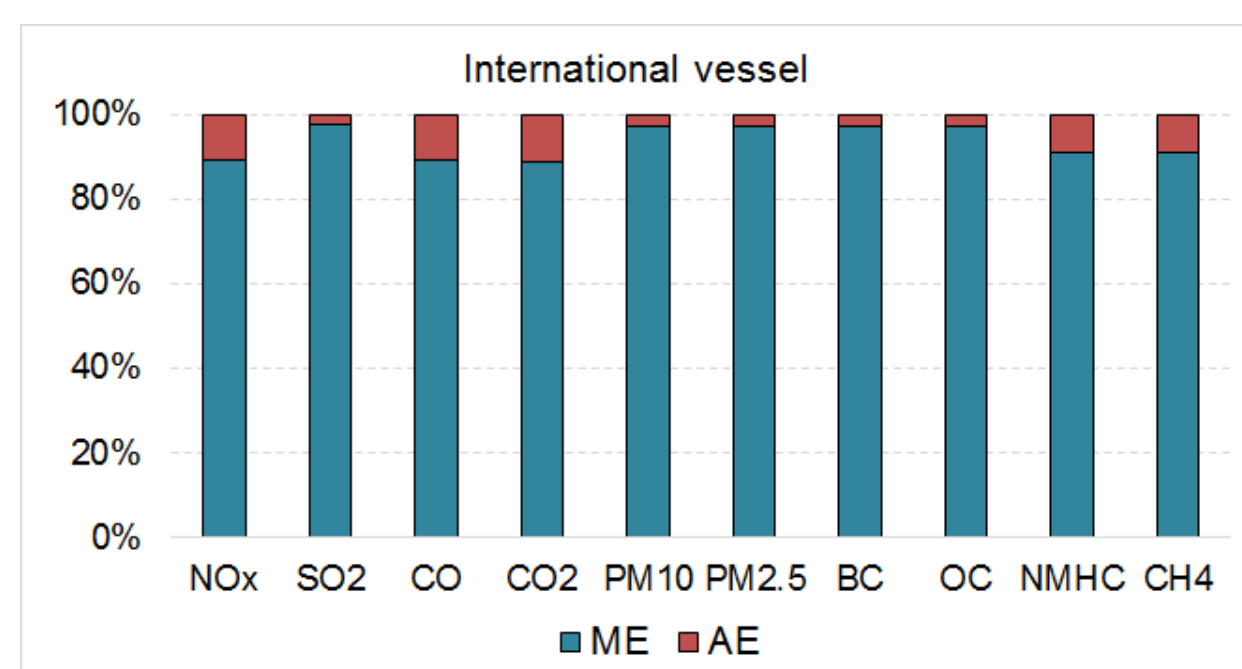
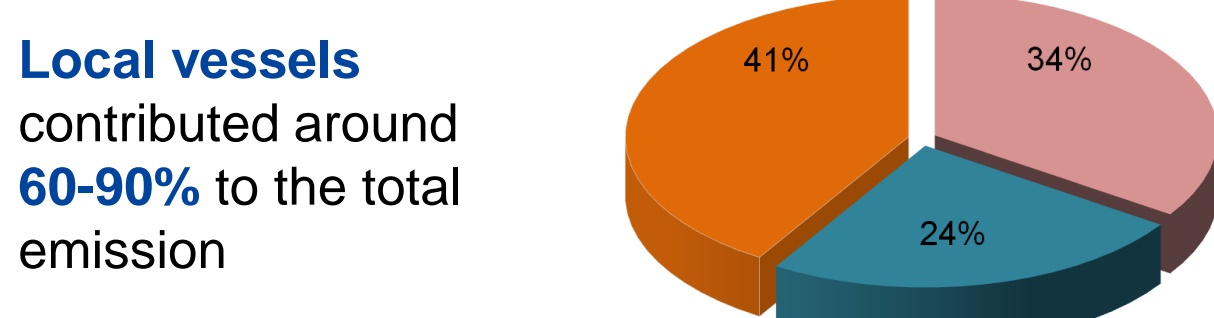
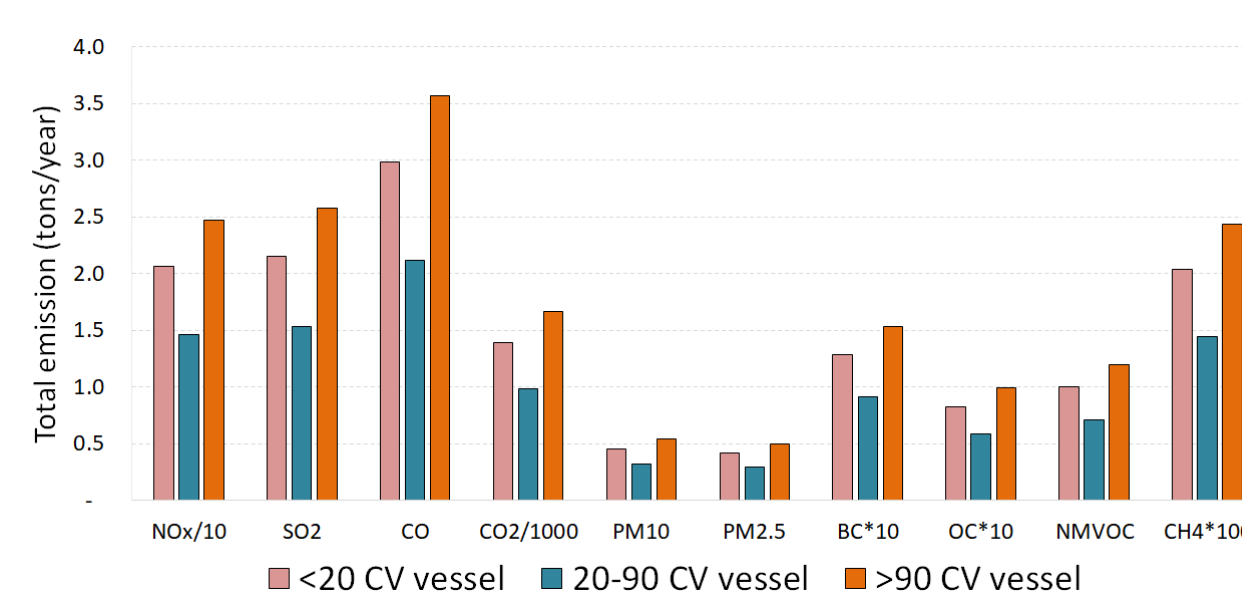
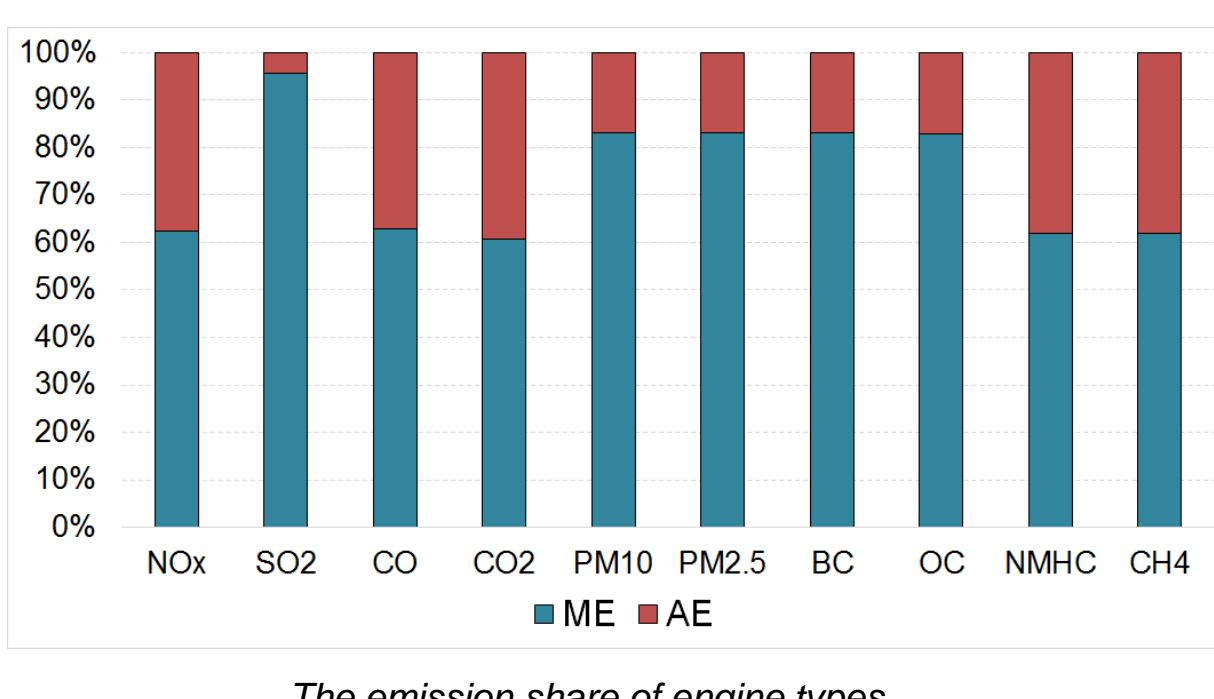
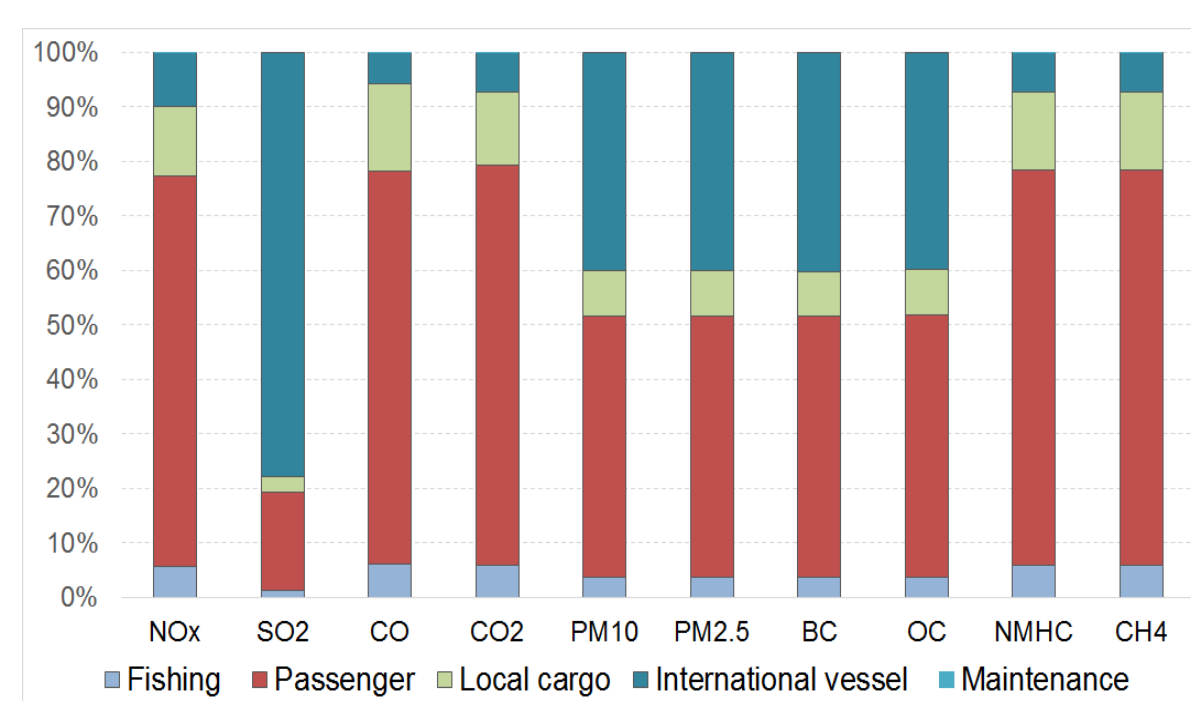
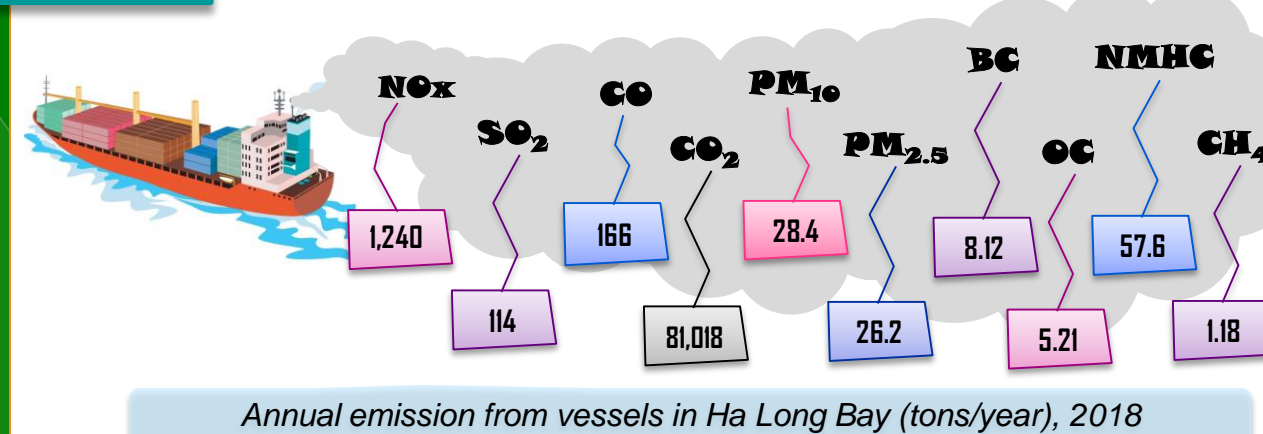
OBJECTIVES

- ✓ To develop emission inventory for shipping activities in Ha Long Bay in 2018.
- ✓ To develop the spatial and temporal distribution of shipping emission in the Ha Long Bay area.
- ✓ To recommend management measures to reduce emission from ships.

METHODOLOGY



RESULTS



CONCLUSIONS

- Passenger and international vessel are two major contributors
- The higher emission intensities along the passenger and international vessel fairways.
- There is a need to strengthen the fuel quality management to reduce the emission of SO₂, PM and Hydrocarbon.
- Using renewable energy for Auxiliary Engine to reduce energy needed from diesel oil.
- The results can be input to 3D air quality modeling.