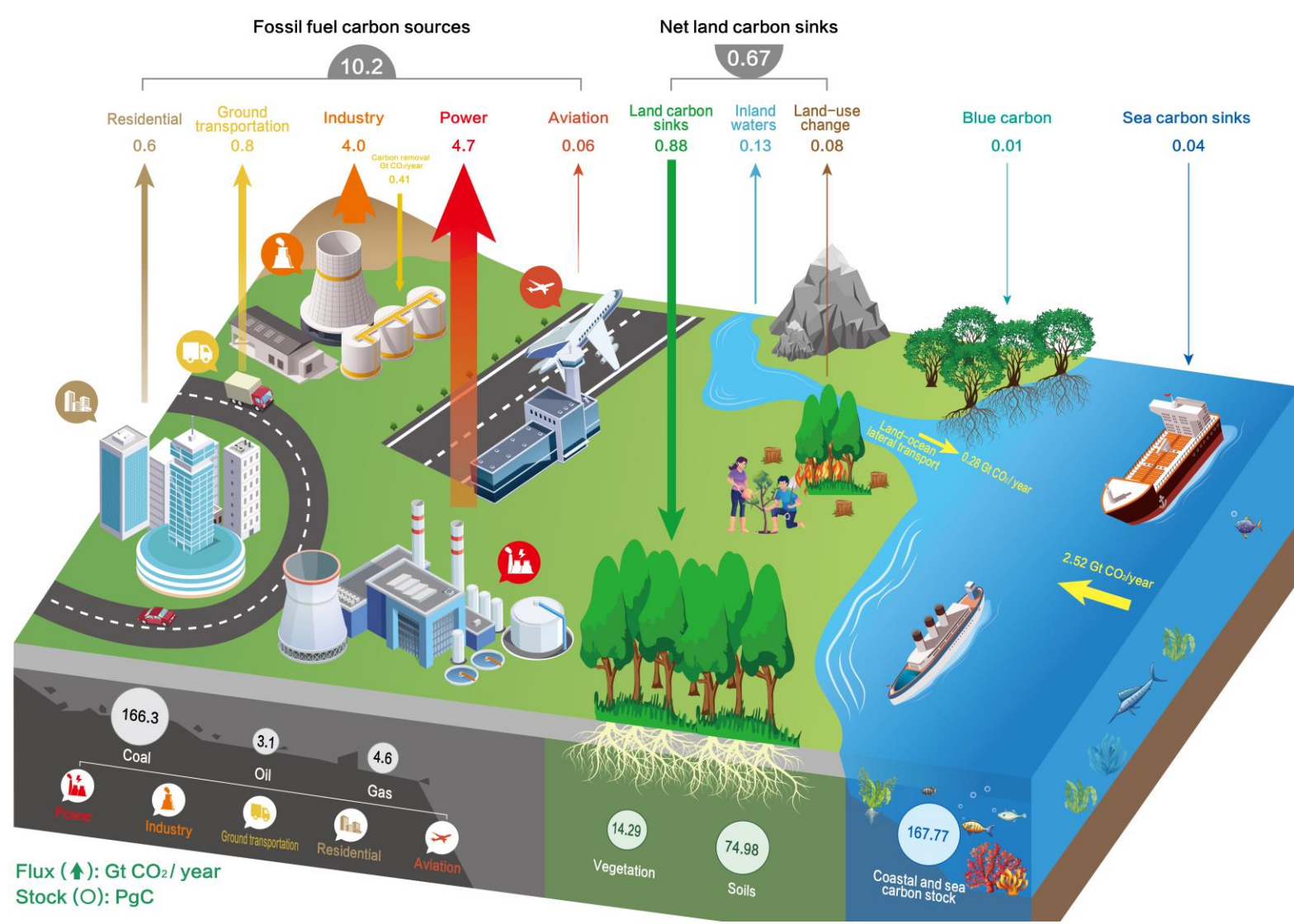# Near-real-time monitoring of global ocean carbon sink

Piyu Ke, Xiaofan Gui, Wei Cao, Dezhi Wang, Ce Hou, Lixing Wang, Xuanren Song, Yun Li, Biqing Zhu, Jiang Bian, Stephen Sitch, Philippe Ciais, Pierre Friedlingstein, Zhu Liu

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Introduction

We present Carbon Monitor Ocean (CMO-NRT), a novel dataset providing near-real-time monthly gridded estimates of global surface ocean fugacity of $CO_2(fco_2)$ and ocean-atmosphere CO_2 flux from January 2022 to July 2023. Leveraging Convolutional Neural Networks and semi-supervised learning, our highly accurate models enhance timely climate change mitigation efforts.
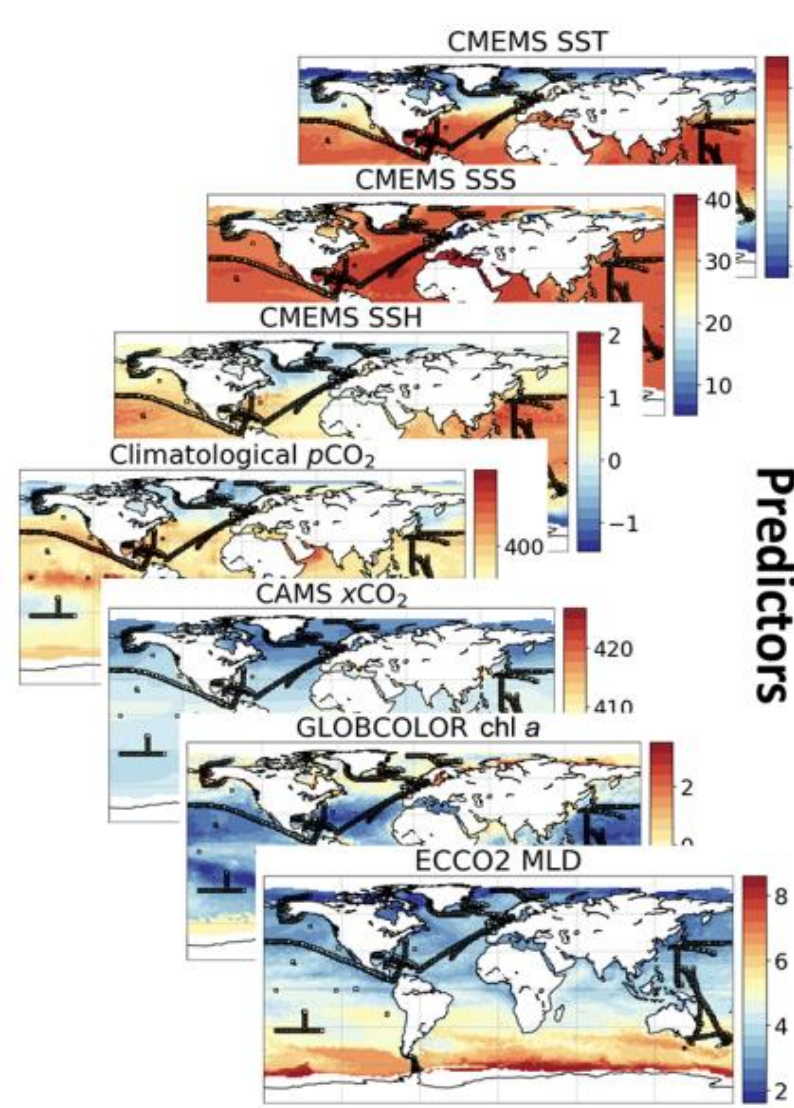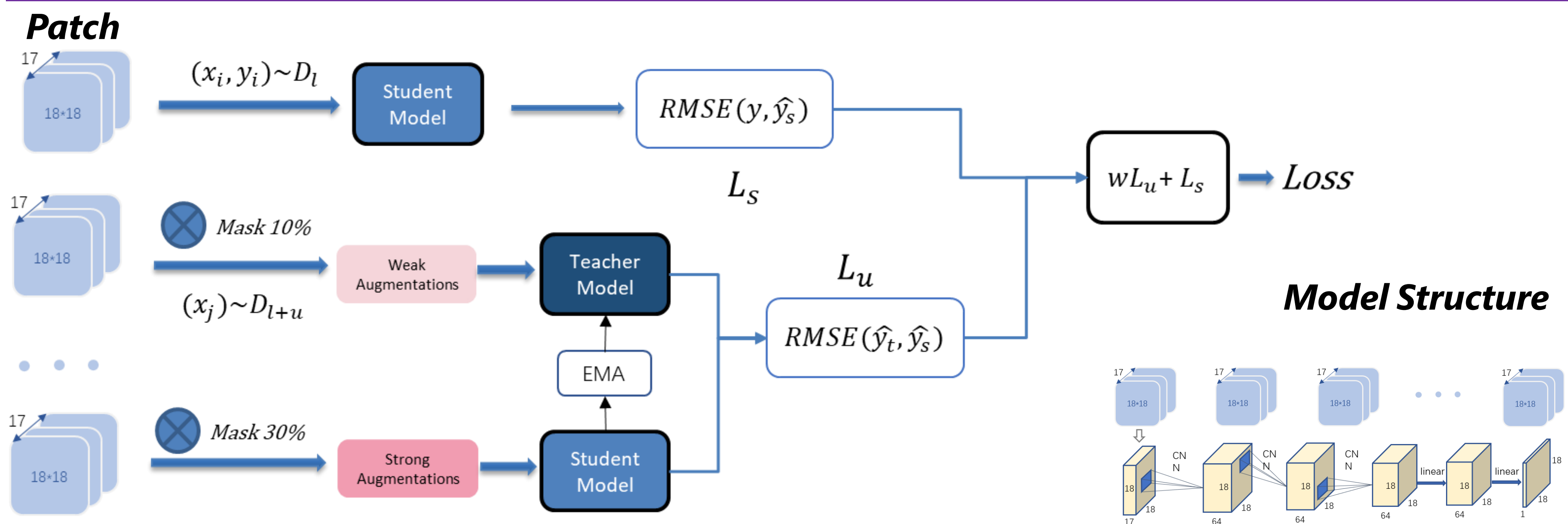

Environmental factors
Predictors

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Global ocean carbon sink
Target

• Environmental factors influencing and reflecting oceanic carbon sink variations

• Reconstructing global oceanic carbon sink using ML methods with global environmental data
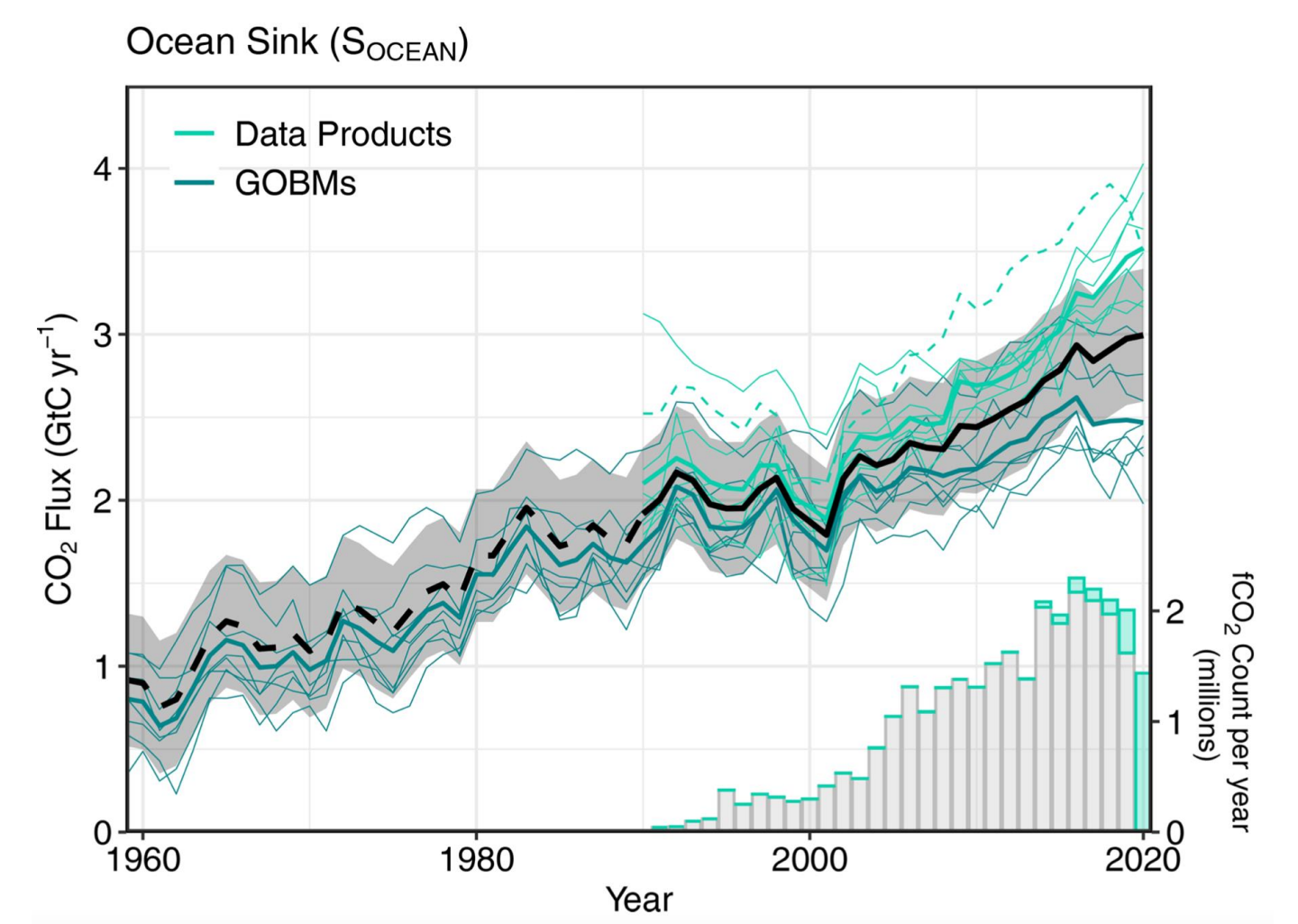
Model

Result

Our models maintain accuracy with errors below a 5% threshold(NRMSE), most models have losses below 2%