

### Supplementary Document (Acronyms and Abbreviations): Satellite Remote Sensing and Artificial Intelligence for Livestock Greenhouse Gas Benchmarking

This document provides a comprehensive list of acronyms and their full forms used throughout the manuscript. The list includes satellite and remote sensing instruments, artificial intelligence methodologies, greenhouse gas compounds, organizations, and related technical terms.

Acronyms	Abbreviations
AAAI	Association for the Advancement of Artificial Intelligence
ACOS	Annual Cost of Ownership Studies
AGU	American Geophysical Union
AI	Artificial Intelligence
CAFOs	Concentrated Animal Feeding Operations
CANN <sub>2</sub> ONET	Canadian Nitrous Oxide Collaboration Network
CBAM	Carbon Border Adjustment Mechanism
CH <sub>4</sub>	Methane
CNN	Convolutional Neural Network
CO <sub>2</sub>	Carbon Dioxide
COP26	26th Conference of the Parties
DAYCENTT	Denitrification and Decomposition Model
DOI	Digital Object Identifier
ESA	European Space Agency
EU	European Union
EVI2	2-band Enhanced Vegetation Index
FAO	Food and Agriculture Organization
FLUXNET	FLUX (Carbon, Energy, and Water Flux) NETWORK
FTS	Fourier Transform Spectrometer
GC-IRMS	Gas Chromatography-Isotope Ratio Mass Spectrometry
GHG	Greenhouse Gas
GHGSat	Greenhouse Gas Satellite
GMES	Global Monitoring for Environment and Security
GOSAT	Greenhouse Gas Observing Satellite
GWP	Global Warming Potential
ICOS	Integrated Carbon Observation System
IEEE	Institute of Electrical and Electronics Engineers
IGES	Institute for Global Environmental Strategies
IPCC	Intergovernmental Panel on Climate Change
IRIS	Infrared Imaging Spectrometer
ISO	International Organization for Standardization
ISPRS	International Society for Photogrammetry and Remote Sensing
ISS	International Space Station
LLMs	Large Language Models
LSTM	Long Short-Term Memory
ML	Machine Learning
MMV	Measurement, Monitoring, and Verification
MRV	Measurement, Reporting, and Verification
N <sub>2</sub> O	Nitrous Oxide
NASA	National Aeronautics and Space Administration
NDC	Nationally Determined Contributions
NITROS	Nitrous Oxide (European Space Agency mission)

<b>NYU</b>	New York University
<b>OCO-2</b>	Orbiting Carbon Observatory-2
<b>OCO-3</b>	Orbiting Carbon Observatory-3
<b>PINN</b>	Physics-Informed Neural Network
<b>PRISMA</b>	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
<b>R<sup>2</sup></b>	Coefficient of Determination
<b>RADARSAT</b>	Radar Satellite
<b>RMSE</b>	Root Mean Square Error
<b>SBTi</b>	Science-Based Targets Initiative
<b>SHAP</b>	SHapley Additive exPlanations
<b>SWIR</b>	Shortwave Infrared
<b>TANSO</b>	Thermal And Near Infrared Sensor for Carbon Observation
<b>TROPOMI</b>	TROPOspheric Monitoring Instrument
<b>UAV</b>	Unmanned Aerial Vehicle
<b>UK</b>	United Kingdom
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>US/USA</b>	United States of America
<b>XCH<sub>4</sub></b>	Column-Averaged Methane Mixing Ratio
<b>XCO<sub>2</sub></b>	Column-Averaged Carbon Dioxide Mixing Ratio
<b>XGBoost</b>	eXtreme Gradient Boosting

*Note: Acronyms are presented in alphabetical order. Some acronyms (e.g., chemical formulas) retain their original notation format.*