

Intercomparison of NASA GLOBE Observer Land Cover Data with Satellite-Derived Products in 2020

Thursday, October 23, 2025 1:00 PM (20 minutes)

Citizen science has grown tremendously in recent years due to its ease of data collection and ability to generate large volumes of observations, which is particularly valuable for artificial intelligence (AI) applications that rely heavily on labeled reference samples. NASA GLOBE Observer is a global citizen science platform that enables volunteers to collect environmental data, including land cover and land use (LCLU) information, key inputs for understanding ecosystem dynamics and its ecosystem services, such as climate regulation. Accurate classification of LCLU from satellite imagery requires large amounts of labeled reference data, which citizen science can help supply. In this study, we evaluated the agreement between the GLOBE Observer Land Cover dataset (data, number of comparison points) and three widely used remote sensing products: MODIS Land Cover, ESA WorldCover, and Dynamic World in 2020. Our objectives were to (1) assess the agreement between citizen science-based land cover photos and remote sensing products and (2) harmonize the datasets to produce a reliable reference dataset for downstream applications. Among the nine LCLU classes assessed, the urban category exhibited the highest agreement, with User's consistency values of 76.07% for MODIS, 89.67% for ESA WorldCover, and 48.86% for Dynamic World. Results also show that overall consistency between the GLOBE Observer Land Cover dataset and MODIS, ESA WorldCover, and Dynamic World is 19.23%, 23.39%, and 27.84%, respectively. The low agreement may be due to the inconsistent spatial resolutions and classification systems, which require further exploration.

Is there a SINGLE day you are unavailable to present?

Is there a time of day you are unavailable to present?

Organized Session Details

Author: HE, Yaqian (Indiana University Bloomington)

Co-authors: SORKER, Raihan; YANG, Di; HUANG, Xiao; LOW, Russanne; NELSON, Peder

Presenter: HE, Yaqian (Indiana University Bloomington)

Session Classification: Poster Session

Track Classification: Spatial Analysis & GIS