

SURVEY CALIBRATED CROP AREA ESTIMATION USING SENTINEL 2 AND LUCAS SURVEY DATA

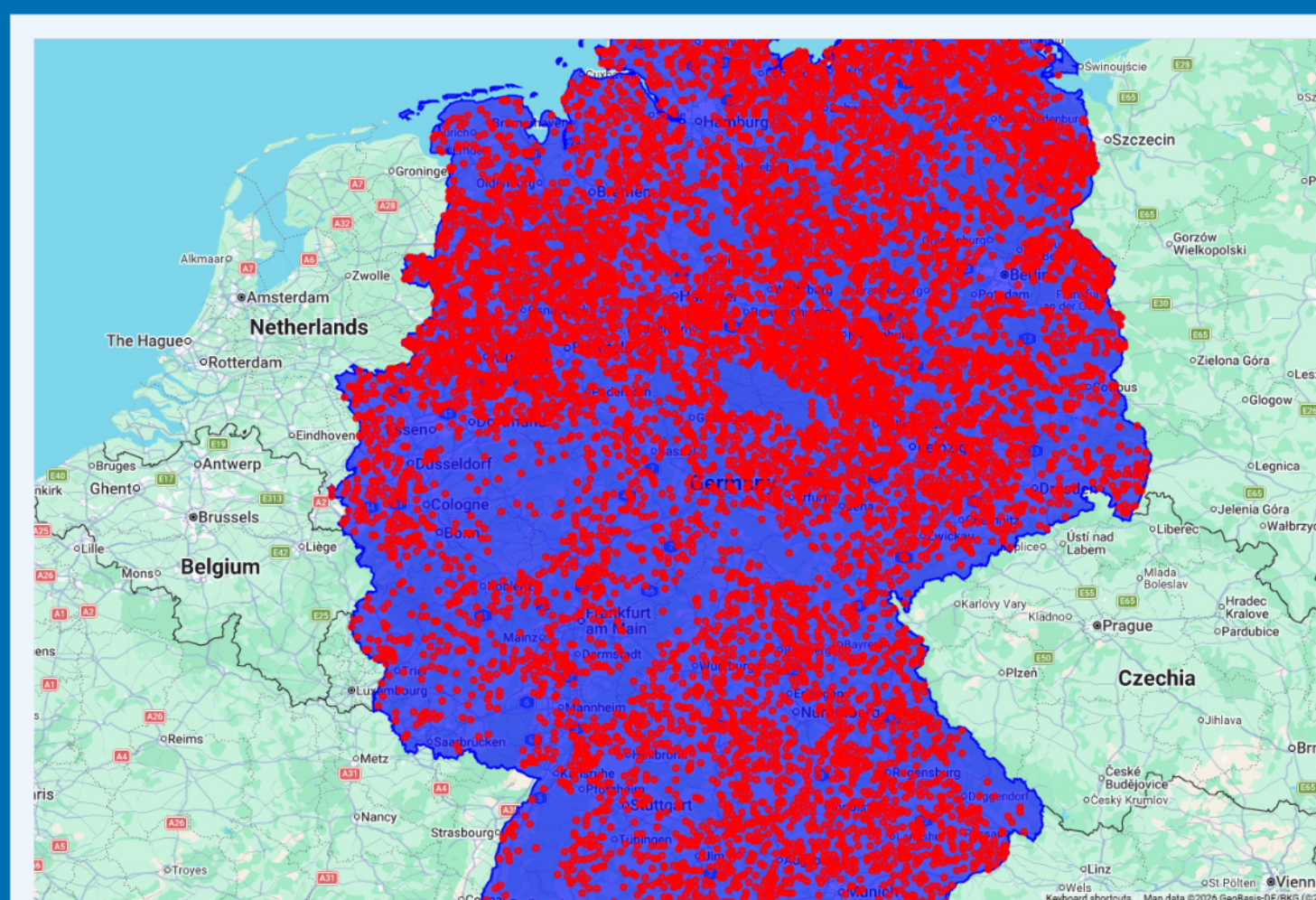
A design based framework for Official Statistics

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INTRODUCTION:

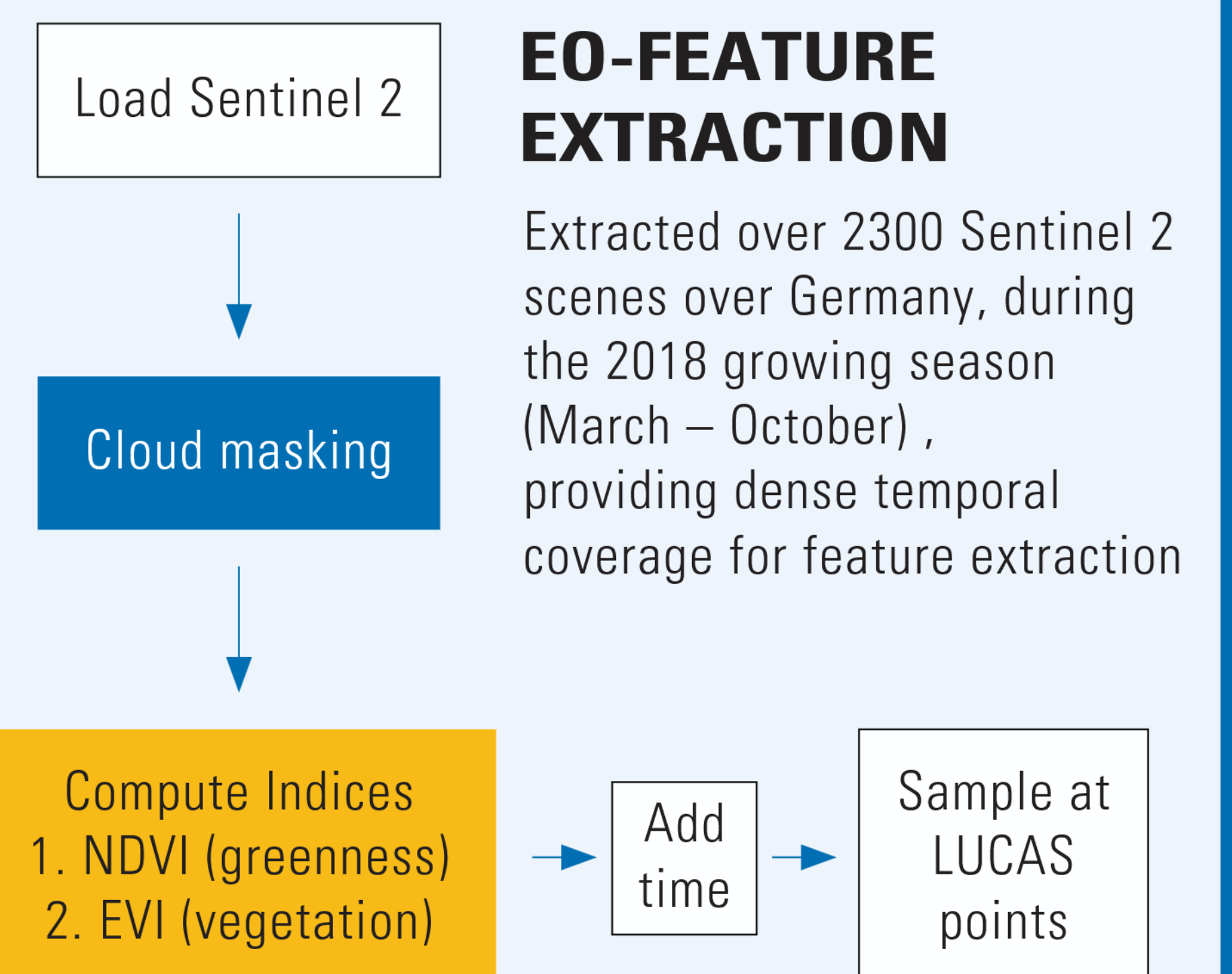
Traditional surveys (like LUCAS):	Earth Observation (satellite):
✓ Statistically reliable	✓ Full spatial coverage
✗ Sparse	✓ Fast
✗ Expensive	✗ Classification errors (bias)
✗ Slow	

How can we combine the strengths of surveys and satellite data to produce reliable and timely crop statistics?



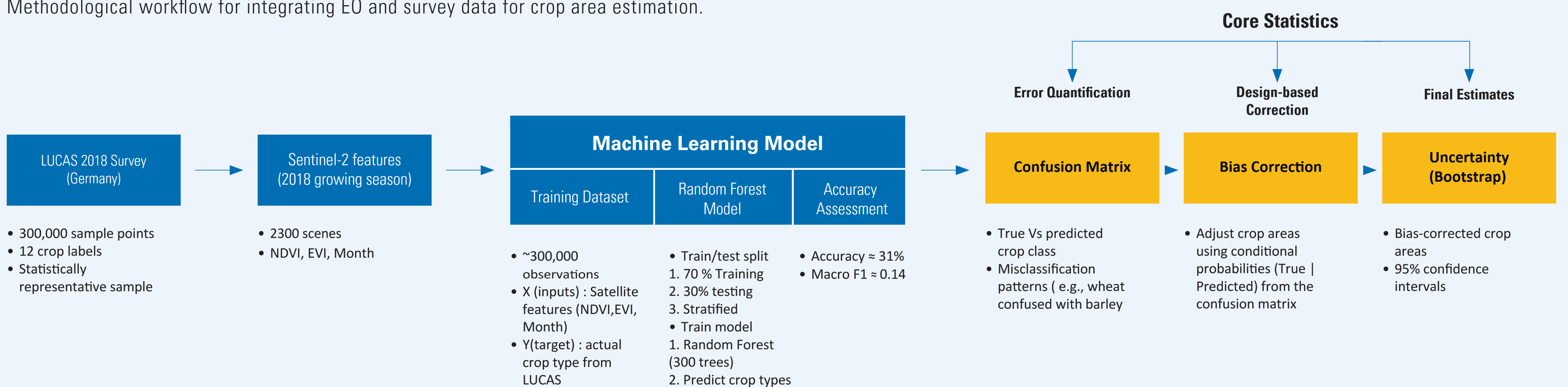
Spatial distribution of LUCAS survey points:

- 300k observations
- 12 crop types

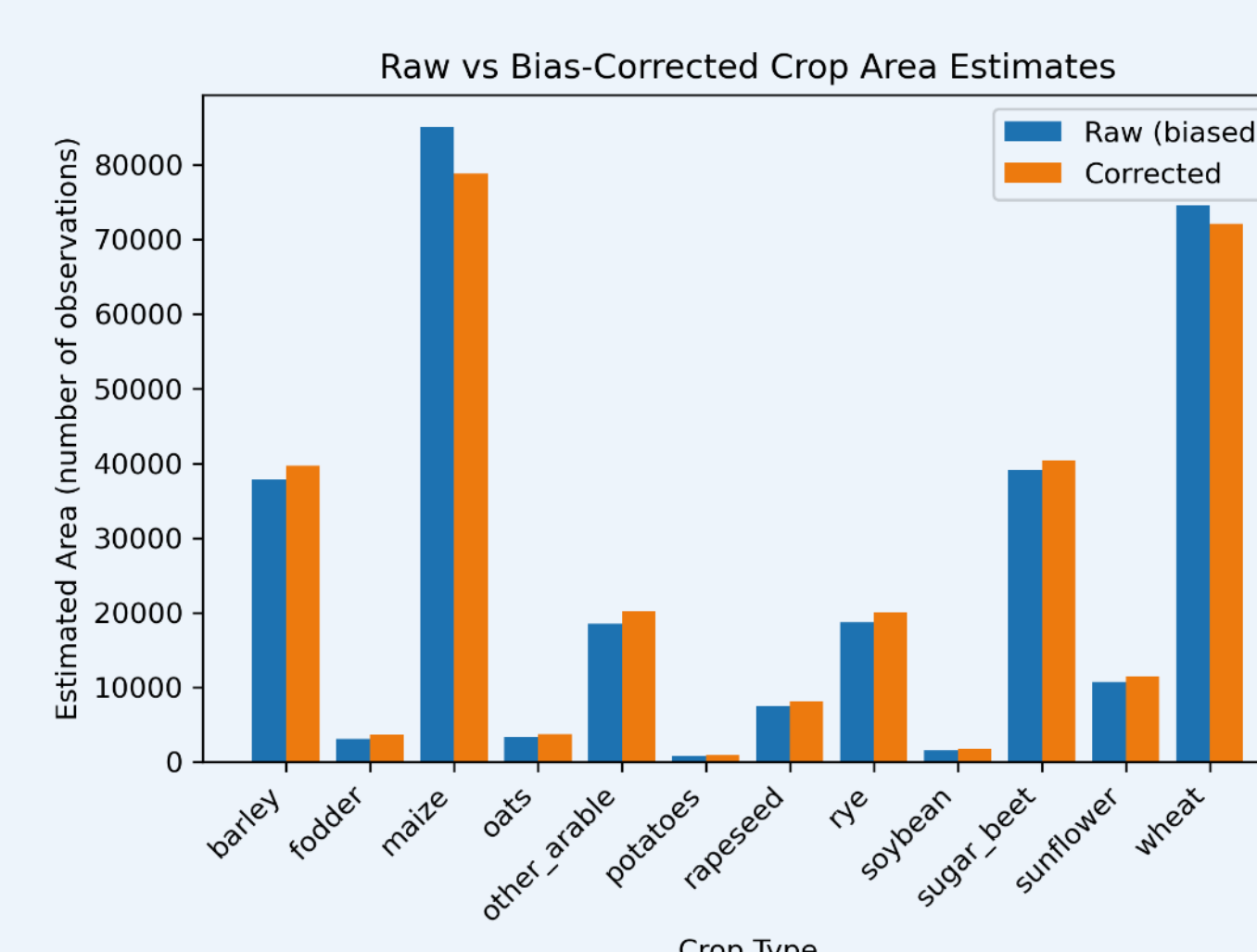
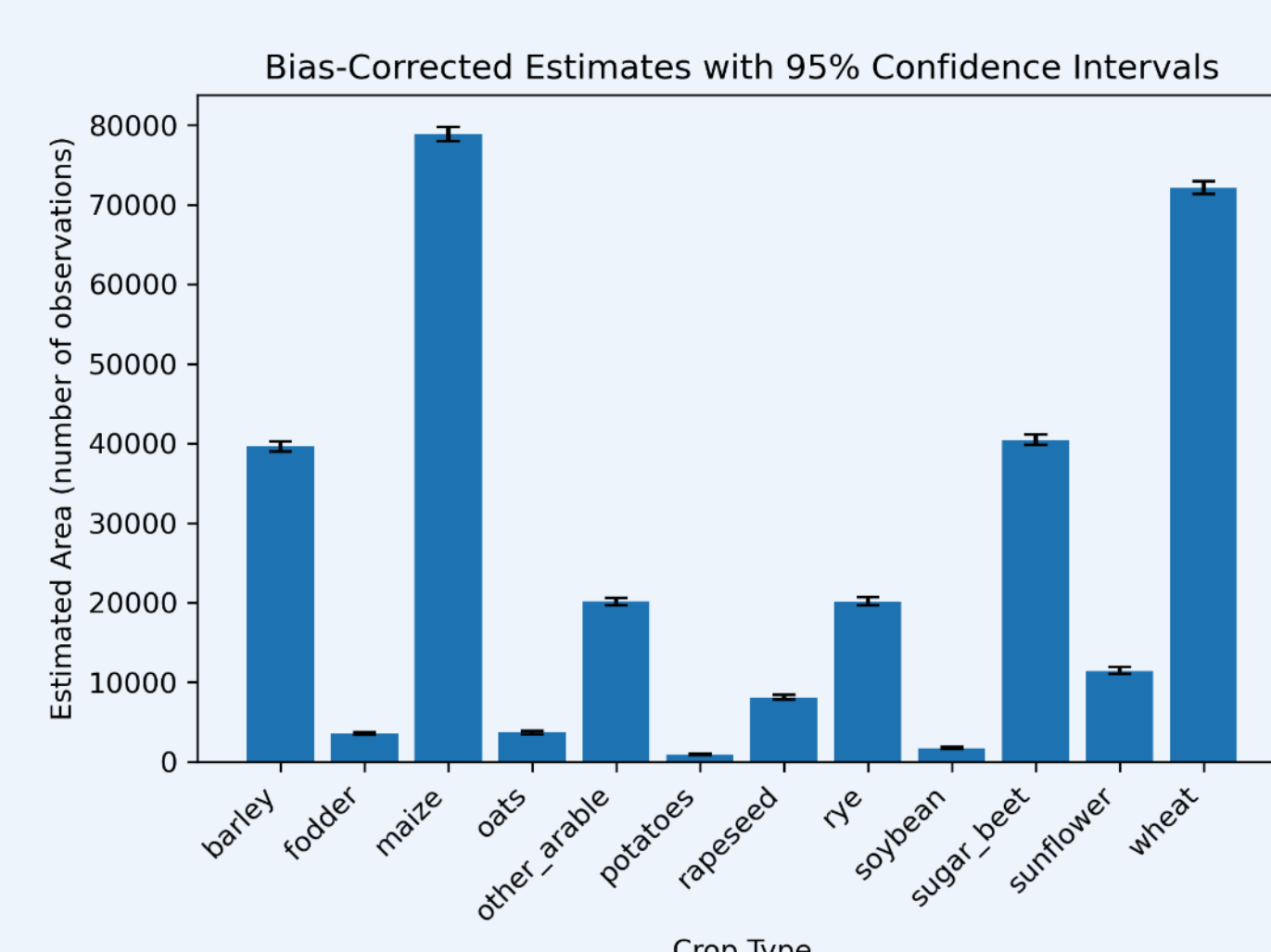
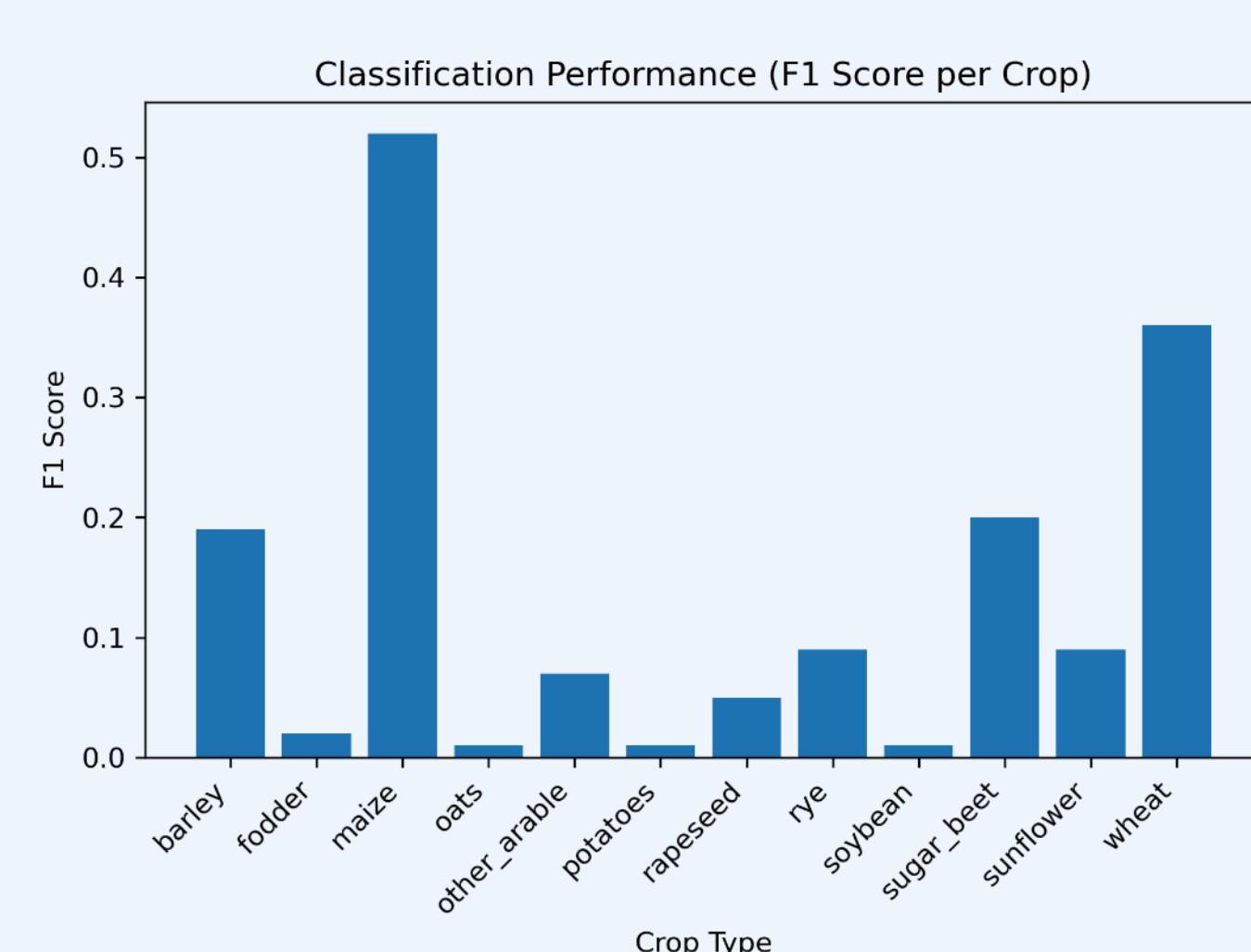


METHOD

Methodological workflow for integrating EO and survey data for crop area estimation.



RESULTS



Together these results show that although classification accuracy is relatively low, the bias correction framework allows us to produce consistent and reliable crop area estimates.

KEY TAKEAWAY:

1. We demonstrate an operational pipeline for EO-based crop mapping using open and reproducible tools
2. We show how survey data can be used to calibrate and correct EO-derived crop area estimates
3. We quantify the uncertainty associated with these corrected estimates, thereby aligning EO-based agricultural indicators with the principles of official statistics.

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