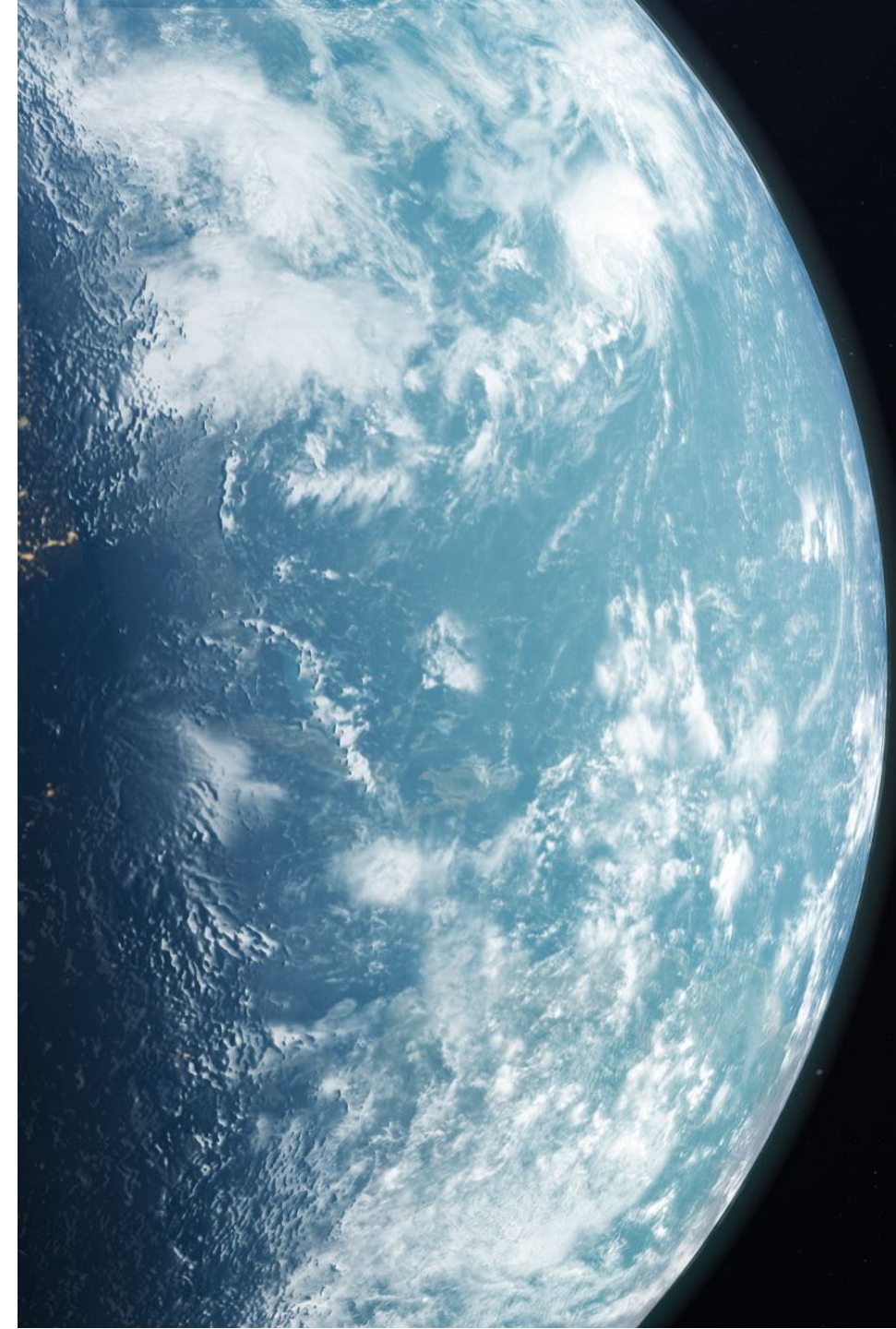


Next frontiers in global land cover/ land use monitoring

Nancy Harris

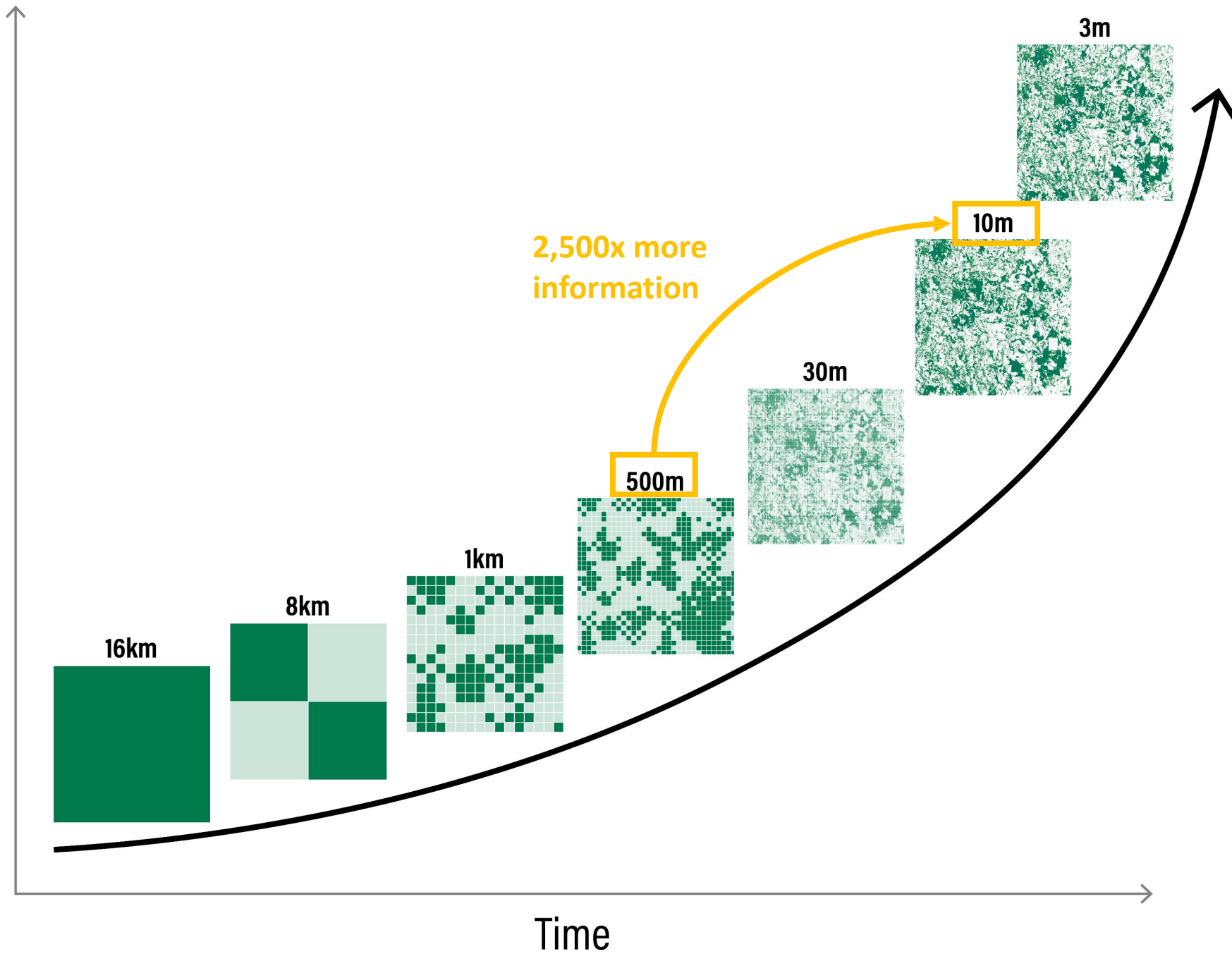
February 28, 2022



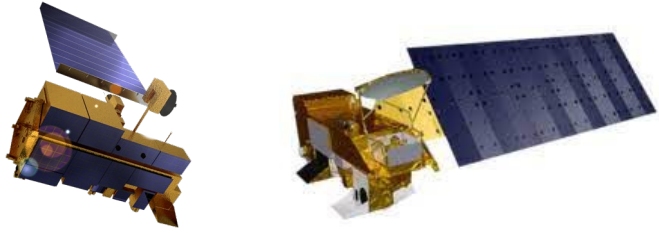
Outline

- What global land cover/land use datasets are available?
- How has the quality of these data changed over time, including the level and types of uncertainty in the data?
- To what extent have crops expanded globally and replaced natural ecosystems?
- How have crop yields and utilizations for biofuel feedstocks changed over time?
- Key takeaways

Free & Open Information



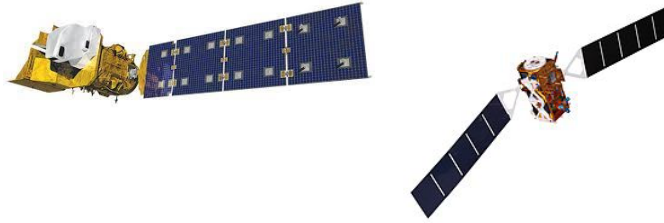
What global land cover/land use data are available?



MODIS/Terra+Aqua (NASA)

Global land cover MOD12Q1
500m resolution
2001-2019

Data Producer:
Boston University (Friedl)



Sentinel-1 and Sentinel-2 (EU Copernicus)

Various
10 m resolution
2020

Data Producers:
ESA WorldCover*
ESRI / Microsoft / Impact Observatory
Google*
TerraPulse*^



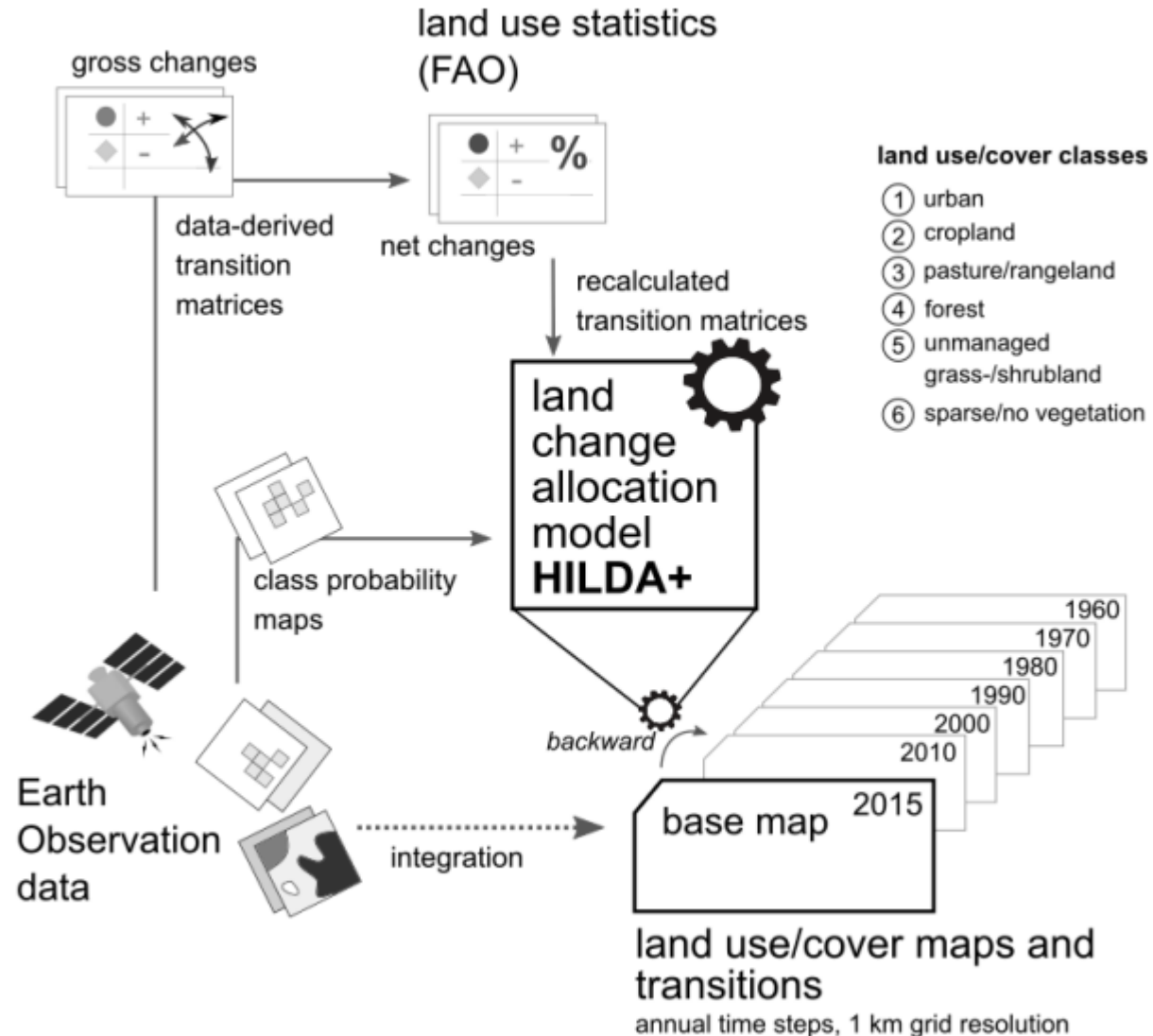
Landsat 9 + precursors (NASA/USGS)

Global Land Cover Change
30 m resolution
2000-2020

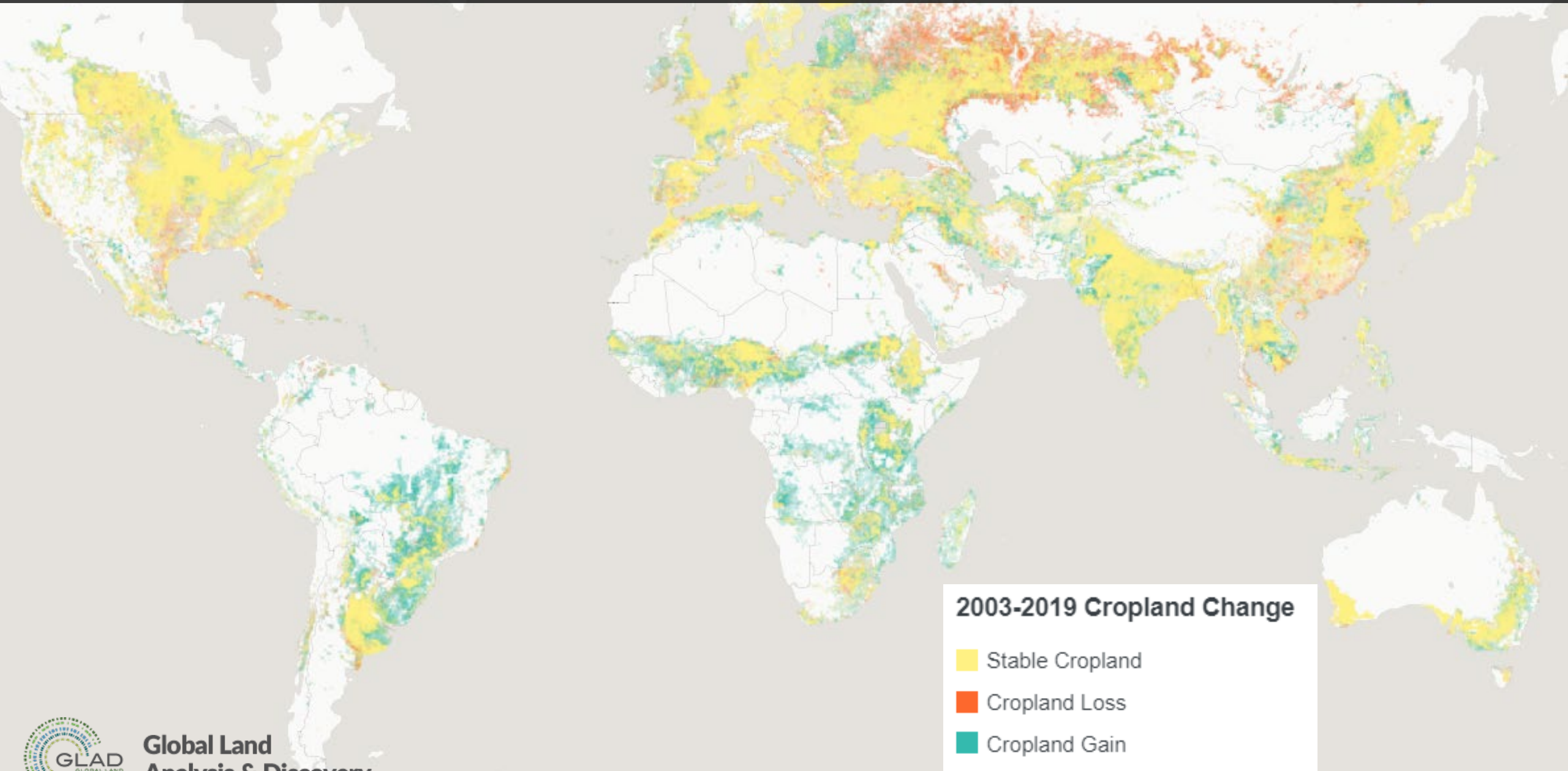
Data Producers:
Boston University (Friedl)*
UMD GLAD (Hansen/WRI)

GLOBAL
FOREST
WATCH

HILDA+: a global land change allocation model

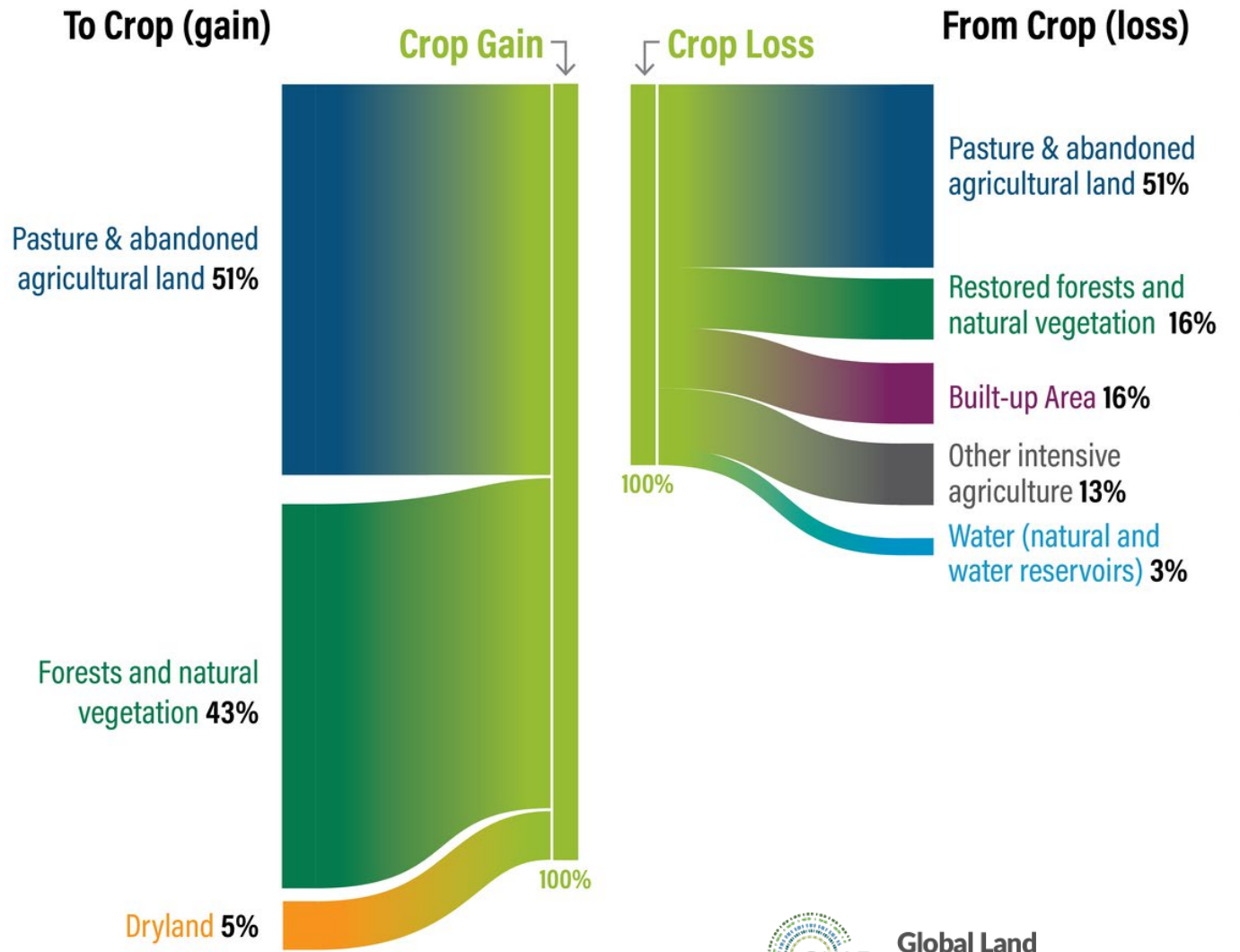


Global cropland extent and change (2003-2019)



Land Cover change to and from Cropland

Half of new cropland replaced natural ecosystems

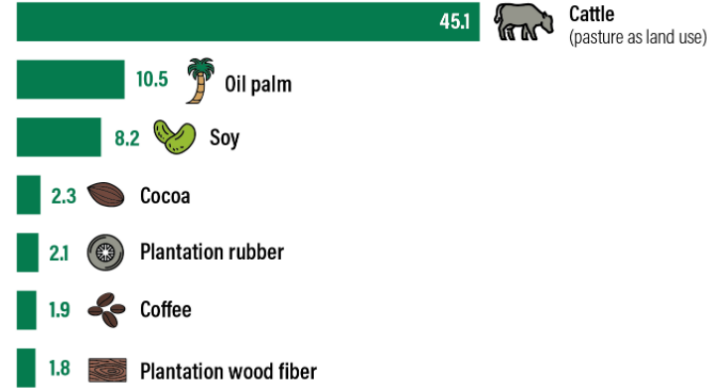


Source: Authors.
22.01.27

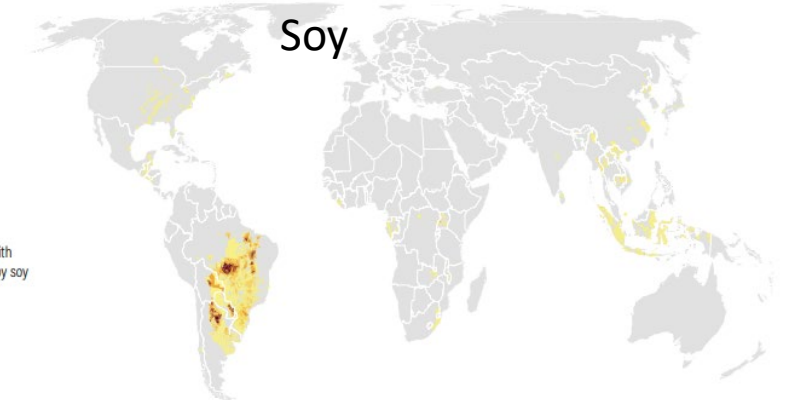
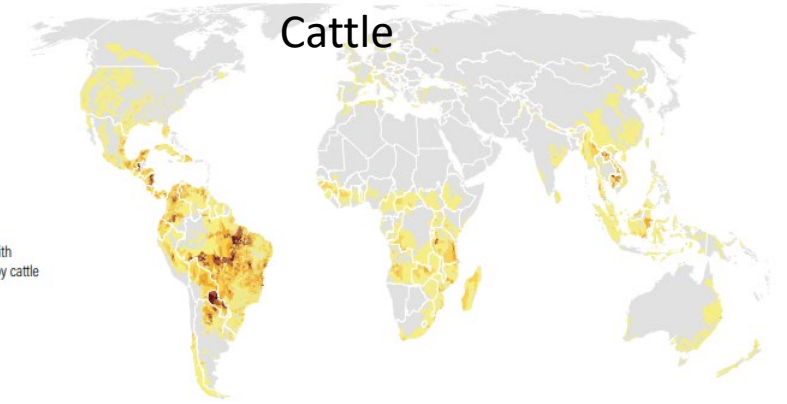
Deforestation linked to key commodities, 2001-2015

Total forest replacement by analyzed commodities (2001-15)

Deforestation (2001-15, million hectares)

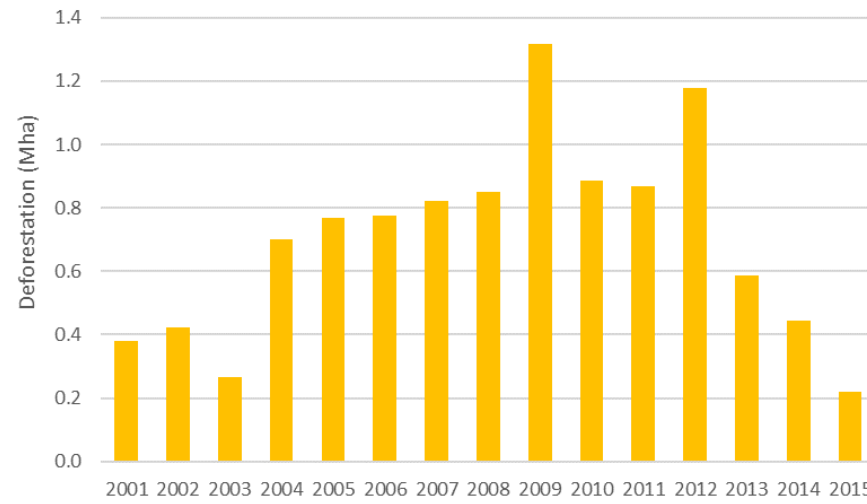


Source: Global Forest Review
21.02.09

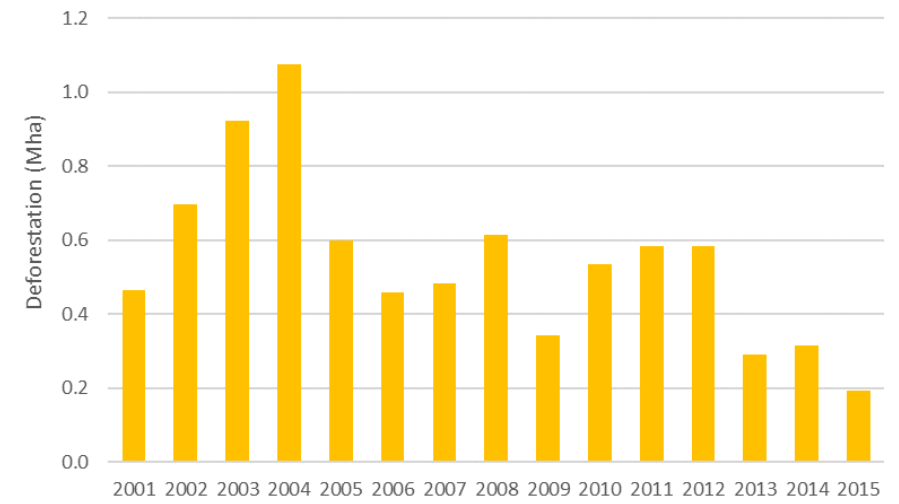


Deforestation linked to key commodities, 2001-2015

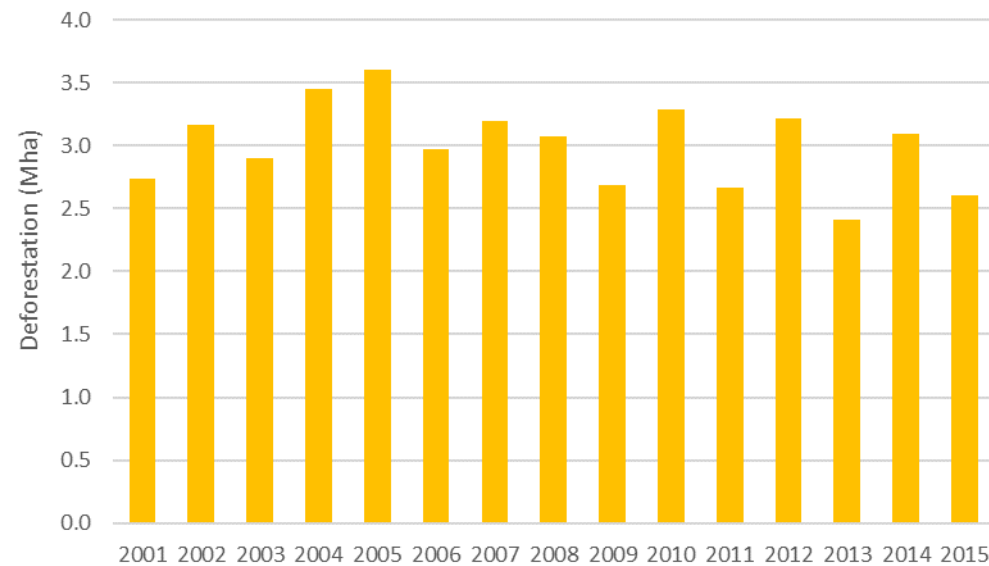
Total forest area replaced by oil palm globally



Total forest area replaced by soy globally



Total forest area replaced by pasture globally



6 Key Takeaways

1. Satellite-based land cover and land use information is increasingly available, and will continue to be improved and refined over time.
2. Precision of land cover maps has increased, and good practice methods are available to estimate uncertainty and map accuracy.
3. Cropland area has expanded by 9% worldwide over the past 20 years, with the fastest rate of expansion in Africa.
4. Globally, half of all crop expansion replaced natural ecosystems. Crops have also replaced pasture land, and pasture continues to expand into tropical forests.
5. Crop area harvested for export and industrial use has increased faster than for food and feed, and yields for industrial and feed uses are rising faster than for food.
6. The world faces intense competition for land to meet global food, energy, climate and biodiversity goals

Webinar

Land and Carbon Lab presents: What Does Cropland Expansion Mean for People and the Planet?

Register ↗

Add to Calendar

March 03, 2022-8 - 9:15am EST - Online

[Registration Link](#)