Environmental Statistics
Climate Change for Agriculture and Land Use

UN Expert Group on Environment Statistics

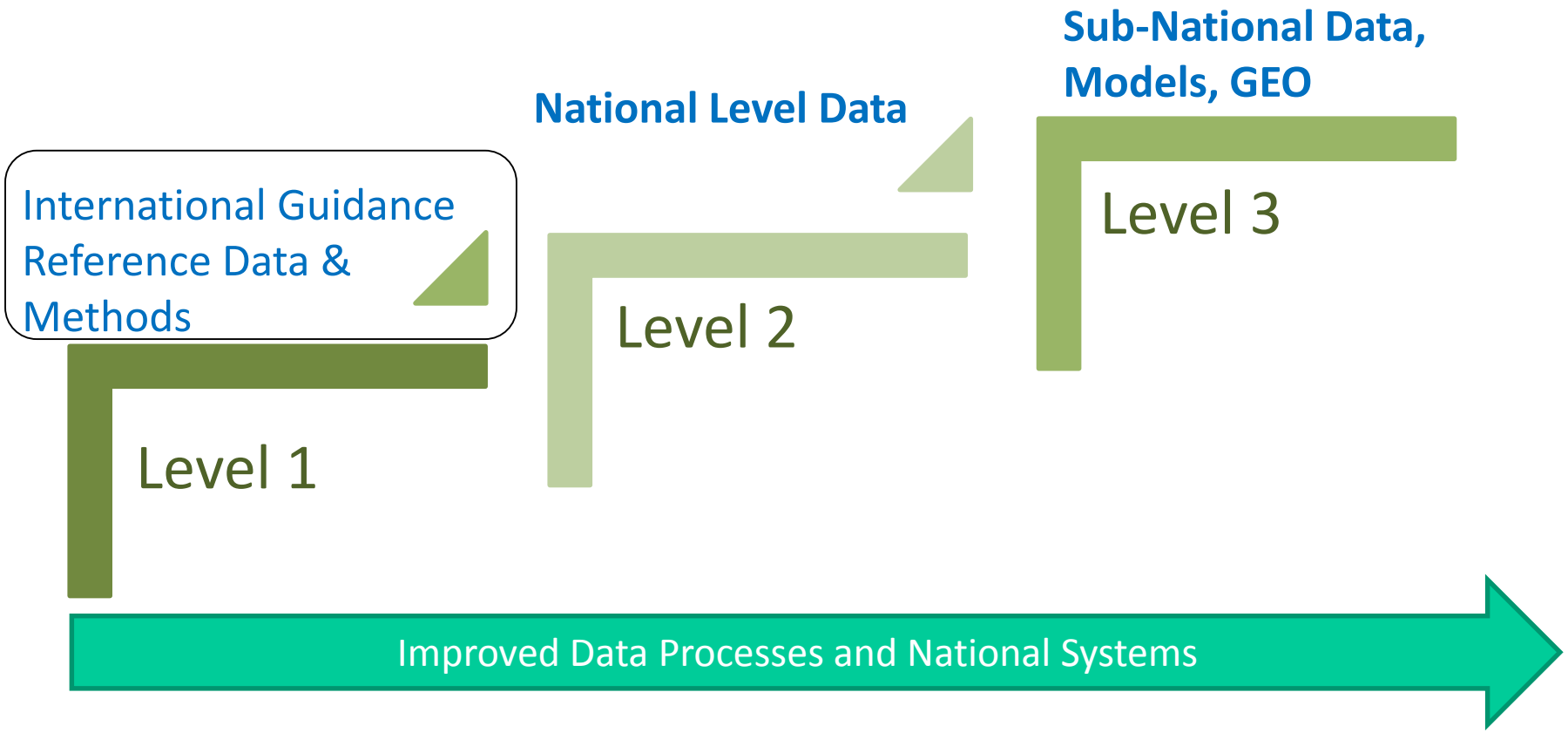
New York
May 21-23 2019

Food and Agriculture Organization
of the United Nations

Outline

- ***Agri-environment Statistics***
- ***Analytical Statistics and Indicators***
- ***Climate Change Statistics***

Framing FAOSTAT Analytical Data Products:



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Climate Change-relevant Statistics at FAO

Rationale

- Agriculture, Forestry and Fisheries are both a significant cause of climate change (20-24% of global emissions), and a sector greatly vulnerable through negative climate impacts on food production and food security
- Agriculture figures prominently in member countries' National Determined Contributions under the UNFCCC Paris Agreement, for both mitigation and adaptation commitments and goals

CC Statistics support to member countries

- Contribute to the Enhanced Transparency Framework for reporting under the climate convention
- Enable national analysis and regional comparisons, complementing SDG 13 by means of quantifiable indicators

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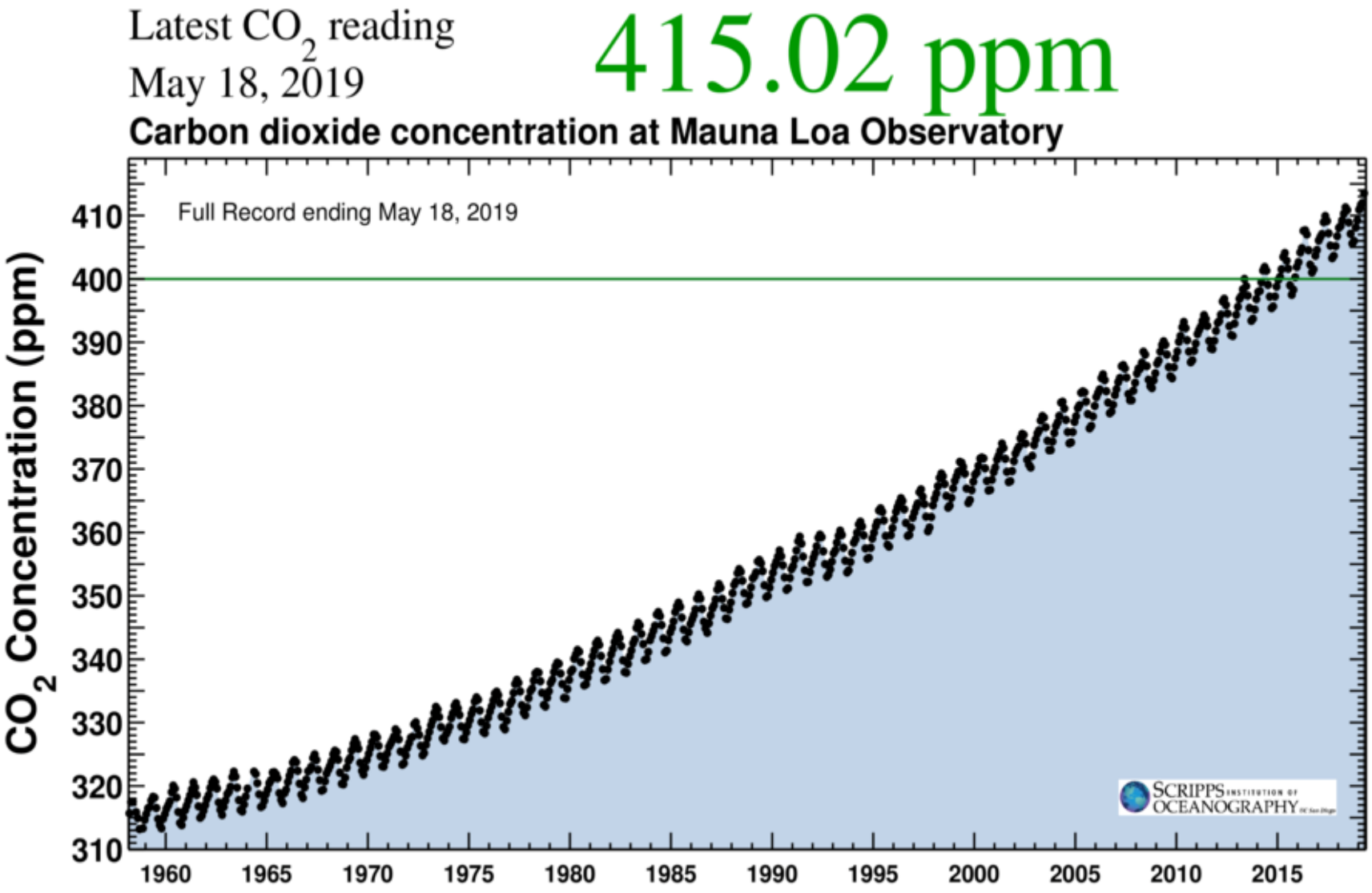
Atmospheric CO2 concentration, 1958-2019



New FAOSTAT Climate Change Statistics

Products

- Greenhouse gas emissions for **agriculture**, **forestry and other land use**, 1961-2017
- Related indicators: **Agriculture contribution** to total emissions (1961-2010); **Emissions intensities of ag commodities** (1961-2017)
- **Temperature Change** (NASA/FAO), 1961-2018

International Context

- Support countries reporting to UNFCCC
- Contribute to UNSD work and the UNECE Task Force on CC-Relevant Statistics (FAO pilot for UNECE set)
- SEEA Air Emissions Accounts for Agriculture, Forestry and Fisheries

Outreach

- Capacity development to strengthen relevant national statistics
- Focus on communication of results to non-specialized users

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Examples of Geospatial applications to FAOSTAT Agri-environmental Statistics

- Land Cover and Land Cover Change
  - Area burned / emissions from biomass fires
  - Area of degraded Peatlands / emissions
- Temperature Change
- Aggregating to national statistics: GAUL

Note: Significant additional Geospatial work at FAO

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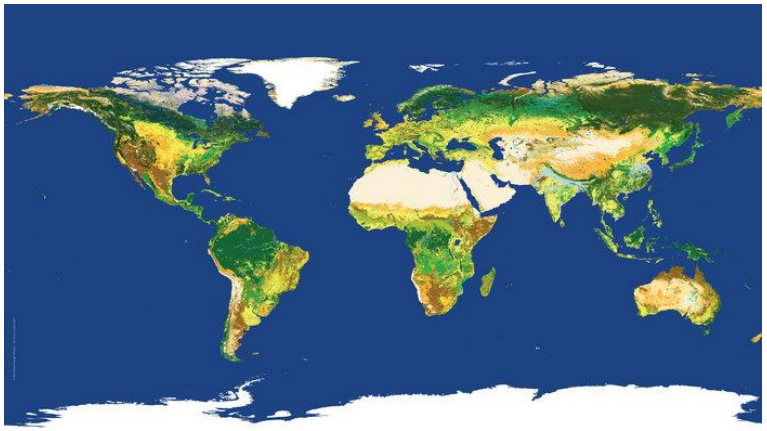
Land Cover



Source: ESA CCI, 2018

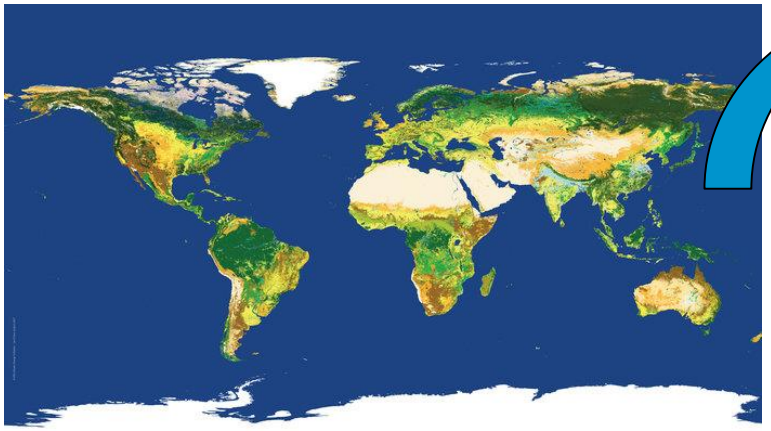
Land Cover is needed for key reporting processes:

- UNFCCC (e.g., IPCC LU classes for NGHGI)
- SDG (e.g., 2.4.1; 15.1.1.; 15.3.1)
- SEEA (e.g., Natural Capital and Ecosystems)

No global statistical data collection

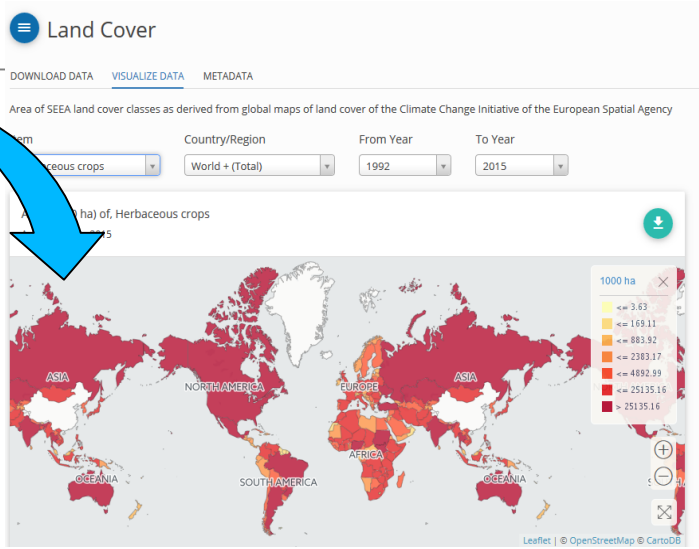
Information available from remote sensing @ 300m

Land Cover



Source: ESA CCI, 2018

GAUL



PROCESS (with ESA):

- Use LCCS to map LC classes to SEEA at 300m
- Use GAUL to aggregate from pixel to National Level (MODIS, ESA CCI)

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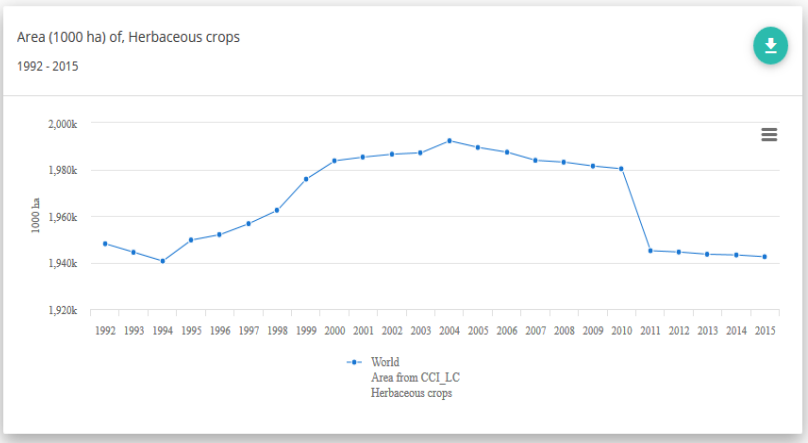
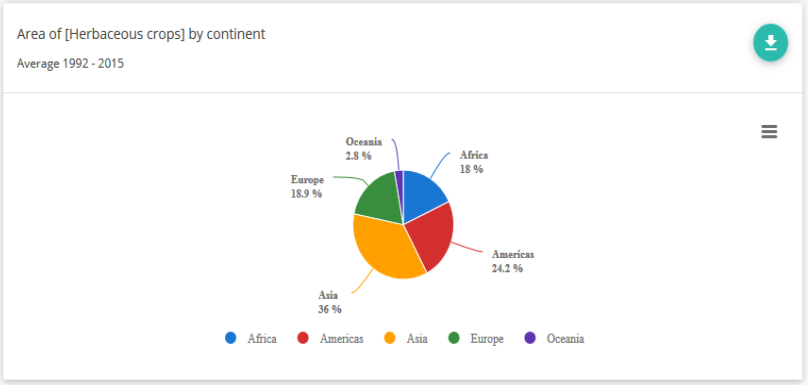
FAOSTAT Land Cover Accounts





- 14 Land Cover Classes (SEEA)
- 185 Countries and territories
- Time series 1992-2016

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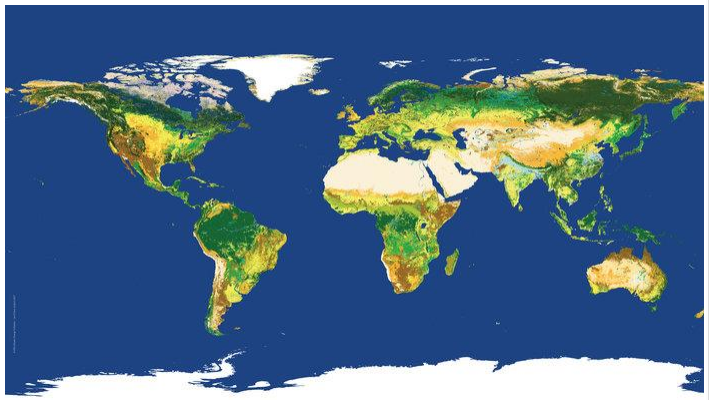
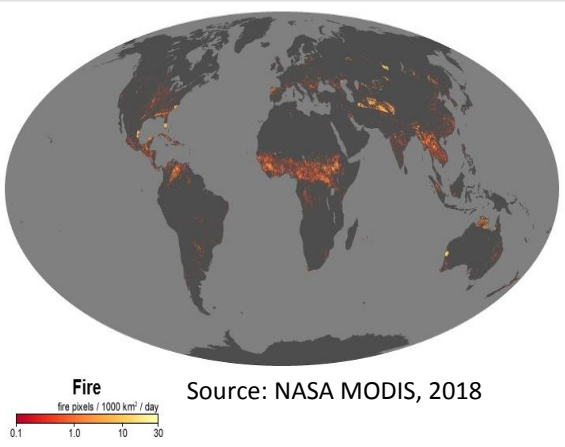
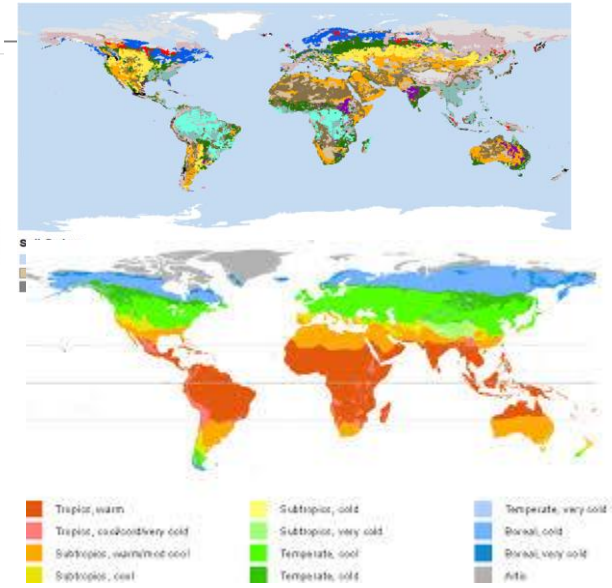
Land Cover, Fires, Degraded Peatlands



Source: ESA CCI, 2018



Source: NASA MODIS, 2018



Source: FAO, 2018

Information is needed for key reporting processes:

- UNFCCC (e.g., IPCC LU classes for NGHGI)
- SDG (e.g., 2.4.1; 15.1.1.; 15.3.1)
- SEEA (e.g., Natural Capital and Ecosystems)

No global statistical data collection

Information available geospatially @ 300m (LC) 500m (fires), 1km (soil and agro-climatology)

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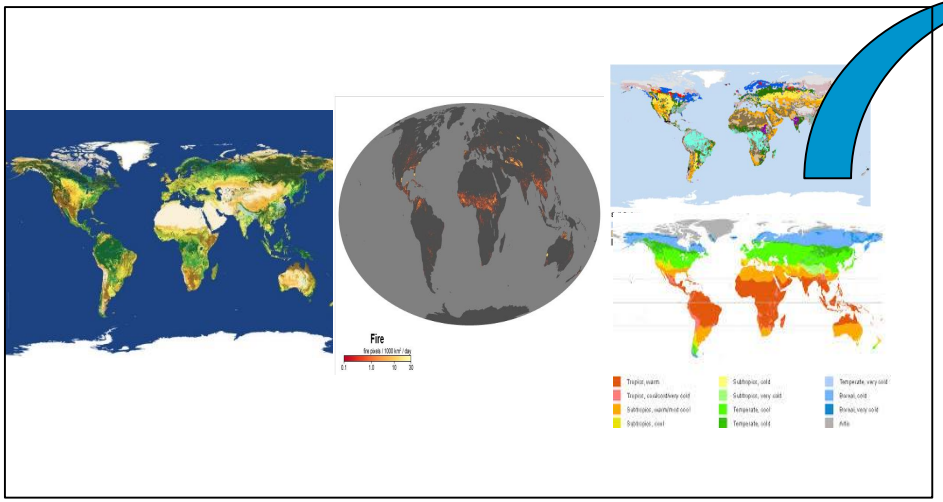
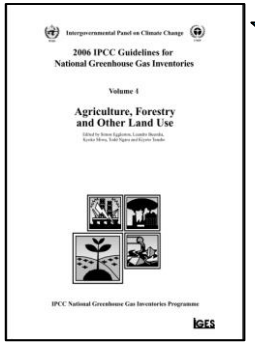
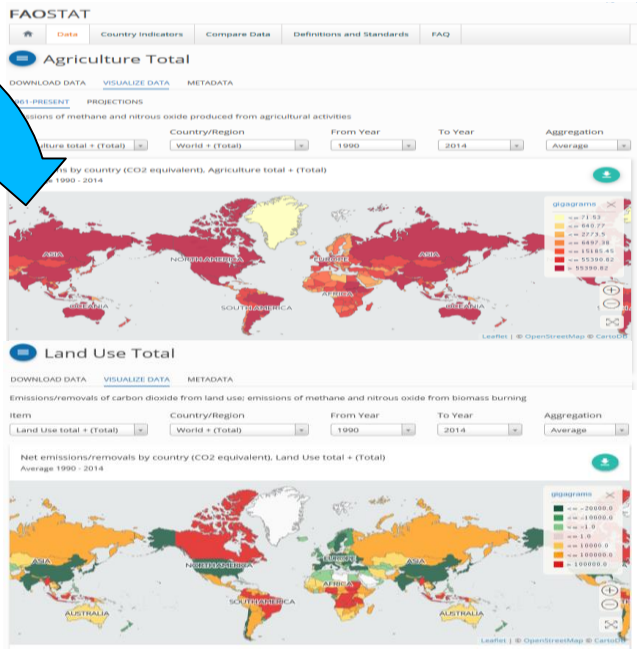
Land Cover, Fires, Degraded Peatlands





GAUL



PROCESS (with ESA, NASA, JRC):

- Overlay SEEA LC classes and fire data to estimate burned areas by LC at 500m
- Compute biomass using IPCC and FAO AEZ at 1 km
- Estimate emissions using IPCC at 1km
- Use GAUL to aggregate from pixel to National Level

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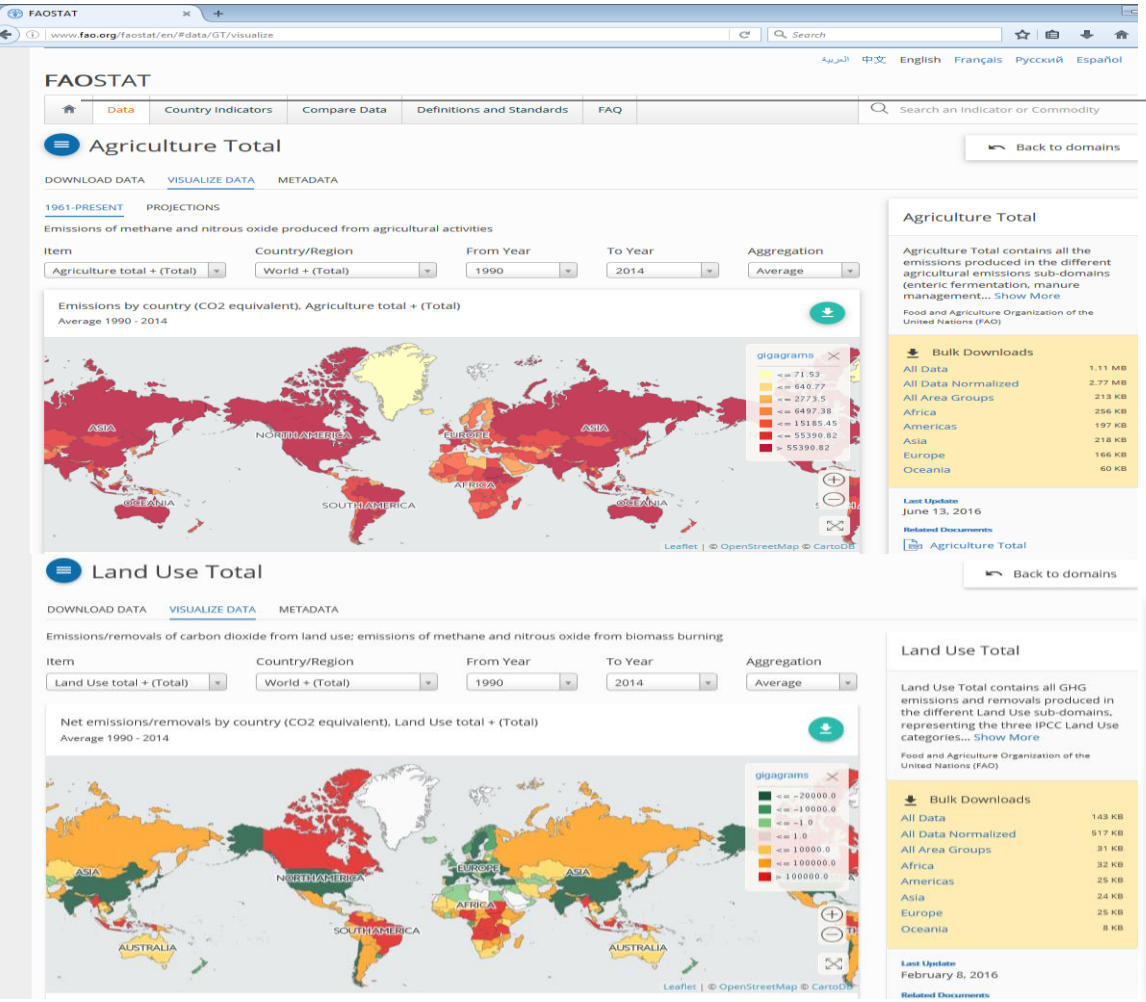
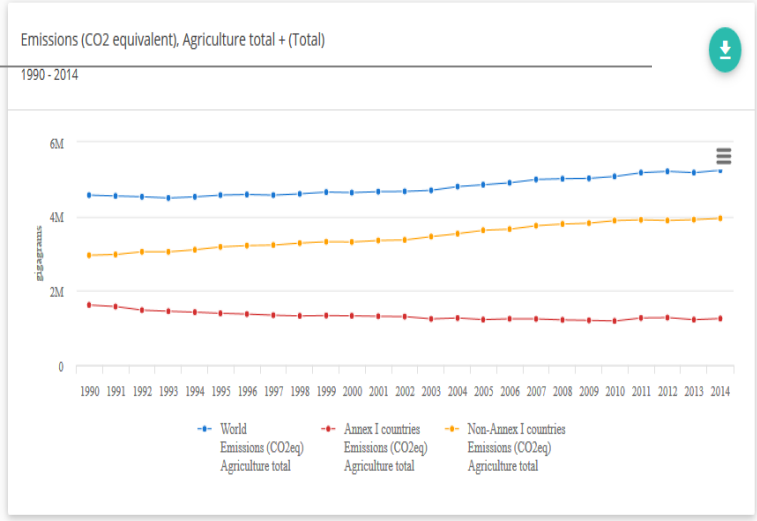
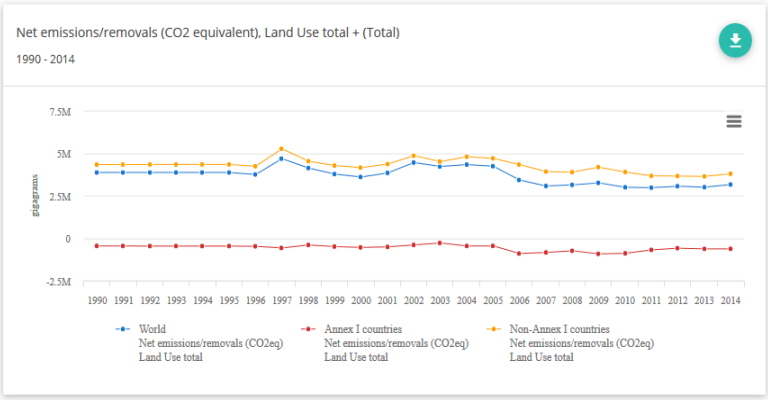
FAOSTAT Agriculture and Land Emissions Accounts







- Burnt area, drained peatland area, burned biomass and emissions over SEEA Land Cover/IPCC Land Use Classes + Peatlands
- 185 countries and territories, 1990-2016

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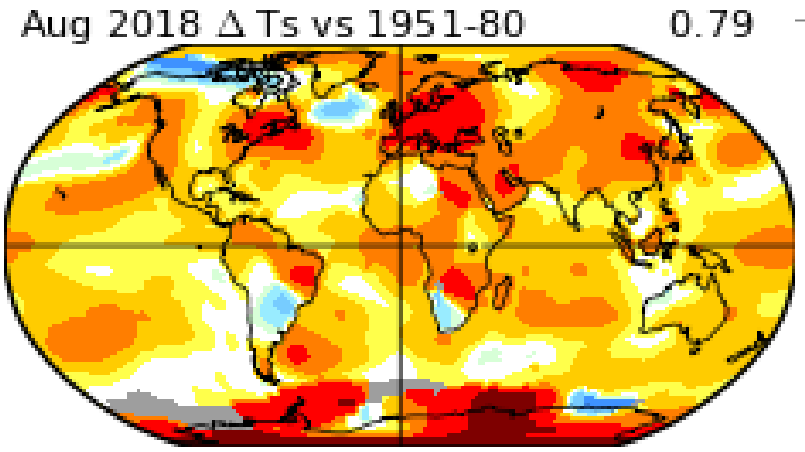
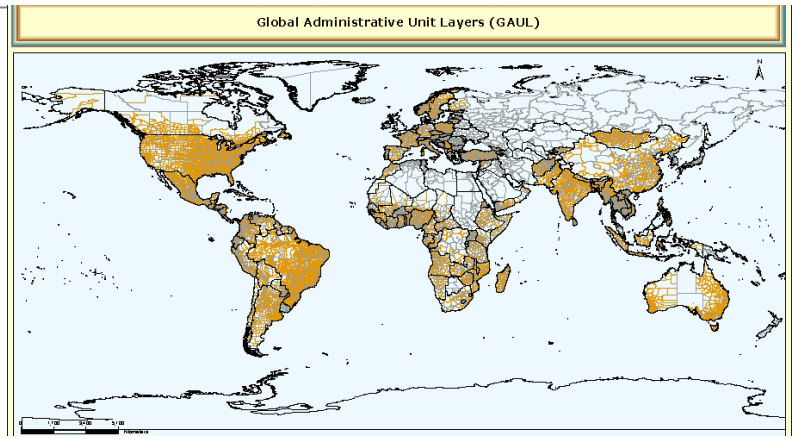
Temperature Change



Source: NASA GISS, 2018



GAUL. Source: FAO, 2018

Information is needed for key reporting processes:

- UNFCCC (e.g., NCs, BURs, NDCs)
- SDG (e.g., 13)
- SEEA (e.g., Natural Capital and Ecosystems)

No global statistical data collection

Information available from network of met stations, geospatially distributed @ 50 km)

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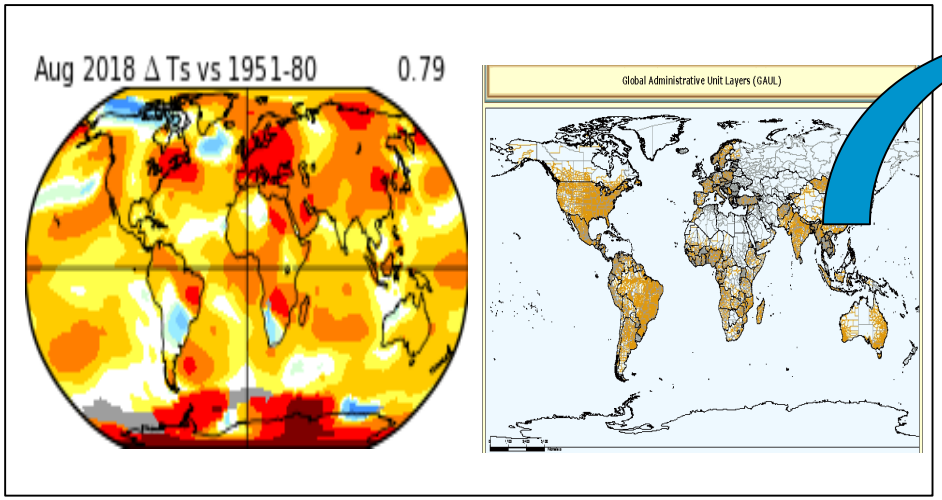
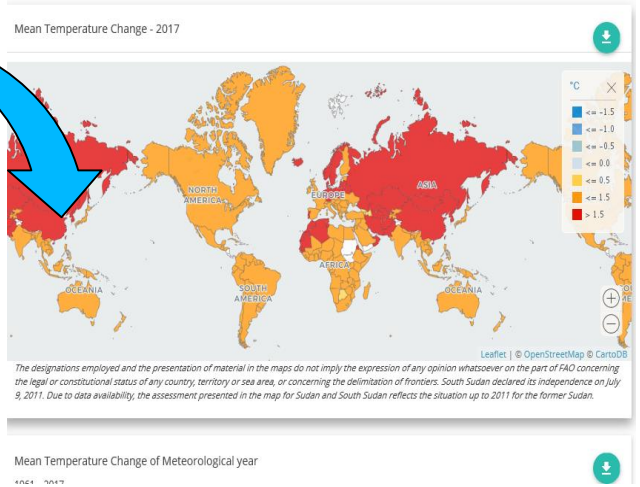
FAOSTAT Climate Change Indicator: Temperature Change



GAUL



PROCESS (with NASA-GISS):

- Use GAUL to aggregate from pixel to National Level
- Produce uncertainty indicators (ongoing)

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Conclusions

- FAOSTAT Climate Change Statistics aim to support member countries in their national analyses and international reporting needs
- Established domains include emissions and related indicators, and are used to inform regional and global trends.
- GEO spatial-derived statistics are useful to address a number of relevant issues in agri-environment and climate change
- FAO aims to work with member countries, UNFCCC, UNSD and UNECE on the creation of a climate change relevant statistical framework in support of the Enhanced transparency goals of the Paris agreement

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Thank You !

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