CEOS *biomass harmonization*. A collaborative effort between global and national biomass monitoring experts

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25.05.2022

CEOS *biomass harmonization* activities in support of the Global Stocktake of the Paris Agreement

United Nations Climate Change

Paris Agreement

PARIS2015 COP21-CMP11

Transparency Framework

Global Stocktake

- Mitigation
- Adaptation
- Means of Implementation: Finance, Technology, Capacity Building
- Cross-cutting: Response measures, Loss & Damage, Equity

Systematic Observations Community

CEOS was established in 1984 to coordinate and harmonize Earth observations to make it easier for the user community to access and use data

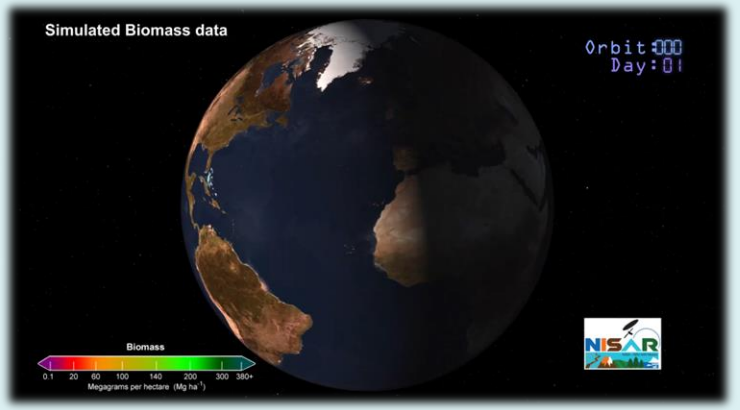
CEOS

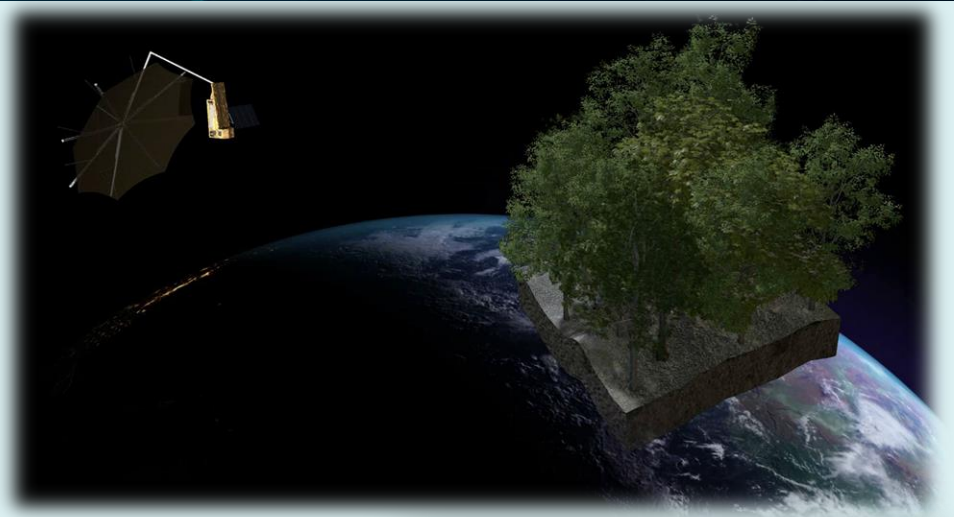
AFOLU Roadmap Task team

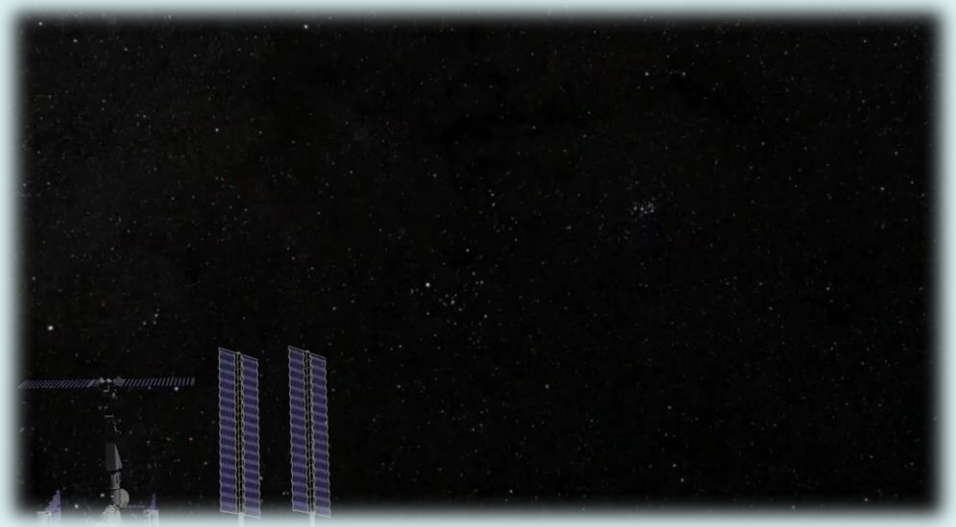
Biomass harmonization

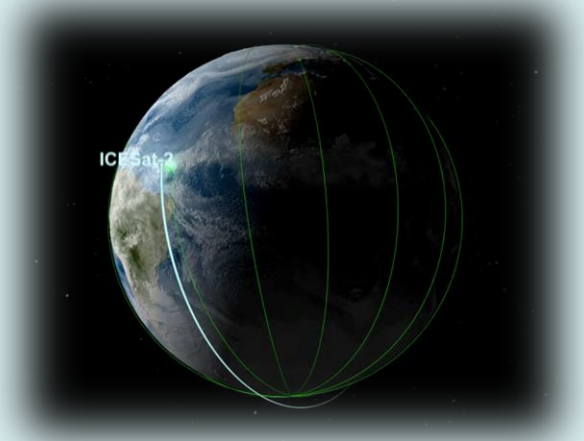
CEOS *biomass harmonization* activities in support of the Global Stocktake of the Paris Agreement

Exploring new data from satellites designed specifically to measure above-ground biomass









NASA

GEDI ECOSYSTEM LIDAR

UNIVERSITY OF MARYLAND 18 56

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

USDA

esa biomass

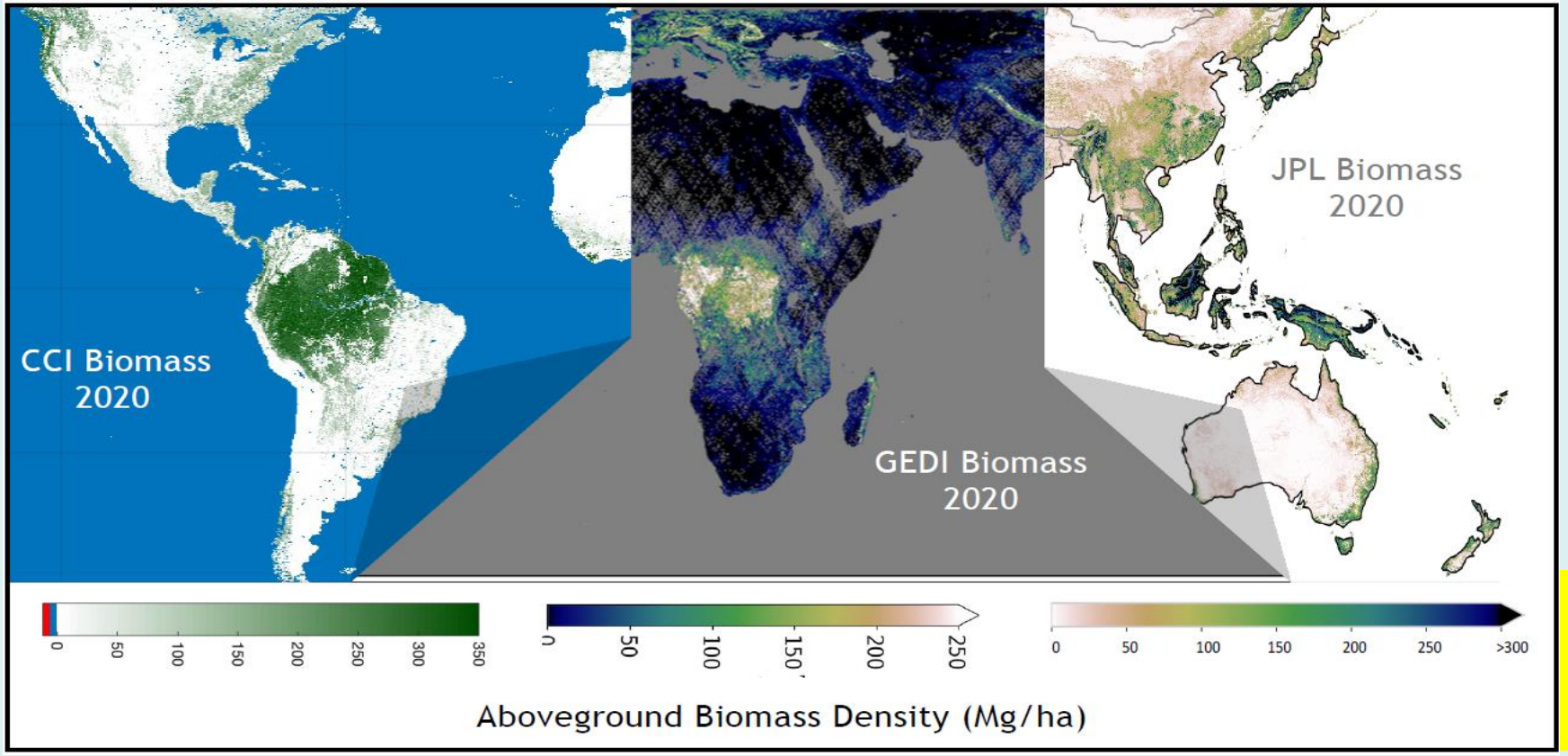
esa

NISAR NASA - ISRO SAR Mission

JAXA

CEOS *biomass harmonization* activities in support of the Global Stocktake of the Paris Agreement

- Biomass products available in advance of the Global Stocktake
- Understand the differences and develop a single CEOS-endorsed harmonized biomass product
  Understand the differences to enhance transparency and develop harmonized methods



Duncanson et al.
A3.06 Biomass monitoring Part 1
Thursday 08:30am

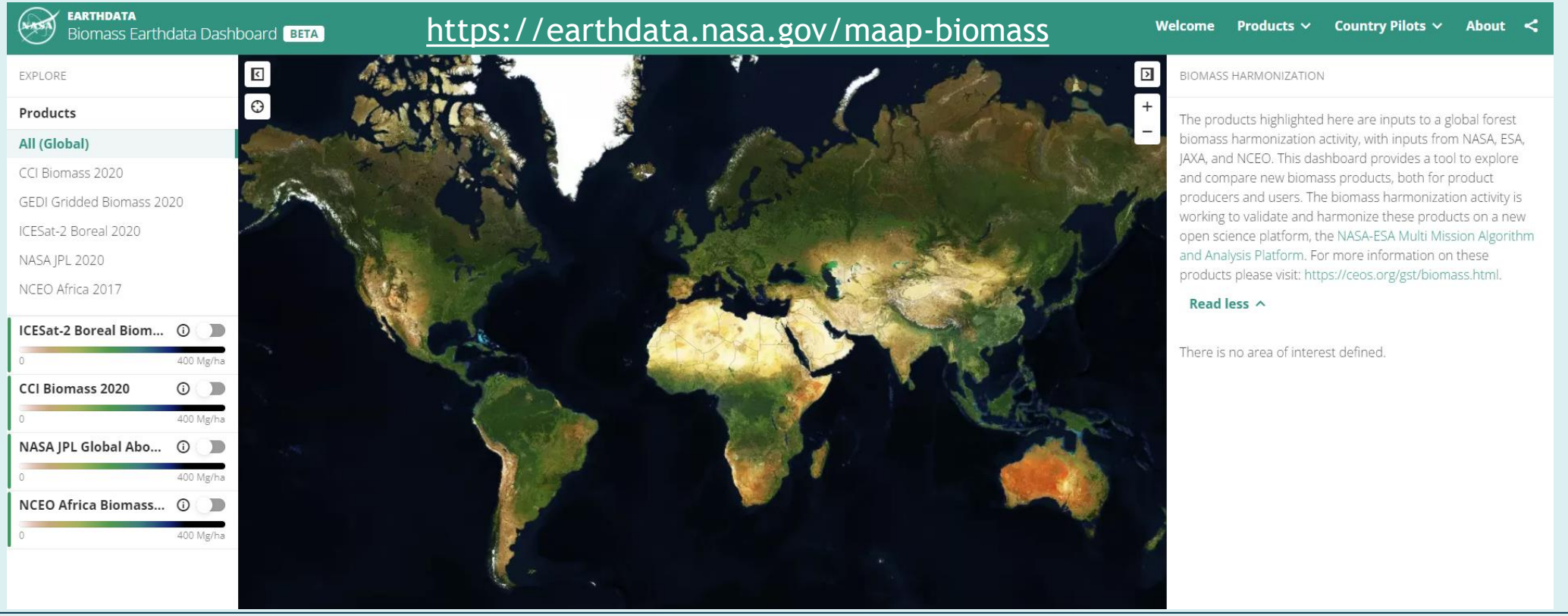
CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Exploring new ways to collaborate, to work together

Satellite global biomass monitoring experts

National Forest Inventory experts

SilvaCarbon



CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

$$Emission = A \times EF$$

$$\Delta C = \frac{C_{t_2} - C_{t_1}}{t_2 - t_1}$$

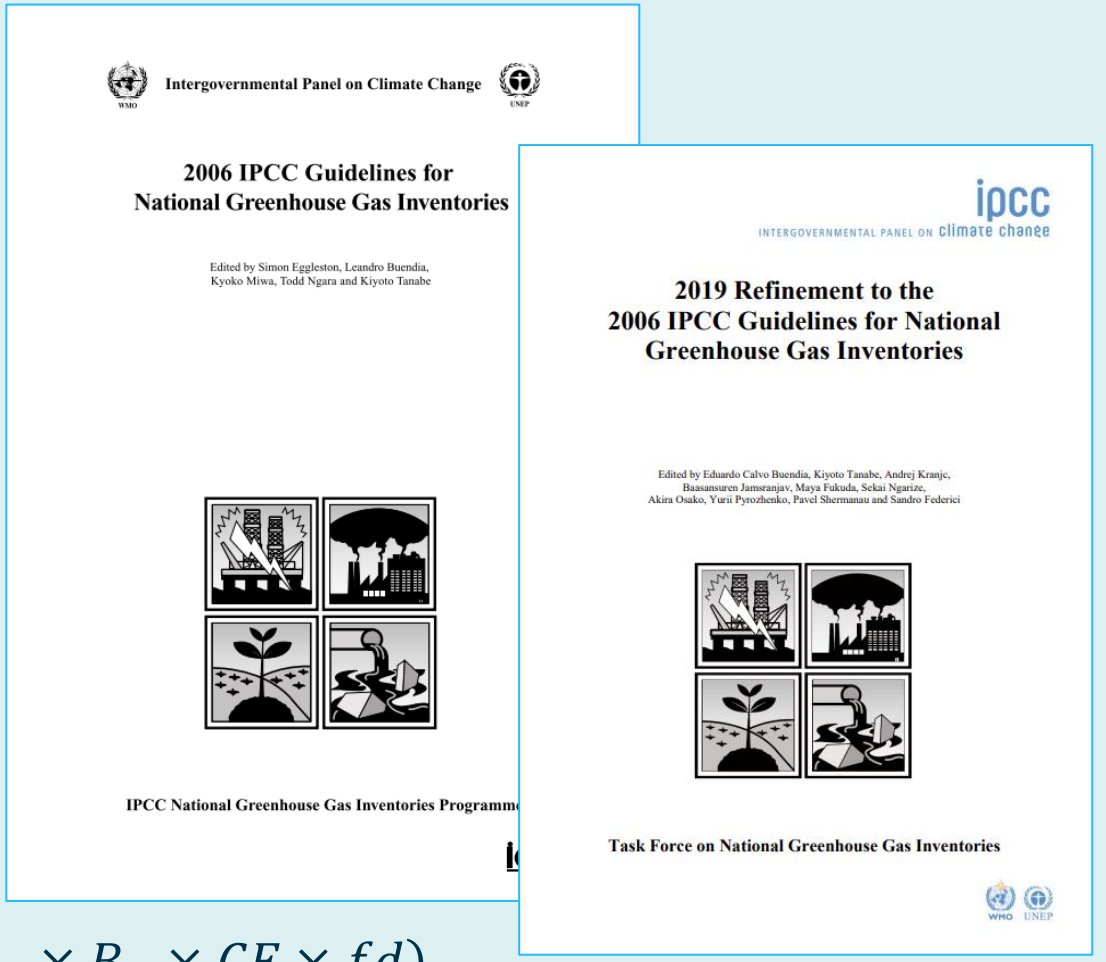
$$\Delta C = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L$$

$$\Delta C_{CONVERSION} = \sum_i \left((B_{AFTER_i} - B_{BEFORE_i}) \times \Delta A \times CF \right)$$

$$\Delta C_L = L_{wood-removals} + L_{fuelwood} + L_{disturbance}$$

$$\Delta C_G = \sum_{i,j} (A_{i,j} \times G_{TOTAL_{i,j}} \times CF_{i,j})$$

$$L_{disturbance} = (A_{disturbance} \times B_w \times CF \times fd)$$



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$$\Delta C_{CONVERSION} = \sum_i \left(\left(B_{AFTER_i} - B_{BEFORE_i} \right) \times \Delta A \times CF \right)$$

Are the estimates consistent with the national forest definition?

Tree outside forests

Tree crops

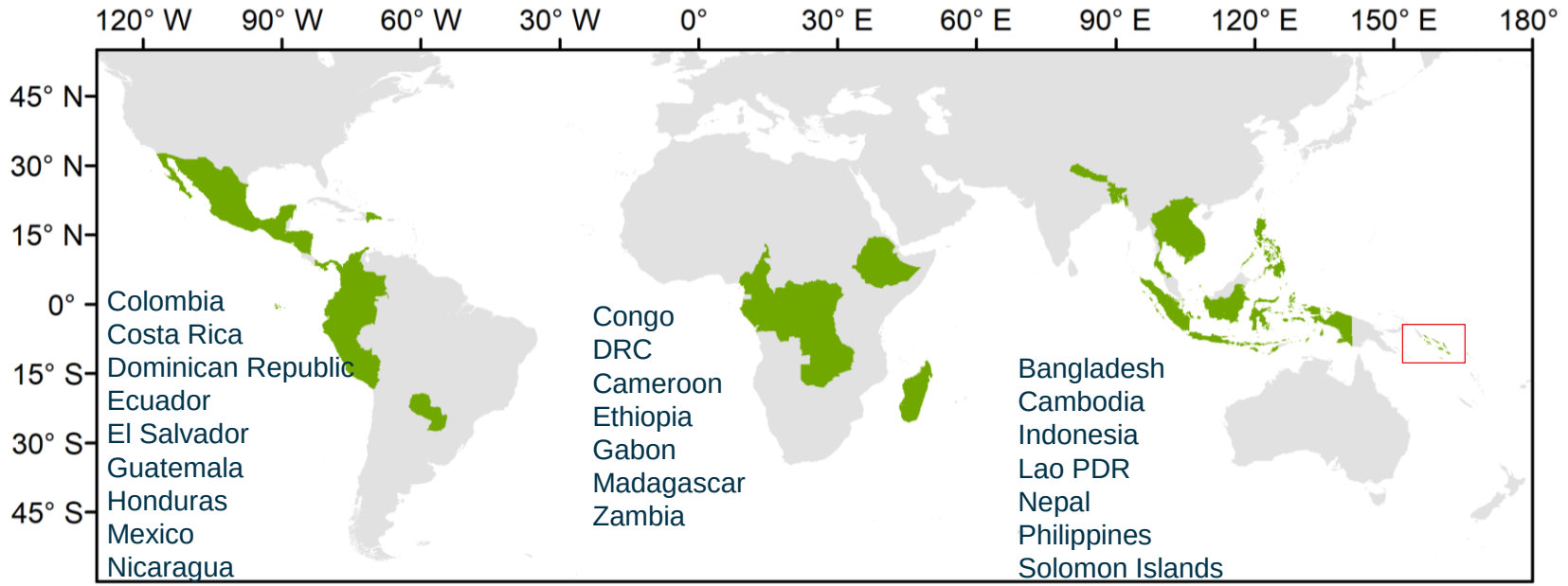
Other conditions to be met:
* spatial scale * temporal coverage * consistency * accuracy

See Chapter 2, Volume 4, 2019 Refinement to the 2006 IPCC Guidelines (link)

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

SilvaCarbon
Forest Monitoring for Climate Change 10 Years

Leading the country engagement activities

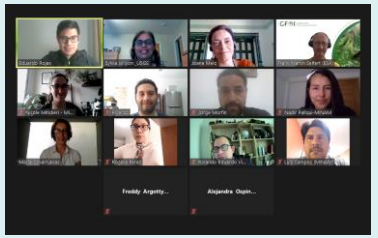


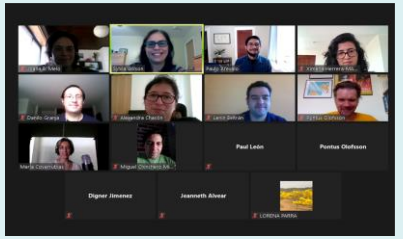
Overarching goals

- Understand needs and requirements
- Provide national feedback on, and contribute to the refinement of, available products
- Demonstrate the uptake of products

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Introducing CEOS and the *biomass harmonization* objectives





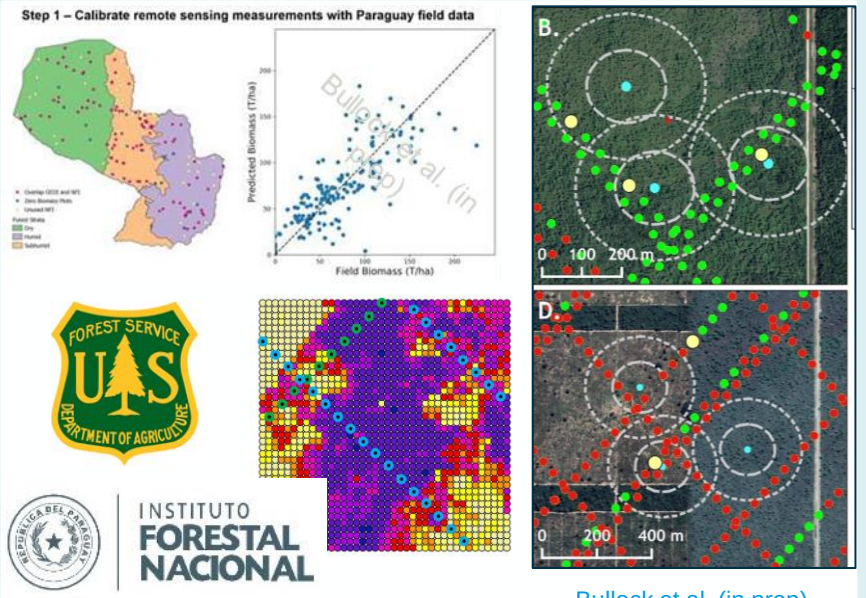
Regional Workshops

1st SilvaCarbon/CEOS Regional Workshop

Latin America and the Caribbean

Paraguay, June 2022

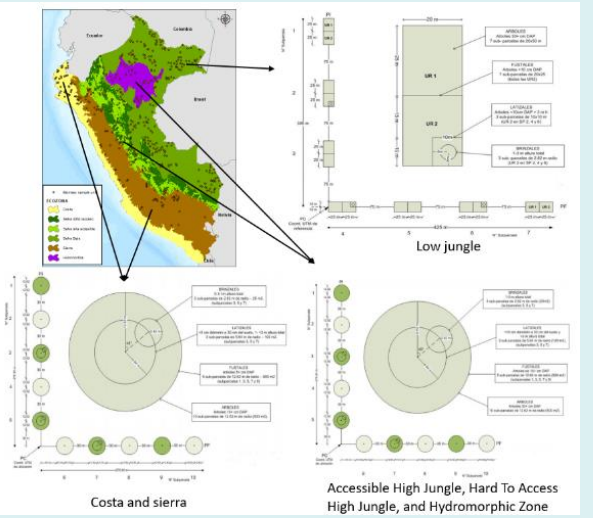
Bilaterally explore opportunities for uptake

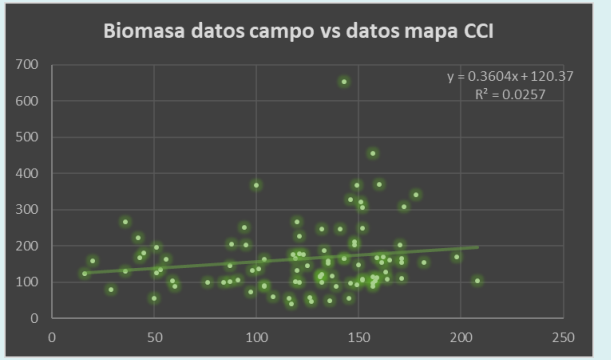


Bullock et al. (in prep)

Paraguay is the first country to have a country-specific GEDI biomass model, calibrated with on-orbit data

provide feedback





CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Preparation work to facilitate the dialogue

Lessons from REDD+ in leveraging MRV capacity in the LULUCF sector

75 submissions
56 countries

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Preparation work to facilitate the dialogue

Melo et al. (in prep)

Satellite data use in the current MRV framework

All countries use satellite data for Activity data

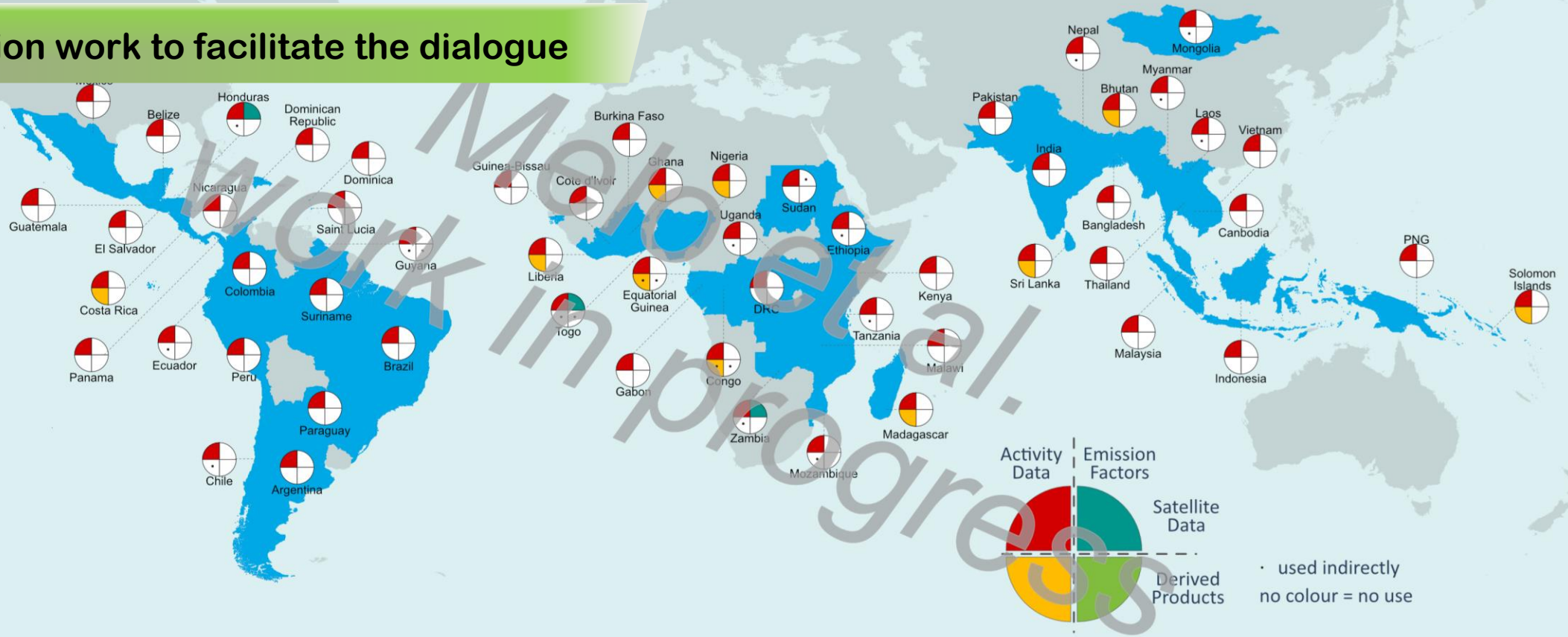
A few use satellite data to develop biomass maps as well

(not including airborne data)

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Preparation work to facilitate the dialogue

Melo et al. (in prep)



use of derived products?

For Activity data, yes. Even direct use
Also for collecting training data or comparison of results
For emission factor only to compare results (Party or AT)

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Preparation work to facilitate the dialogue

United Nations FCCC/TAR/2016/PRY

Framework Convention on Climate Change

Distr.: General
20 December 2016

English only

Report on the technical assessment of the proposed forest reference emission level of Paraguay submitted in 2016

Summary

This report covers the technical assessment of the submission of Paraguay, on a voluntary basis, on its proposed forest reference emission level (FREL), in accordance with decision 13/CP.19 and in the context of results-based payments. The FREL proposed by Paraguay covers the activity "reducing emissions from deforestation", which is among the activities included in decision 1/CP.16, paragraph 70. In its submission, Paraguay has developed a national FREL. The assessment team notes that the data and information used by Paraguay in constructing its FREL are transparent and complete, and are in overall accordance with the guidelines contained in the annex to decision 12/CP.17. This report contains the assessed FREL and a few areas identified by the assessment team for further technical improvement, according to the scope of the technical assessment in the annex to decision 13/CP.19.

GE.16-22513(E)

Please recycle

III. Conclusions

38. The information used by Paraguay in constructing its FREL for deforestation is overall transparent and complete and is in overall accordance with the guidelines for the submission of information on FRELs (as contained in the annex to decision 12/CP.17).

39. The AT acknowledges that Paraguay included in the FREL the most significant activity and the most significant pools in terms of emissions from deforestation. The AT considers that, in doing so, Paraguay followed decision 1/CP.16, paragraphs 70 (on activities undertaken) and 71(b), and decision 12/CP.17, paragraph 10 (on implementing a stepwise approach). The AT commends Paraguay for the information provided on the ongoing work to improve the accuracy and coverage of future FRELs with new data (see paras. 7 and 9 above).

40. As a result of the facilitative interactions with the AT during the TA session, Paraguay submitted a modified submission that took into consideration the technical inputs by the AT. Paraguay implemented a correction of a calculation mistake, provided additional methodological information and identified areas for future improvement. The AT notes that the transparency and completeness of information improved significantly in the modified FREL submission and commends Paraguay for the efforts made.

41. Paraguay explained that the FREL is not consistent with the GHG inventory[31] provided in its 2015 BUR because, for the purposes of the FREL, activity data and emission factors have been updated owing to an institutional decision taken at the time of the submission of the FREL. The AT acknowledges this explanation and highlights that consistency in terms of pools and gases should be addressed in future FREL submissions (see para. 20 above).

42. In addition, pursuant to decision 13/CP.19, annex, paragraph 3, the AT identified the following areas for future technical improvement:

(a) The development of an improved system for activity data collection that allows the assessment of deforested areas in line with the adopted forest definition, as well as the spatially explicit identification of palm areas (see paras. 22–23);

(b) The increase of the sample size by the collection of dasometric information on a larger number of sample units and the development of more species-specific allometric equations (see para.24).

43. In assessing the pools and gases included in the FREL pursuant to decision 13/CP.19, annex, paragraph 2(f), the AT notes that the current omission of pools and gases is likely to be conservative in the context of the FREL. Nevertheless, the AT identified the following additional areas for future technical improvement:

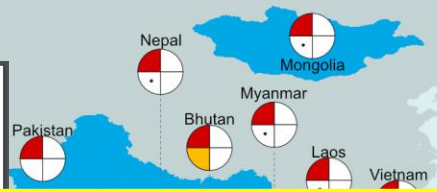
(a) The collection of information on the dynamics of carbon stocks in the dead wood, litter and mineral soils pools after forest conversion in order to assess the significance, in terms of emissions, of these pools (see paras. 31–33 above);

(b) The collection of information needed to estimate emissions from organic soils subject to deforestation or to justify the omission of these emissions in terms of their insignificance (see paras. 31 and 33 above);

(c) Treatment of emissions of non-CO_2 and, specifically, emissions from the practice of slash and burn (see para. 34 above).

44. The AT acknowledges and welcomes the intention expressed by Paraguay to:

[31] In reference to the scope of the TA, decision 13/CP.19, annex, paragraph 2(a).



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(a) The development of an improved system for activity data collection that allows the assessment of deforested areas in line with the adopted forest definition, as well as the spatially explicit identification of palm areas (see paras. 22–23);

(b) The increase of the sample size by the collection of dasometric information on a larger number of sample units and the development of more species-specific allometric equations (see para.24).

44. The AT acknowledges and welcomes the intention expressed by Paraguay to:

(a) Continue working on the forest definition to ensure consistency with other official submissions and in its practical implementation when assessing deforestation (see para. 21 above);

(b) Continuously improve the collection of information on activity data, emission factors and omitted carbon pools, as part of the stepwise approach, for future FREL submissions;

(c) Develop capabilities for the collection of information on emissions from forest degradation, in order to include these emissions in future FREL submissions.

Translate needs into IPCC reporting variables

$$\Delta C_{CONVERSION} = \sum_i \left(\left(B_{AFTER_i} - B_{BEFORE_i} \right) \times \Delta A \times CF \right)$$

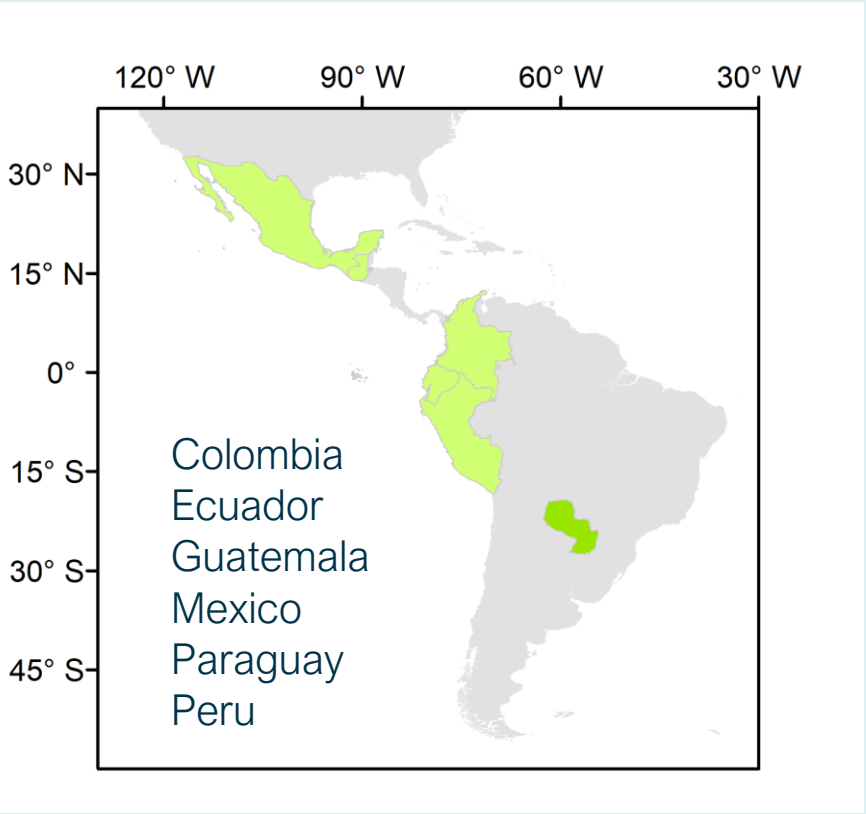
$$\Delta C = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L$$

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

1st SilvaCarbon/CEOS Regional Workshop

Latin America and the Caribbean

Paraguay, 27 June – 2 July 2022



	Country	REDD+ FRL latest submission	REDD+ FRL previous submissions	BUR REDD+ Annex	BUR	NIR	NFI
Latin America and the Caribbean	Colombia	2020	2015	2016, 2019	2015, 2018, 2022	2019	Yes
	Ecuador	2020	2015	2016	2016	2017	Yes
	Guatemala	2022	n.a.	n.a.	n.a.	n.a.	partial
	Mexico	2020	2015	n.a.	2015, 2019	2019	Yes
	Paraguay	2022	2016	2019	2015, 2018, 2021	n.a.	Yes
	Peru	2021	2016	n.a.	2014, 2019	2019	Yes

CEOS *biomass harmonization* activities - A collaborative effort between global and national biomass monitoring experts

Paraguay, 27 June – 2 July 2022

National teams to present their NFIs, and the data and methods currently used in reporting and domestic MRV

LULUCF experts in IPCC guidance (nominated in the UNFCCC roster by their Governments or contributors to the 2019 refinement of the IPCC guidelines)

JAXA, ESA, NASA to present:

- the available datasets and methodologies to measure land use GHG fluxes
- demonstrations of opportunities for their uptake
- a clear plan for sharing of NFI data and collaborating in the testing/refinement of products