Abstract template for the conference "A century of national forest inventories – informing past, present and future decisions"

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On page two, you are asked to fill in your abstract in the format and font size indicated. Please remember to include authors affiliation information in the footer section of page two. The length of the abstract may not be more than one page including references.

Abstract title:		Linking NFIs to Global Earth Observing Datasets
Take-home message:		We now have two on-orbit spaceborne lidar missions well suited for mapping global forest aboveground biomass circa 2020, the associated algorithms are mature, and further improvements through linkages with NFIs are expected.
Presenter name:		Laura Duncanson
Presenter contact info:		lduncans@umd.edu, Geographical Sciences, University of Maryland, College Park
General topic, see website: (please double click on the check box and activate the relevant one)	☐	Improving future NFIs by learning from the past
	☐	NFIs today and in the future
	☒	Cutting edge and futuristic inventory techniques and technologies
Preferred presentation form:	☒	Oral presentation
	☐	Poster
Abstracts will be reviewed by members of our scientific committee and you will be given information on decisions in due time after the submission deadline has passed.		

Linking NFIs to Global Earth Observing Datasets

Laura Duncanson [1]

Introduction: We are entering an exciting period for active remote sensing from space, with many new and upcoming Earth Observing missions that will collect data sensitive to forest structure. In late 2018, both ICESat-2 and GEDI successfully launched and are now acquiring new spaceborne lidar observations. There is also a rich archive of L-band SAR data from ALOS PALSAR, now SAOCOM_A (launched 2018), soon SAOCOM_B (2019) and later NASA/ISRO's NISAR (2022). Finally, ESA's BIOMASS will add P-band SAR data in 2022 to this growing confluence of forest structure EO datasets. Although these data have huge potential to reduce uncertainties in the global carbon cycle, the data rely on field estimates of biomass to train biomass models, as well as for product validation.

Materials and methods: GEDI launched on December, 5th, 2019, a few months after ICESat-2's September 15th launch. Together, these two new NASA lidar systems will collect global forest structure information with orders of magnitude more data than previously available. Algorithms to estimate forest aboveground biomass from these missions have been developed through linking field estimates to simulated spaceborne signals from airborne laser scanning data.

Results: Examples from the new lidar missions (GEDI and ICESat-2) will be presented, focusing both on an overview of GEDI's approach to forest biomass modeling, and early approaches for biomass estimation with ICESat-2. This presentation also gives an overview of the Committee on Earth Observing Satellites (CEOS)'s focus area on above ground biomass, including the forthcoming CEOS biomass protocol, highlighting the importance of biomass product validaiton.

Conclusion: We now have two on-orbit spaceborne lidar missions well suited for mapping global forest aboveground biomass circa 2020, the associated algorithms are mature, and further improvements through linkages with NFIs are expected. NFI data, and field data more generally, are critical for understanding the relative strengths and weaknesses of the many forthcoming biomass maps from the upcoming suite of missions.

1. Geographical Sciences, University of Maryland, College Park
lduncans@umd.edu