GOBIERNO DE ESPAÑA
VICEPRESIDENCIA TERCERA DEL GOBIERNO
MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

EIKOS
SISTEMA DE SEGUIMIENTO TERRITORIAL DE LOS ECOSISTEMAS

iepnb
Inventario Español de Patrimonio Natural y de la Biodiversidad

Seminario: Las nuevas tecnologías aplicadas al conocimiento de los ecosistemas forestales- IFN5

Trabajos realizados usando las parcelas del Inventario Forestal Nacional con datos LiDAR PNOA con NASA's GEDI y las parcelas del IFN

GEDI ECOSYSTEM LIDAR

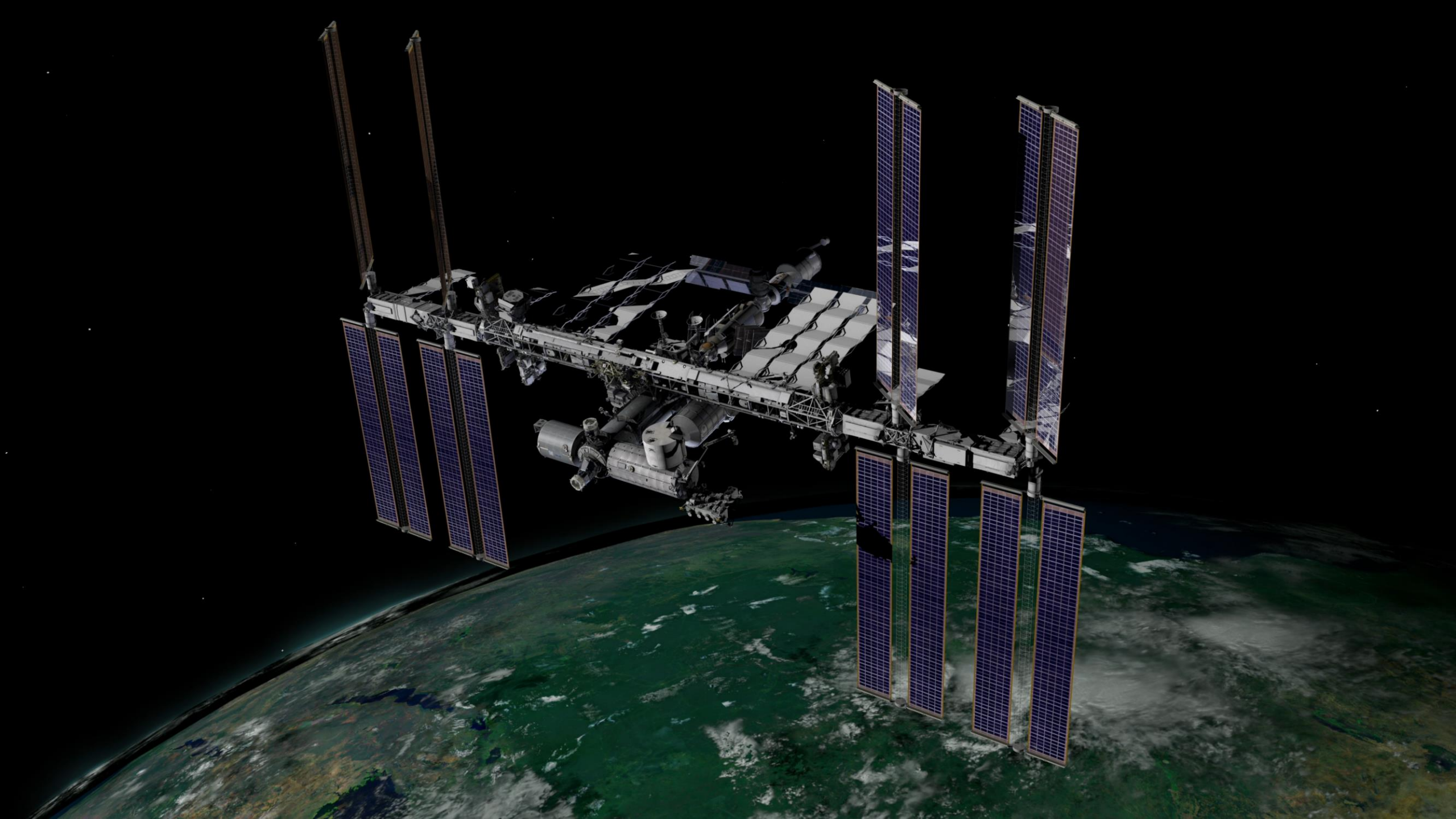
NASA

UNIVERSITY OF MARYLAND 1856

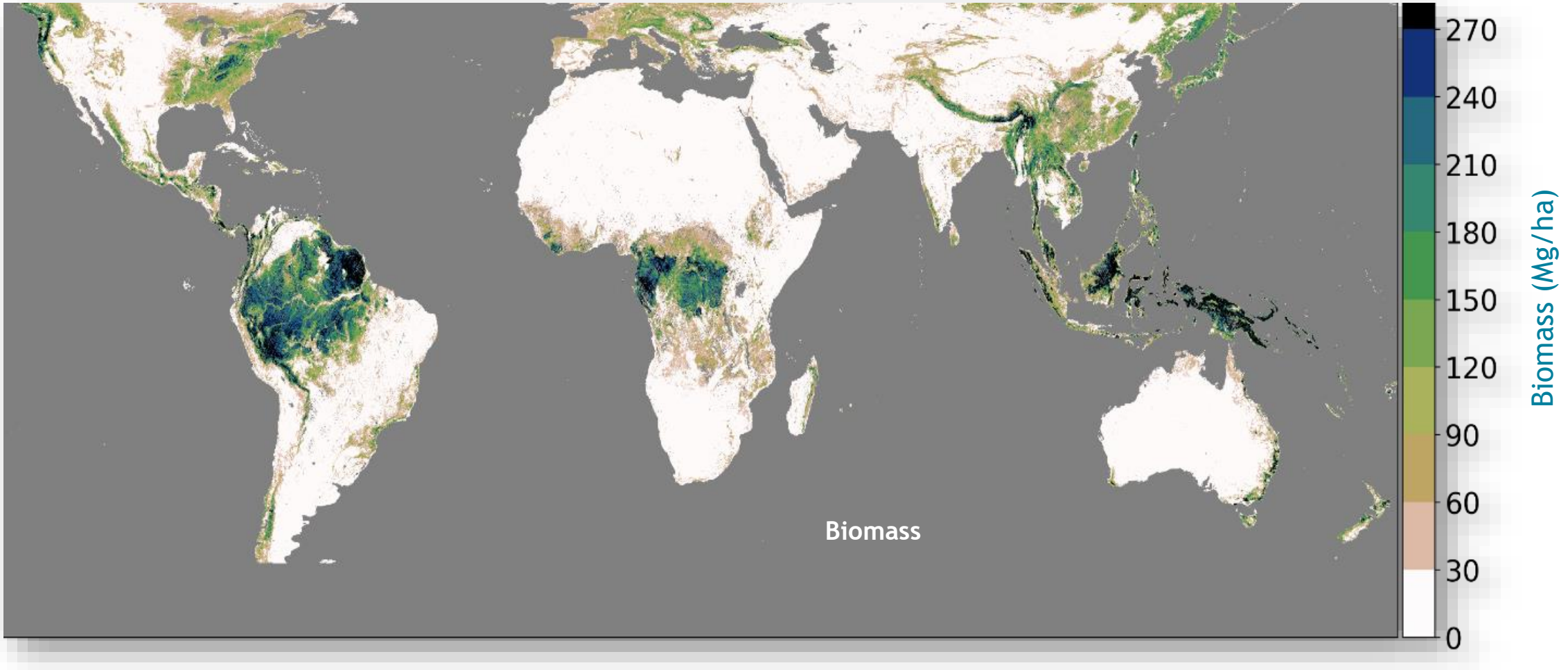
DEPARTMENT OF GEOGRAPHICAL SCIENCES

Adrian Pascual, apascual@umd.edu

NASA's GEDI Science Team / University of Maryland



Existencia de biomasa a nivel global



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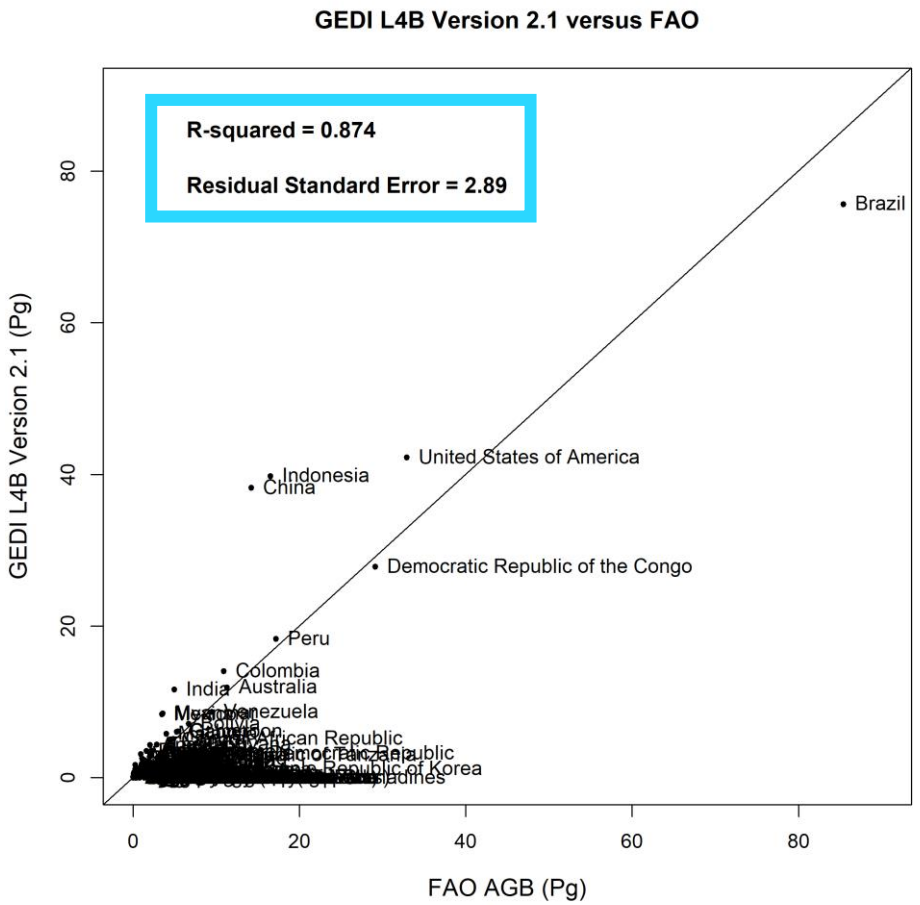
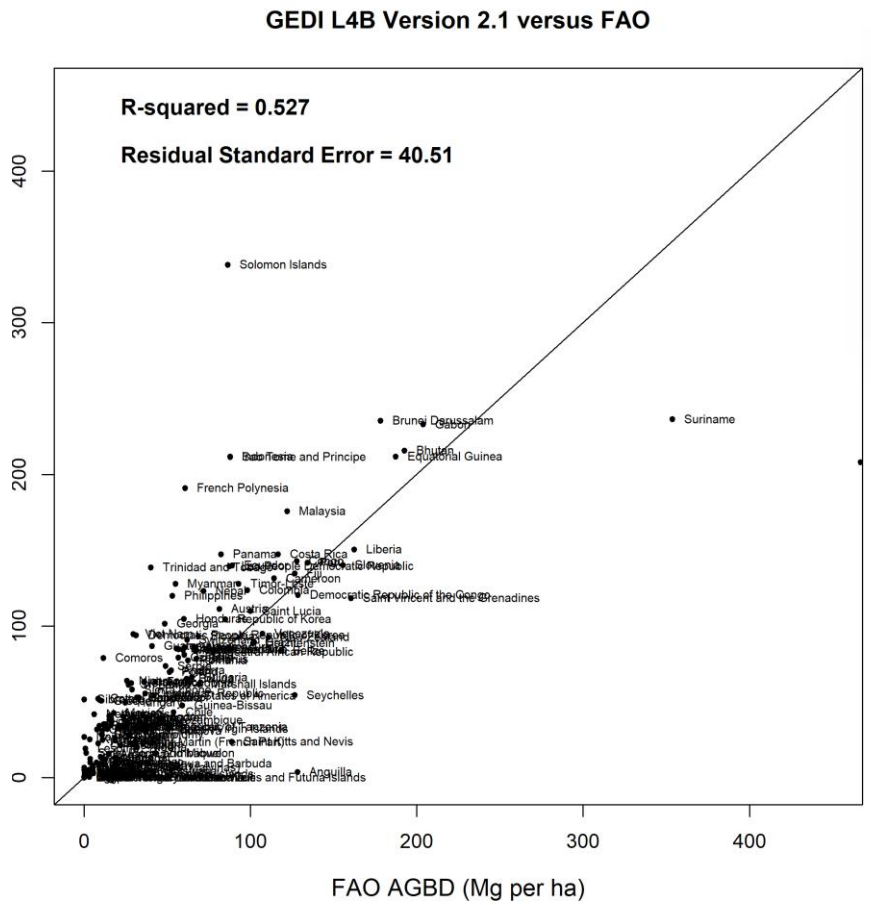
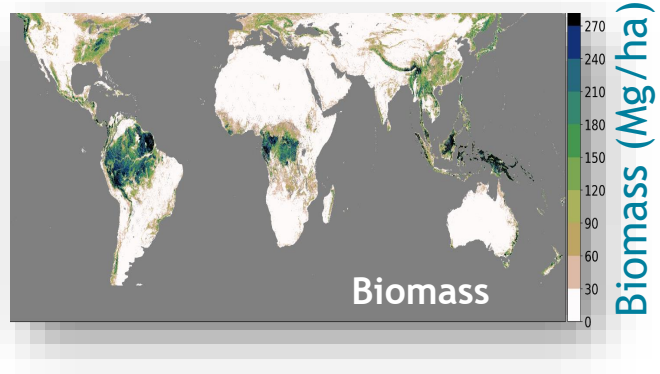
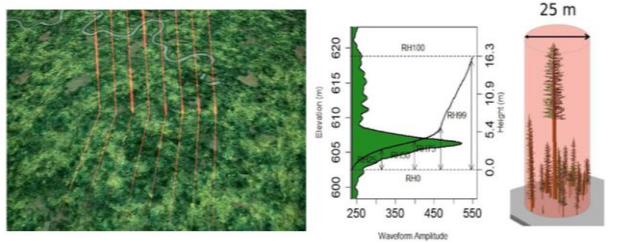






Estimaciones globales



Biomasa total

Existencias medias

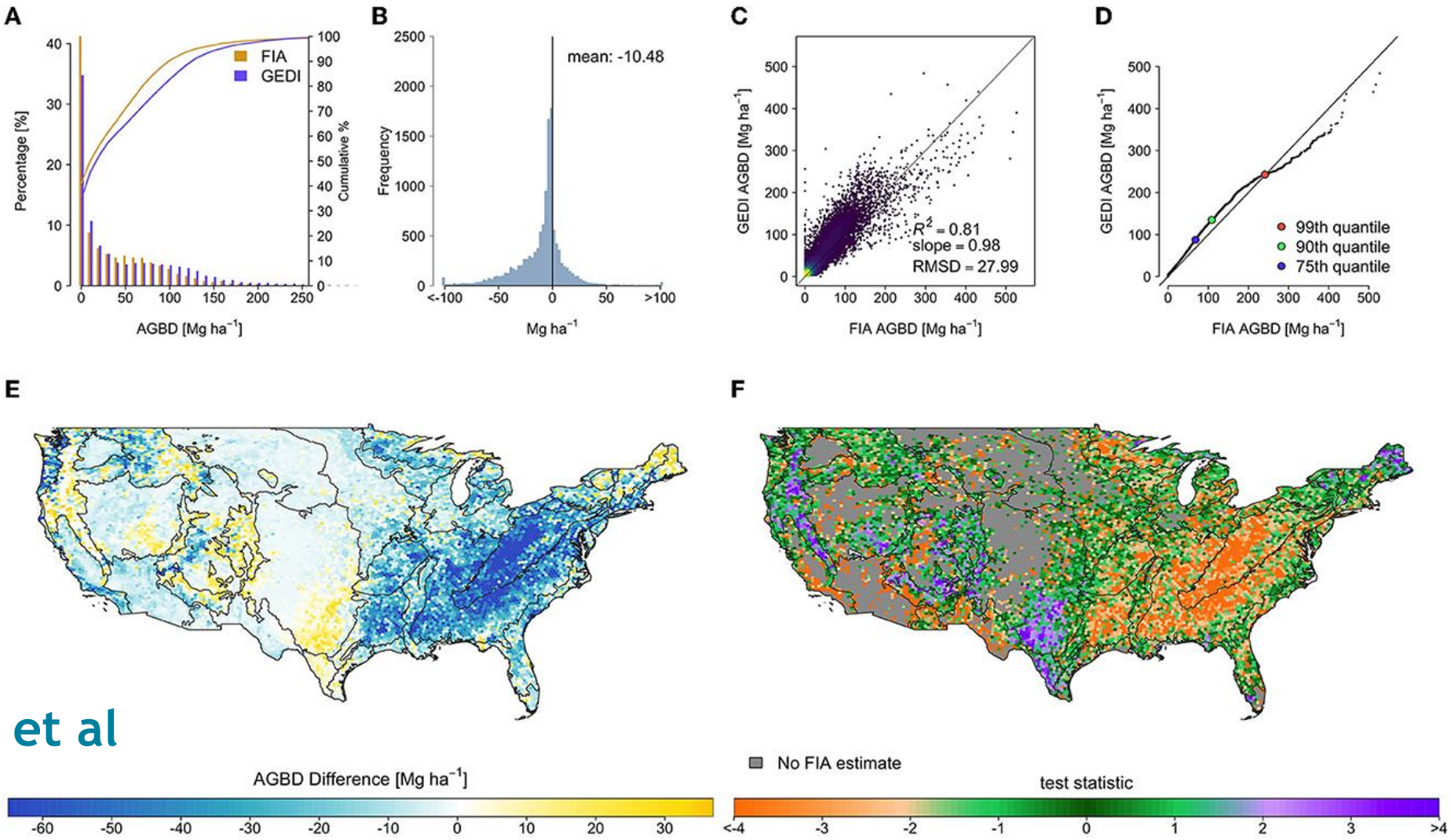
GEDI biomass inference vs IFN-4

IFN4 Report

GEDI biomass inference vs IFN-4

IFN4 Report

Standard GEDI L4A vs FIA



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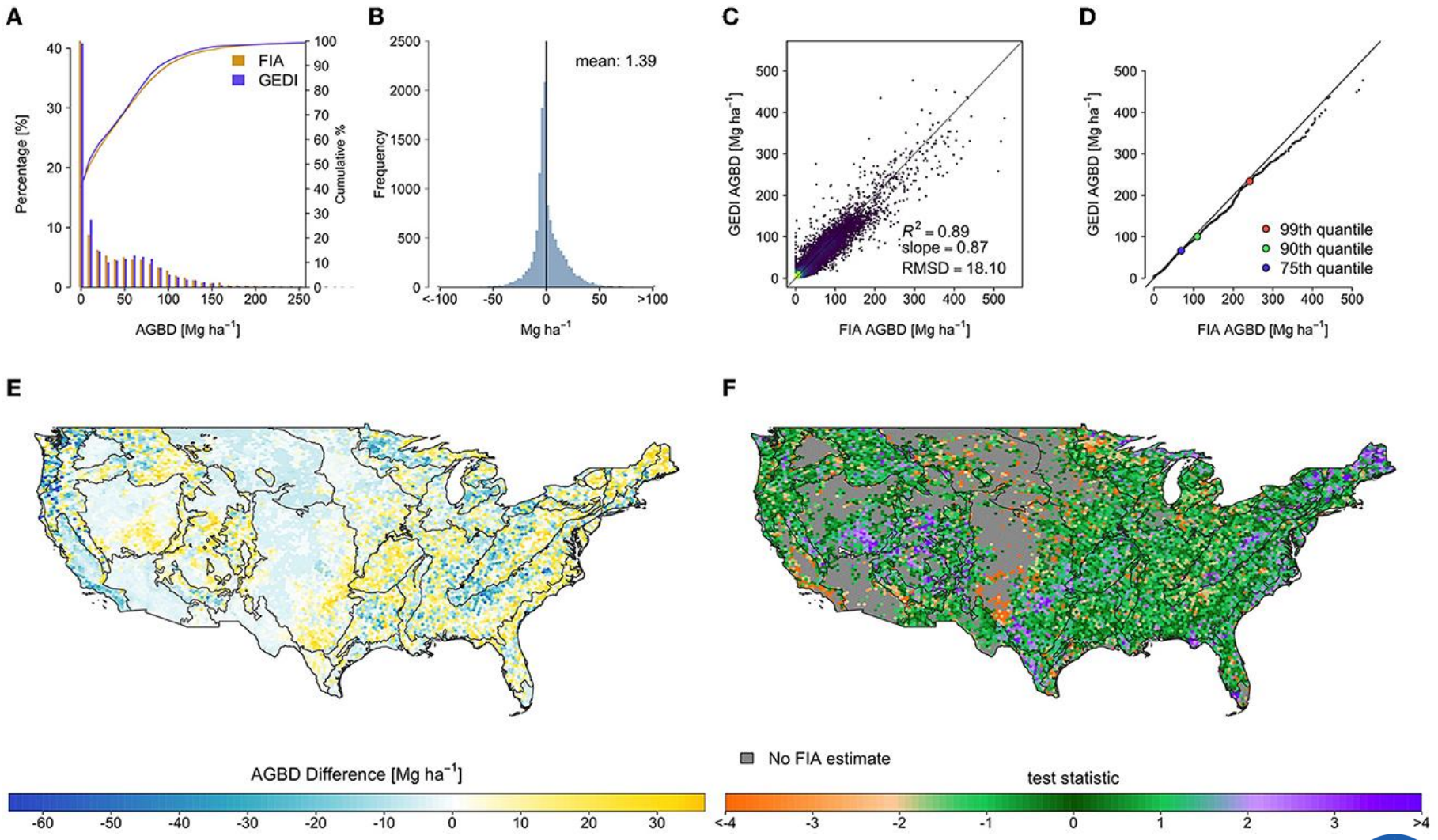
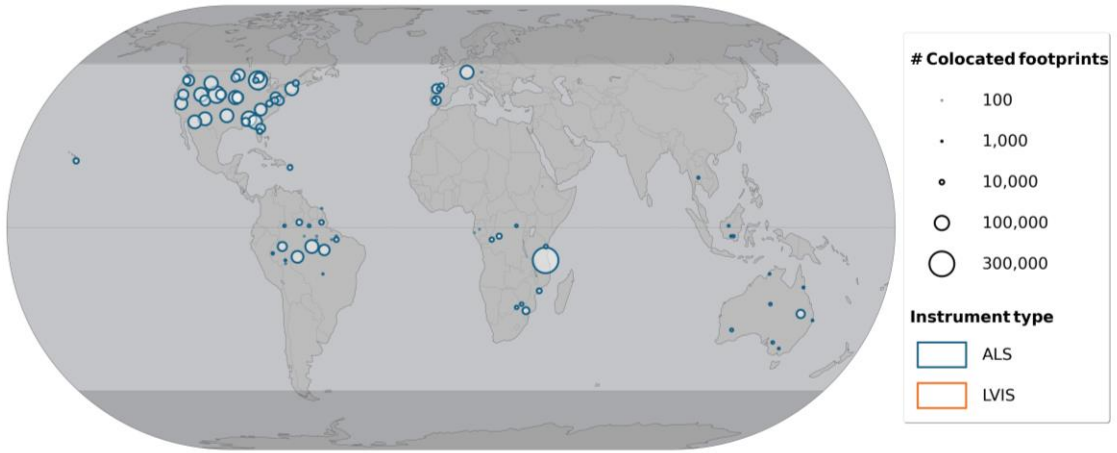
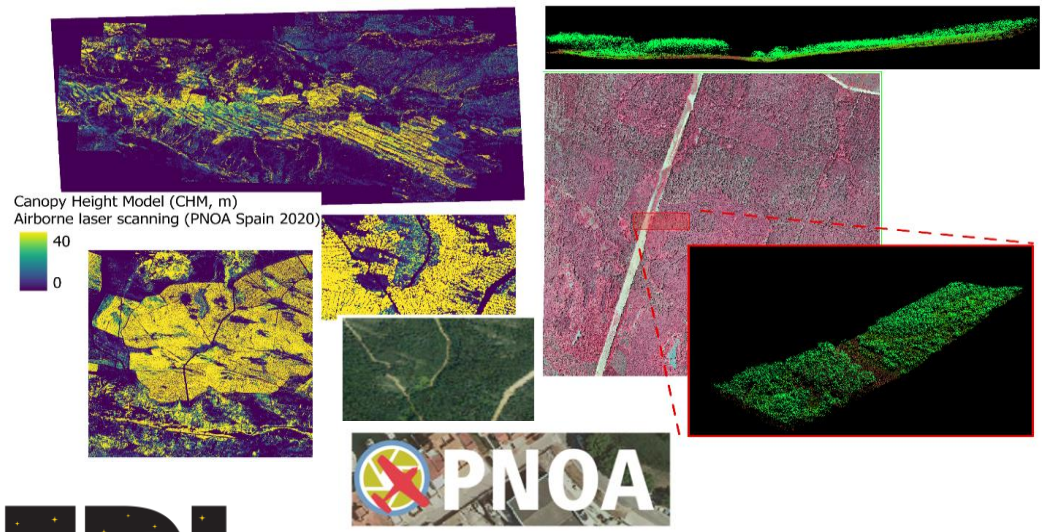
FIA-Recalibrated GEDI L4A vs FIA

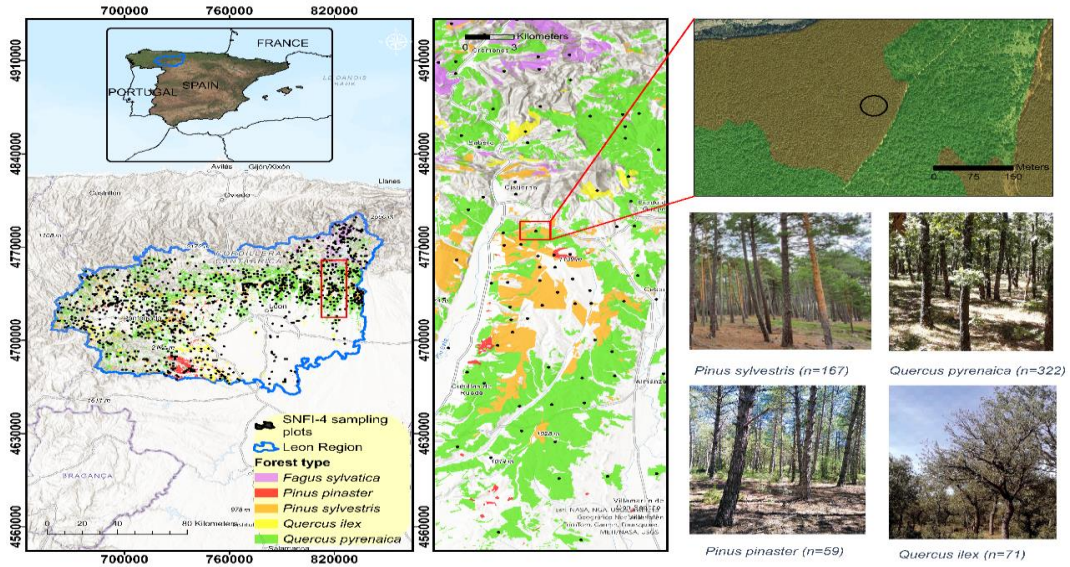


Calibraciones con datos IFN

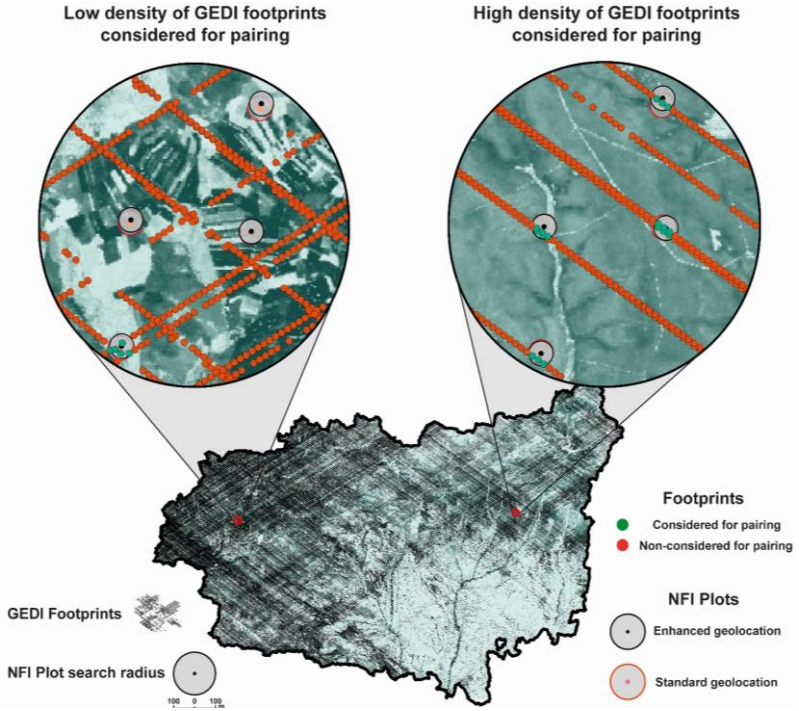
- Estimaciones globales
- Estimaciones mas locales
- **Recalibrar datos en orbita**
- Distintas alternativas

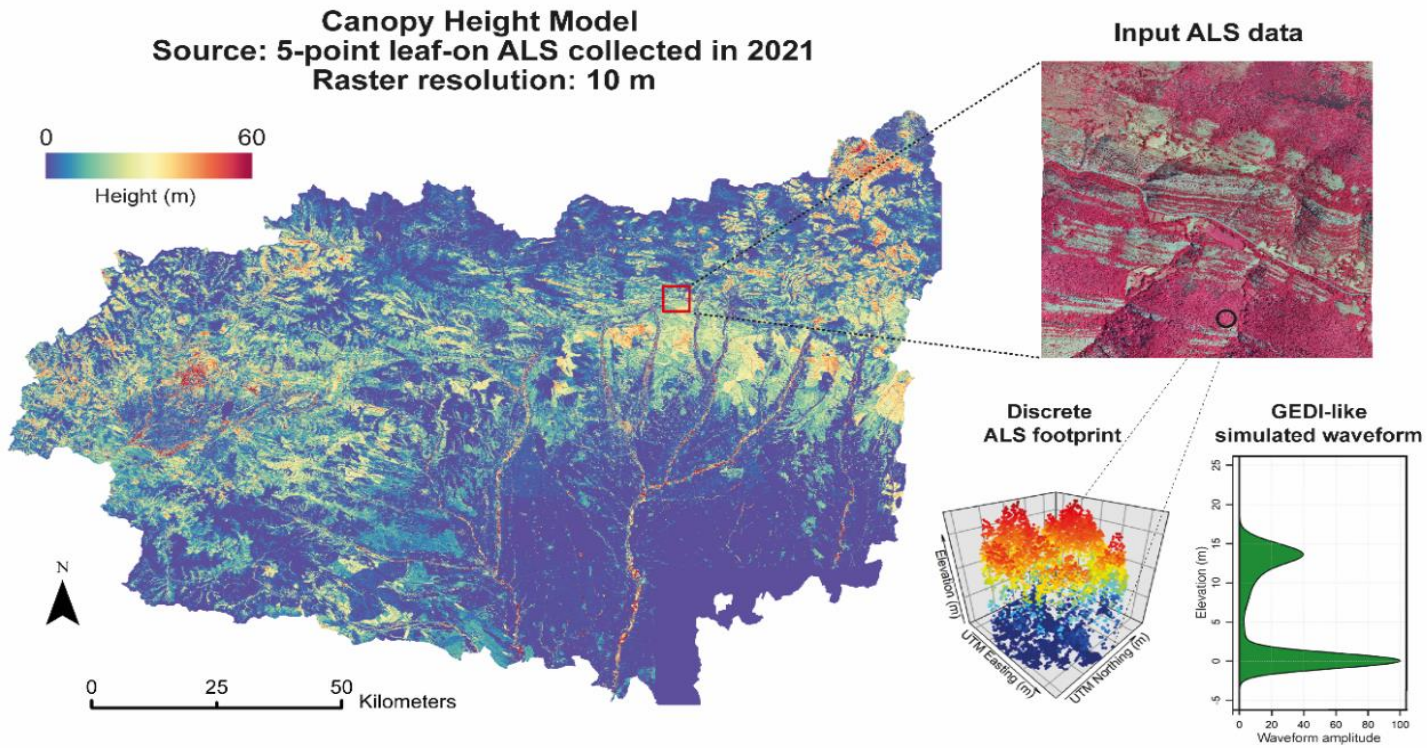






Calibraciones con datos IFN



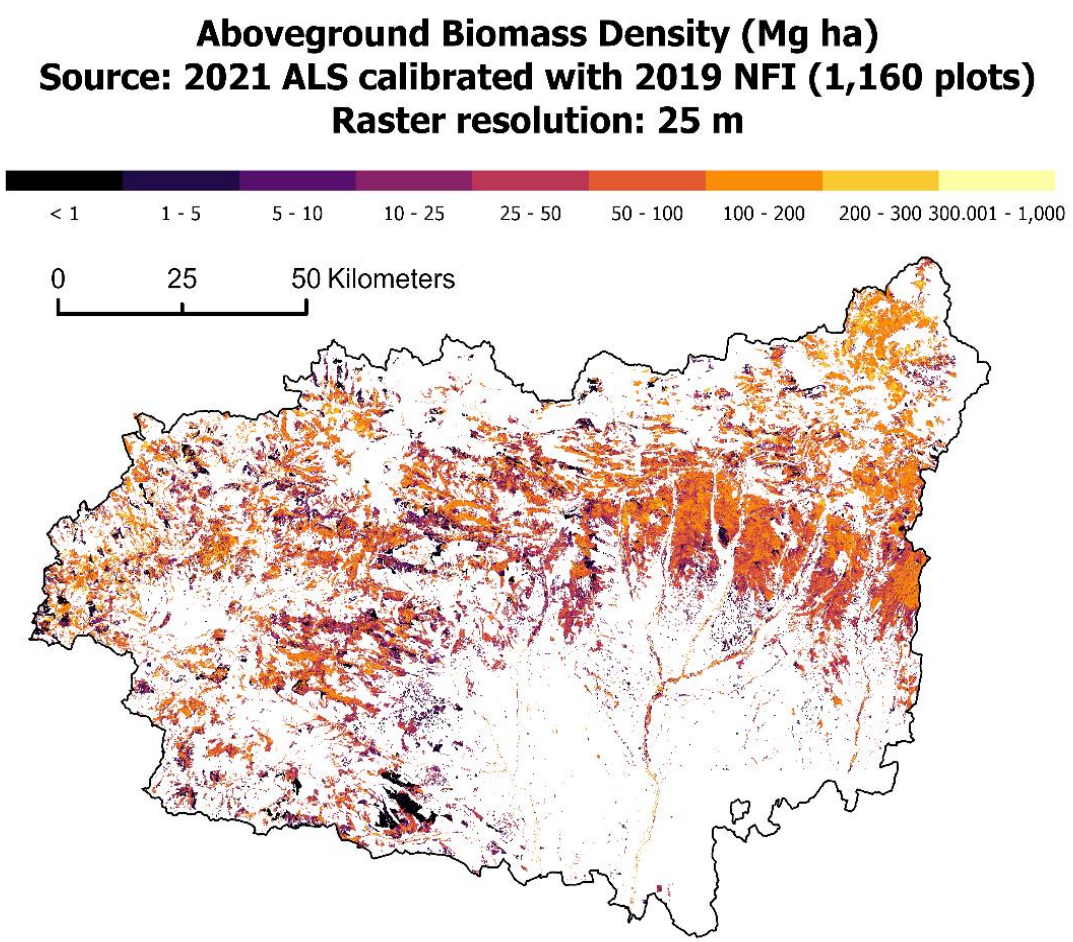


#1
Recalibrar la biomasa con metricas de altura de GEDI alrededor de las parcelas

#2
Simulando con lidar sobre las parcelas

#3
Waveform imputation

Mapas ALS-NFI para comparar

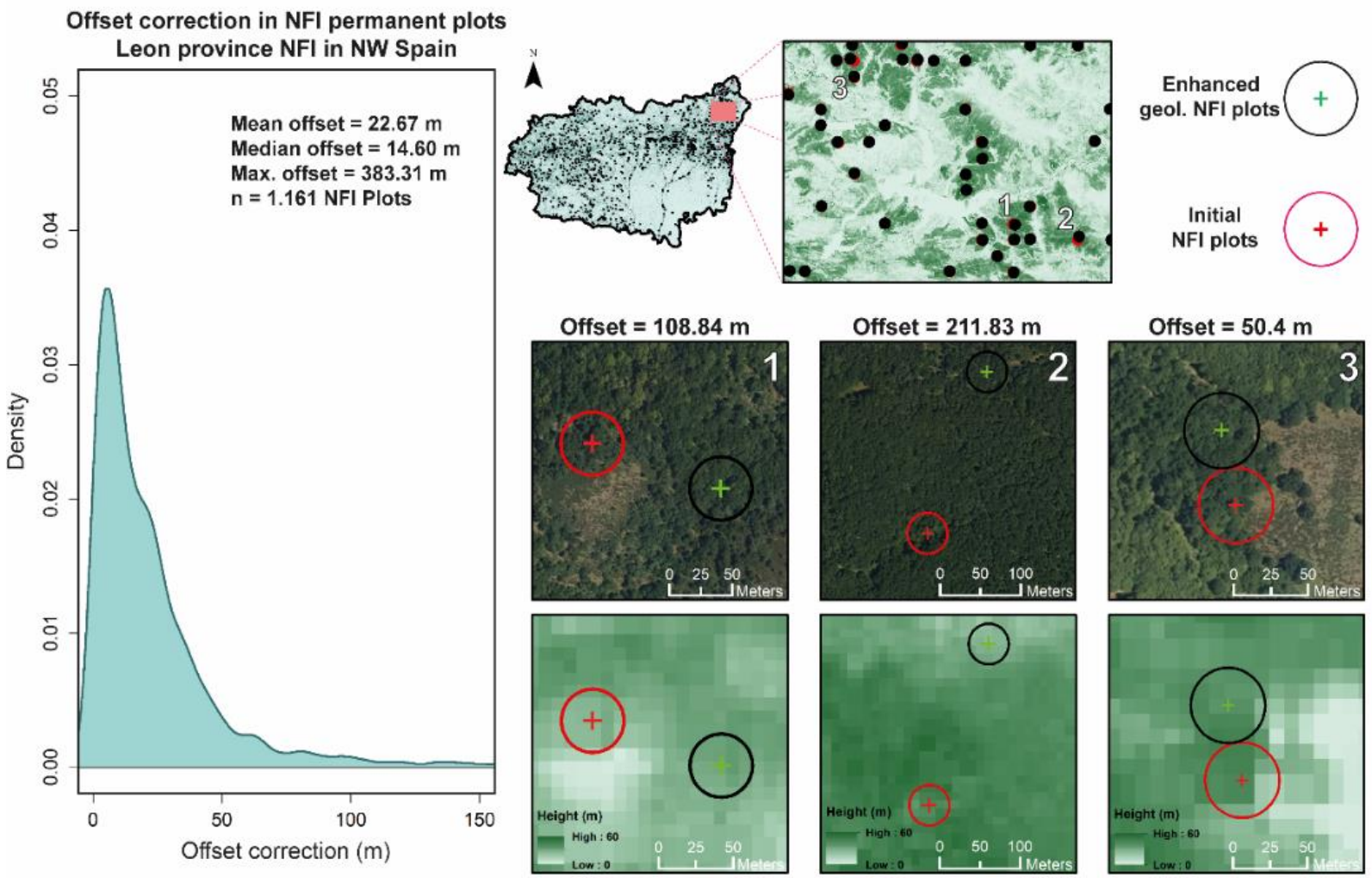


Forest type description	Selected predictors		Parameter values			Fitting statistics		
	h_1	h_2	a	b	c	RMSE	RMSE (%)	Bias (%)
Scots pine (102)	h_{50}	FC_{ALS}	0.0096	1.0555^{***}	1.5165^{***}	21.07	27.50	-0.47
Resin pine (103)	h_{20}	FC_{ALS}	0.1002	1.1347^{***}	1.0145^{***}	22.39	33.65	-0.98
Holm oaks (104)	h_{30}	FC_{ALS}	0.01492^{**}	2.08907^{*}	1.05231	26.27	87.80	-0.09
Mixed (107)	h_{30}	FC_{ALS}	0.000126	1.667^{***}	2.2279^{**}	33.96	67.49	0.99
Pyrenean oaks (110)	h_{30}	FC_{ALS}	0.0164	1.7494^{***}	1.1383^{***}	33.30	51.60	-2.05
Corsican pine (112)	h_{50}	h_{70}	3.7190^{***}	-1.8640^{***}	3.2220^{***}	32.00	27.42	-0.65

Biomasa con ALS : Ext, Galicia, Leon,… agregando tipos de bosque

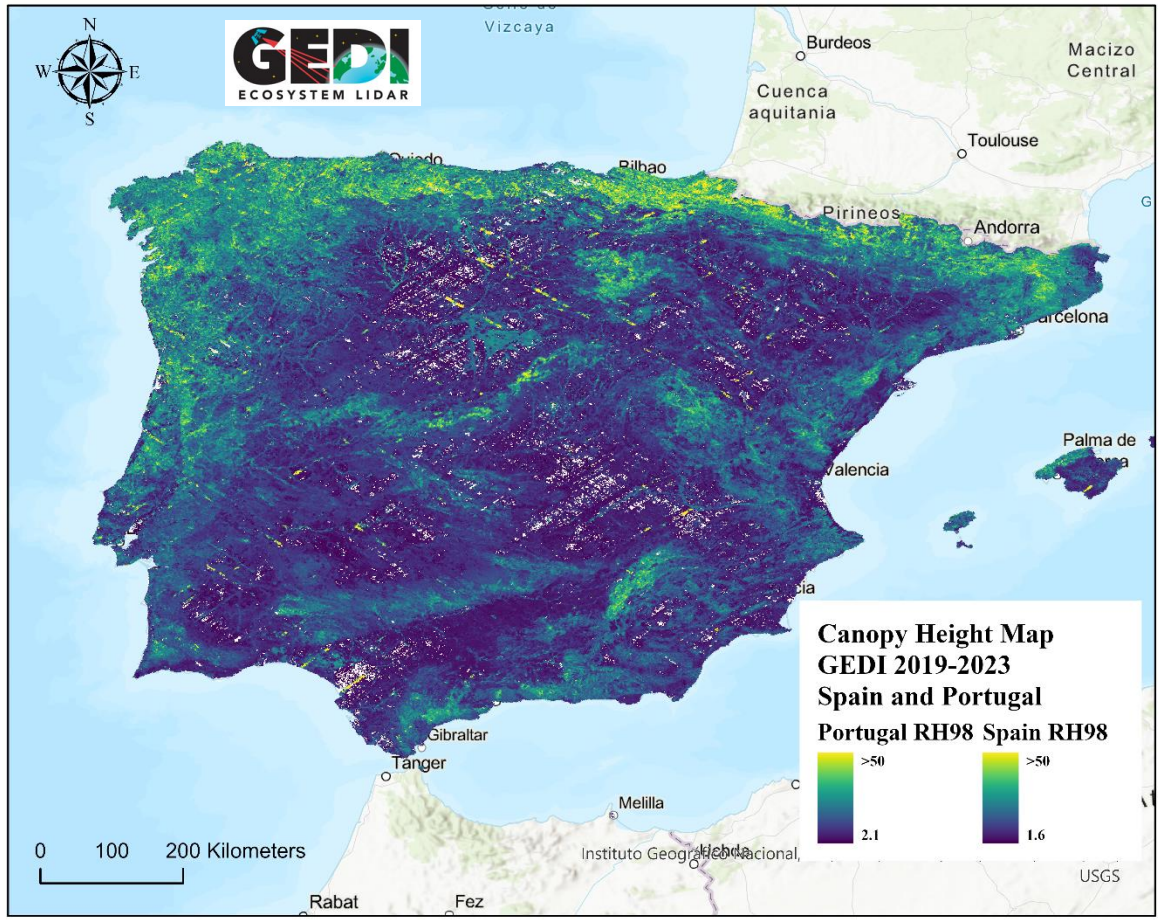
Posicion de las parcelas: ESENCIAL

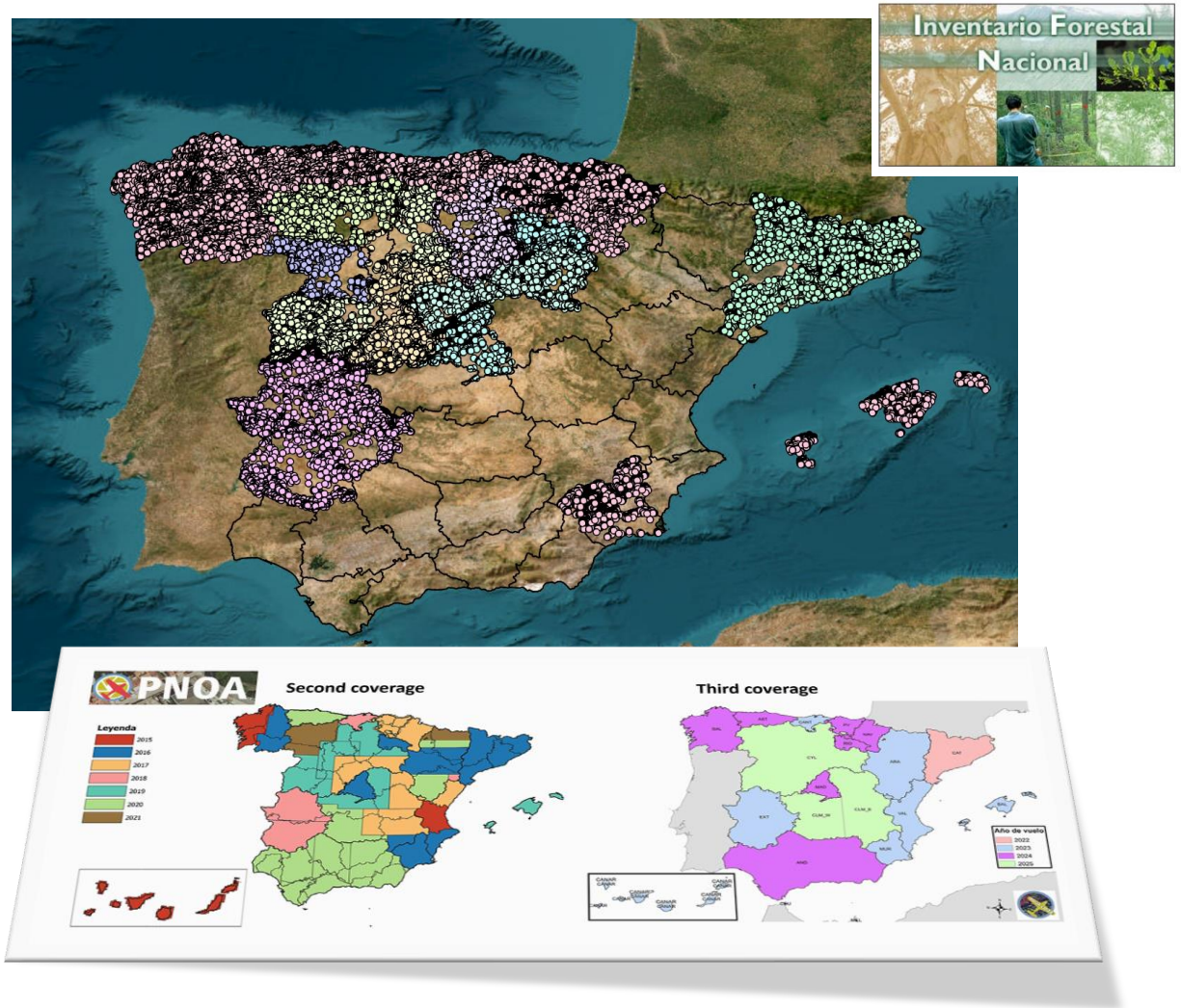
Errores de posicionamiento



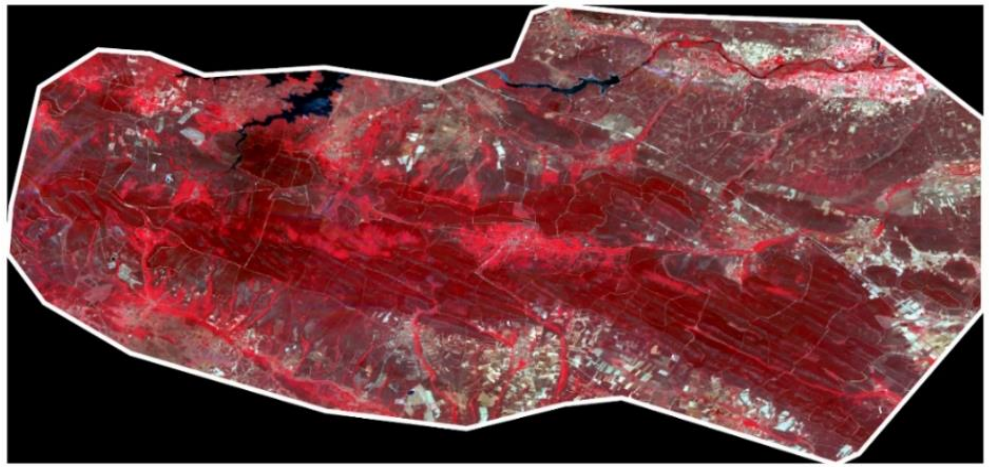
- Parcelas a remedir
- Series de ALS
- Series de IFN
- Crecimiento
- Geolocalizacion de los datos de campo

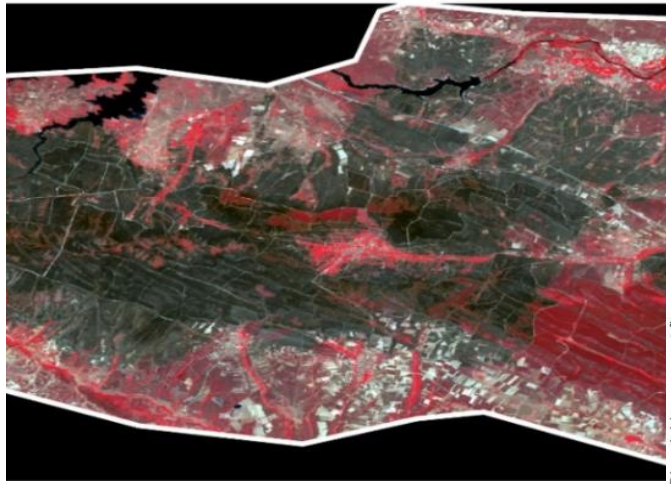
Areas: IFN4 + ALS reciente en 2019/23

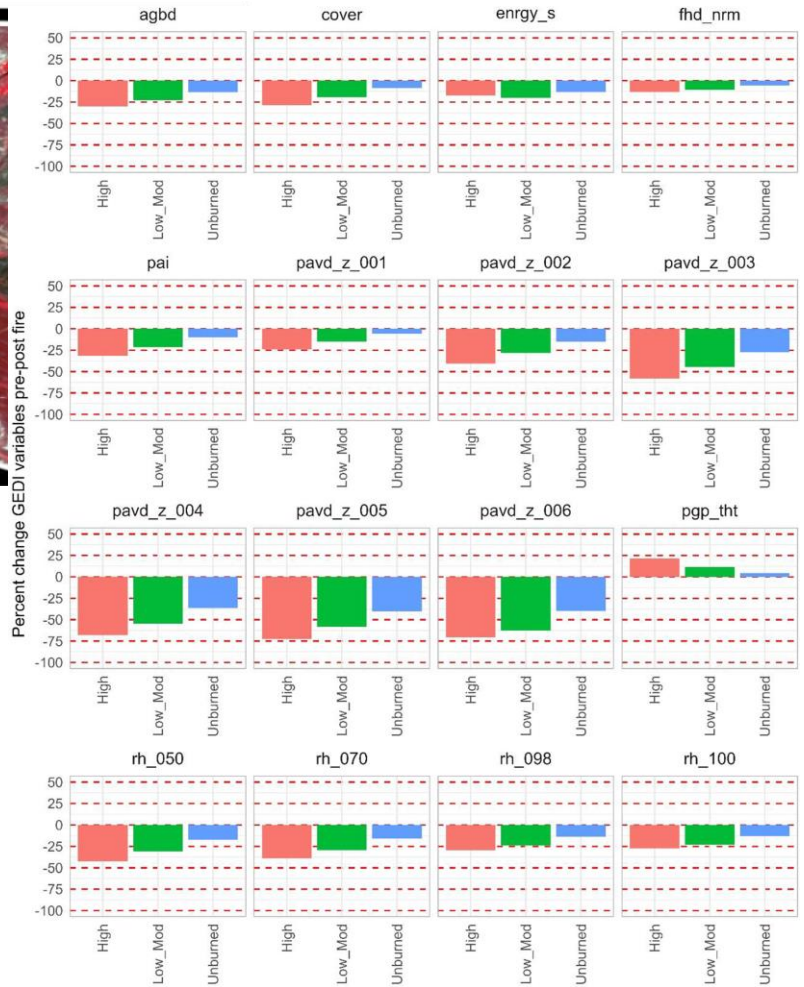


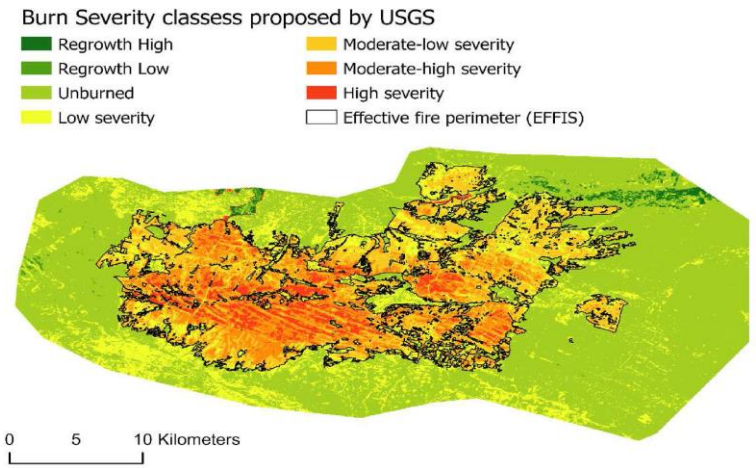


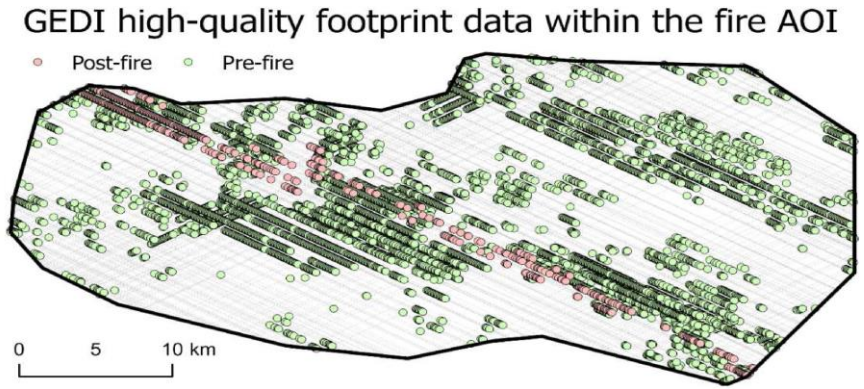
Aplicacion para detector cambios











Ideas uso de GEDI + NFI

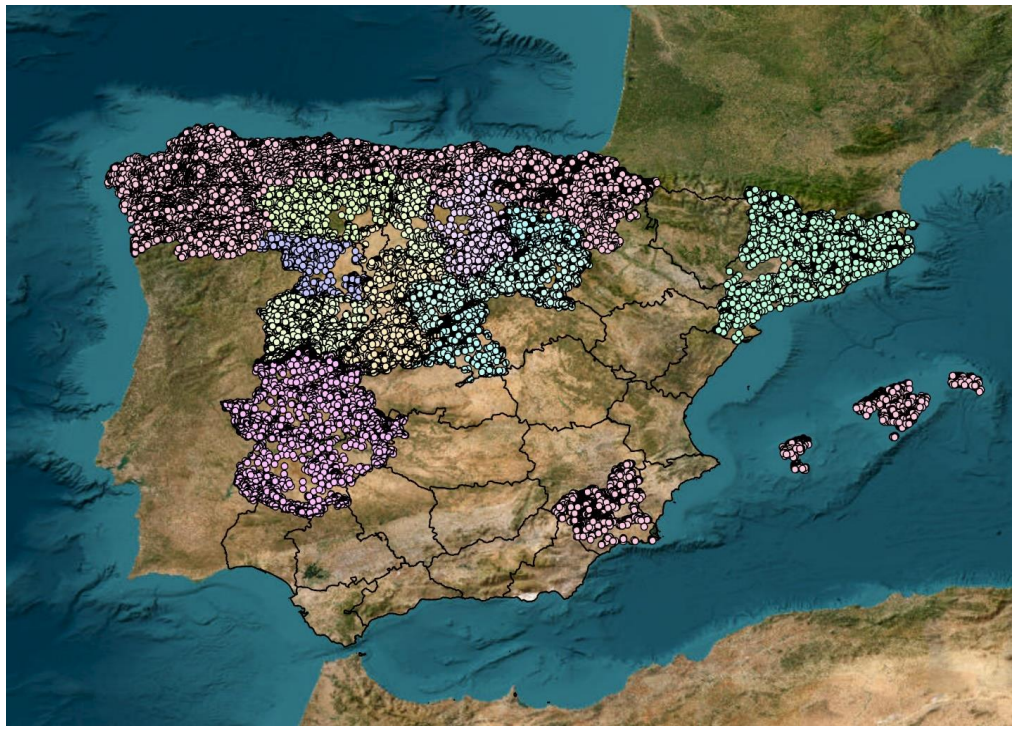
1. Estimacion previa de biomasa (shots alrededor de las parcelas)
2. Estimaciones a nivel de provincial-municipio para regiones donde no se vaya a medir en los proximos *n* anos. Funciona muy bien a nivel provincial/regional.
3. Validacion de los modelos GEDI de biomasa y generacion de recalibraciones para tipos de bosque especificos y de especial relevancia
4. Con el metodo de imputacion podemos generar miles de informacion auxiliar para altura y biomasa
5. Con ALS multi-temporal: asignar mejoras de posicionamiento en base a cambio y discrepancias con mediciones del IFN

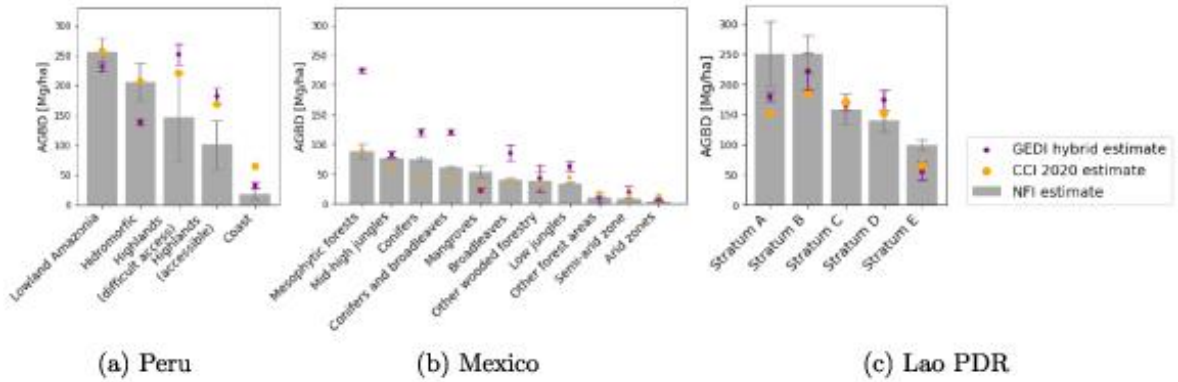
Ideas uso de GEDI + NFI

LETTER • OPEN ACCESS

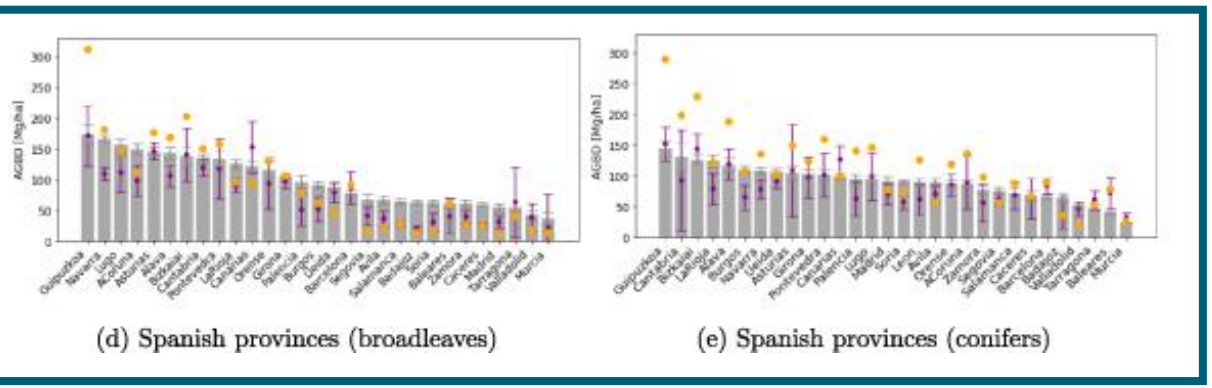
On the NASA GEDI and ESA CCI biomass maps: aligning for uptake in the UNFCCC global stocktake

Hunka et al





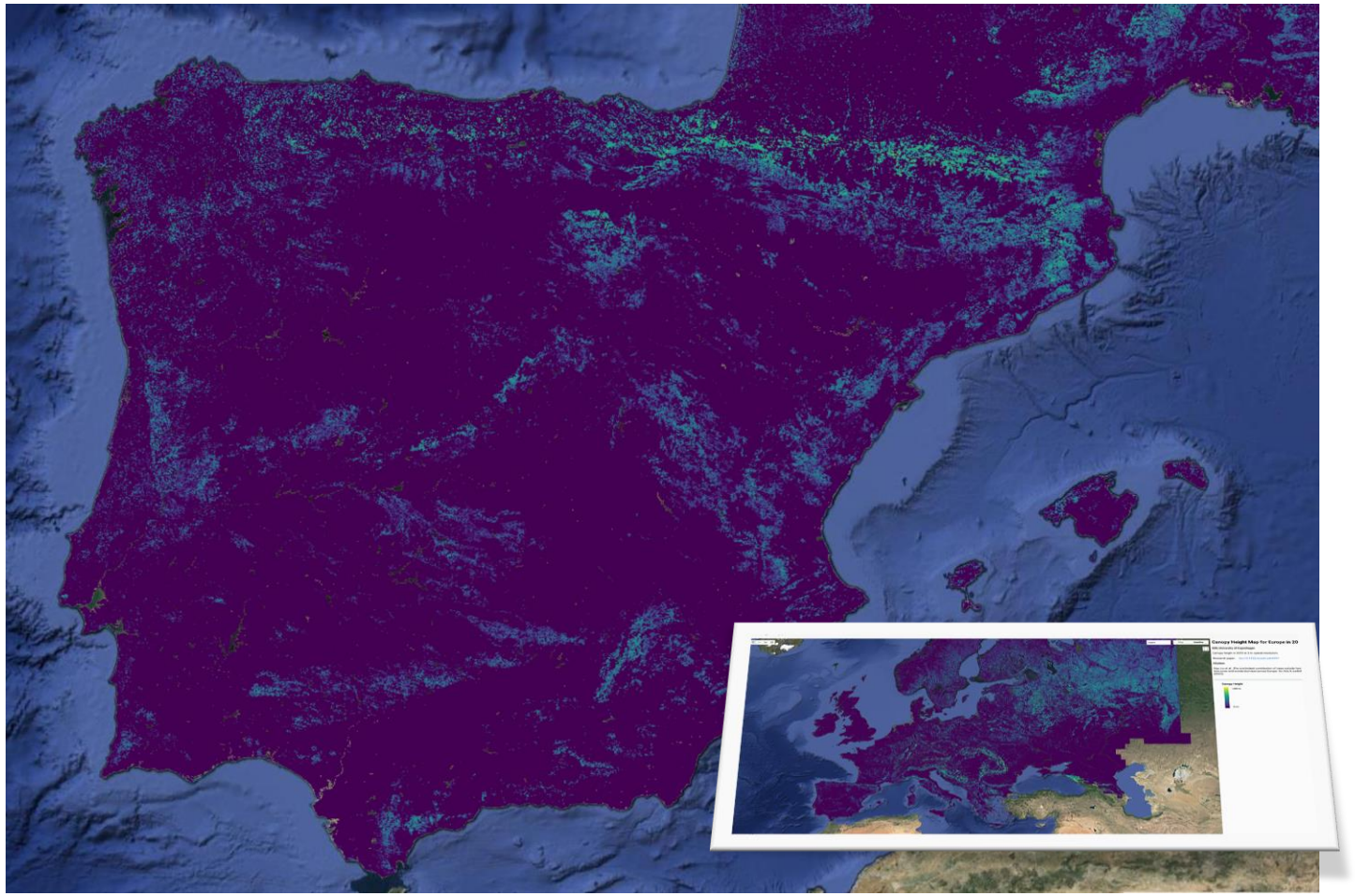
(a) Peru (b) Mexico (c) Lao PDR

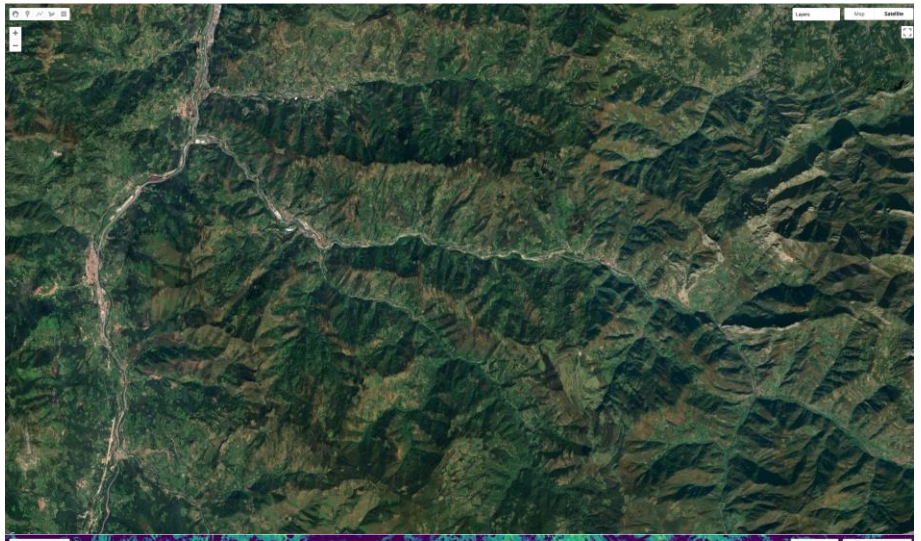


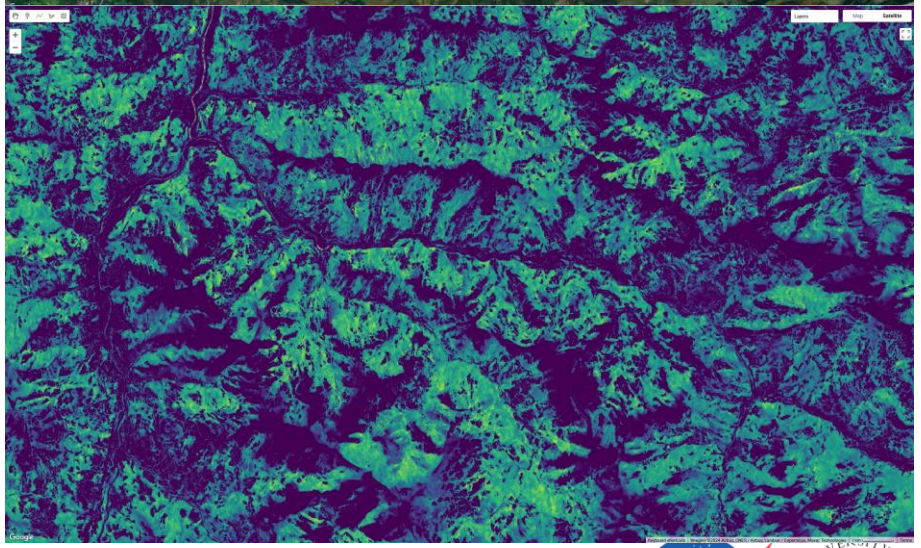
(d) Spanish provinces (broadleaves) (e) Spanish provinces (conifers)

Mapas de alta resolucion ya disponibles

The overlooked contribution of trees outside forests to tree cover and woody biomass across Europe. Science Advances, 9(37).







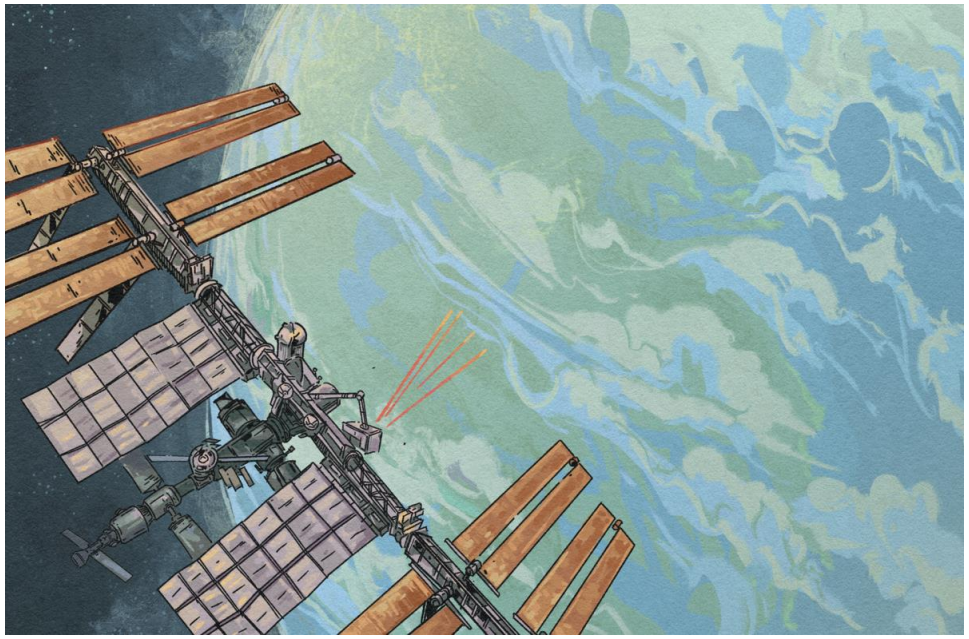
Estado de la mision

- GEDI was re-installed (April 22nd 2024).
- Tests at the ISS as we speak

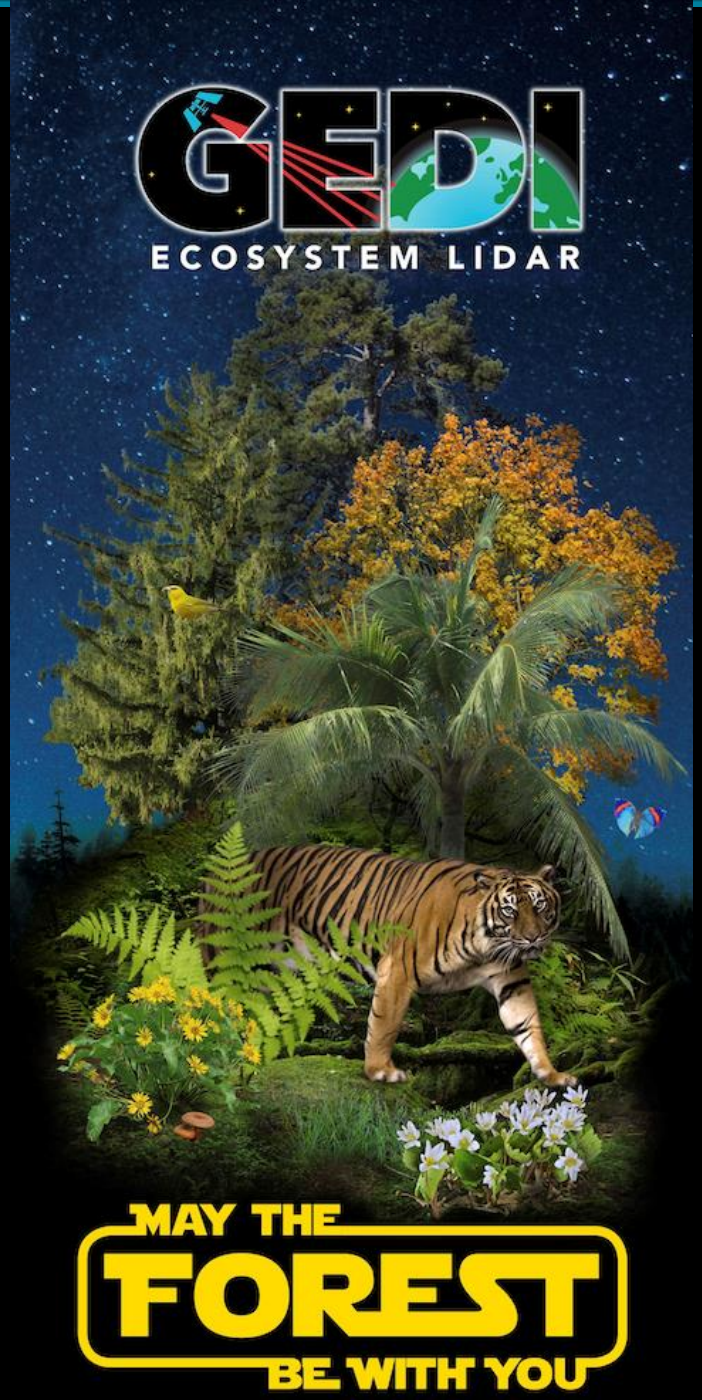
- GEDI operational for the 2024/30 period.
- 31 million high-quality footprints in <4 years

- We use three areas in Spain to test the performance of GEDI

- We are looking forward to cooperate



Product	Description	Archive Site
L1A	Raw waveforms	Not publicly Available
L1B	Geolocated waveforms	LPDAAC
L2A	Elevation and Height Metrics	LPDAAC
L2B	Canopy Cover and Vertical Profile Metrics	LPDAAC
L3	Gridded Land Surface Metrics	ORNLDAAC
L4A	Footprint Level Above Ground Biomass	ORNLDAAC
L4B	Gridded Above Ground Biomass Density (AGBD)	ORNLDAAC



Global Ecosystem Dynamics Investigation

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Gracias!