

SIMANF{R

Preparing our data inventory

Aitor Vázquez Veloso

16/04/23





SIMANF{R}

introduction

web

publications

SIMANF{R}

inventories

scenarios

models

results



- Inventory templates
- Variables explanation
- How to create your inventory using yield table data
- How to create your inventory using SFNI data
- How to add more than one plot to your inventory
- Example inventories



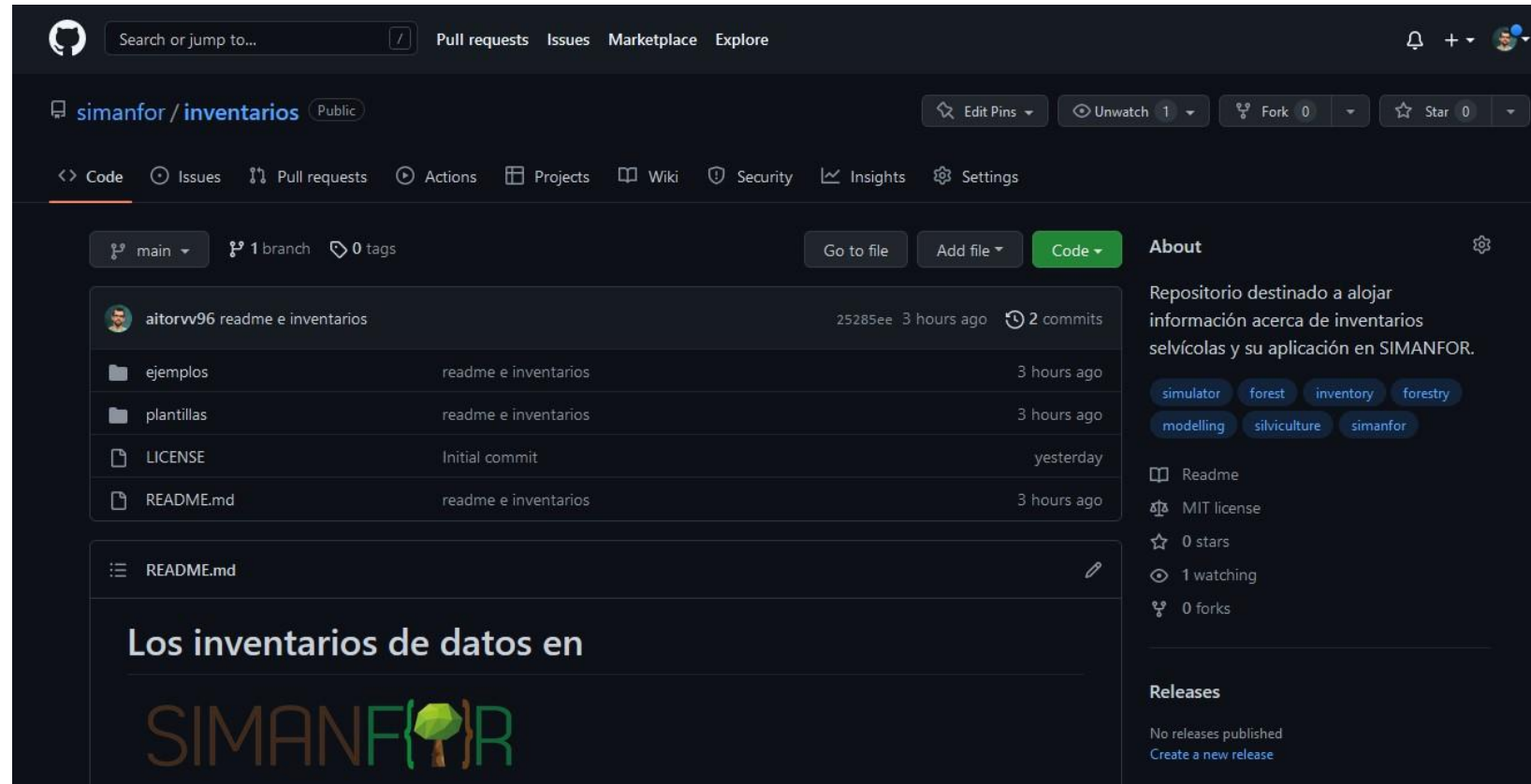
Inventory templates



Each SIMANFOR model requires certain **input variables**. However, in these [inventory templates](#) we have compiled the most important ones (depending on the model, if you provide more information another extra variables can be calculated, please check its [data sheet](#)).

In this [repository](#) you can download, modify and upload them to SIMANFOR to start your simulation.

Later, I will show you how to include your **data** in them, but first let's define some of the more complex variables.





Variables explanation



The **inventory templates** are available in 3 languages (Spanish, English and Galician). All of them are Excel files with 3 sheets; in the sheet "**Metadata**" you can see the explanation of the variables used by the simulator (the ones used in the template are marked in yellow, look for the plot and tree variables from row 70 onwards).

We will explain some of them in detail, although remember that you can check the "Metadata" sheet or external sources such as the [Glosario Técnico Forestal de la SECF](#).

In this [repository](#) you will find a cheatsheet for [basic tree calculations](#), a cheatsheet for [basic stand calculations](#), and an [R script](#) with test data to apply them.

[illegible]

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
249	Variables de árbol																			
250																				
251		estado	Estado del árbol (M = muerto; C = cortado; I = incorporado)																	
252		ID_inventario	Código identificador de inventario, extraído del inventario inicial																	
253		ID_parcela	Código identificador de parcela, extraído del inventario inicial																	
254		ID_arbol	Código identificador de árbol, extraído del inventario inicial																	
255		especie	Especie, siguiendo la codificación del Inventario Forestal Nacional de España																	
256		t	Edad del árbol (años)																	
257		rumbo	Rumbo, calculado desde el centro de la parcela hasta el árbol en cuestión, en grado centesimales. La medición se hace partiendo del norte y en el sentido de las agujas del reloj																	
258		distancia	Distancia, calculada desde el centro de la parcela hasta el árbol en cuestión (m)																	
259		factor_expansion	Factor de expansión																	
260		dbh_1	Diámetro normal, medida 1 (cm)																	
261		dbh_2	Diámetro normal, medida 2 (cm)																	
262		dbh	Diámetro normal medio (cm)																	
263		h	Altura del árbol (m)																	
264		h_tocon	Altura del tocón (m)																	
265		corteza_1	Espesor de corteza, medida 1 (cm)																	
266		corteza_2	Espesor de corteza, medida 2 (cm)																	
267		corteza	Espesor de corteza medio (cm)																	
268		g	Área basimétrica (cm2)																	



Parcelas (plots):

- **Inventory_ID:** inventory code, where source of data is recommended to be included
- **Plot_ID:** plot code (has to be the same as the code of the trees contained in it)
- **Main_species_ID:** code of the main/dominant species of the plot (as there may be several species). For this, we will use the coding of the SNFI (search for it [here](#), appendix 12)
- **Year:** you can leave it blank or put the year in which the data was taken

- **T:** is the average age of the plot (years).
- **Ho:** is the dominant height of the plot (m). It is calculated by averaging the height of the 100 tallest trees in the plot (**Note:** each tree is equivalent to a certain number of trees per hectare (expansion factor), so this must be taken into account):

$$Ho = (\text{expan}_1 \cdot h_1 + \text{expan}_2 \cdot h_2 + \dots + \text{expan}_n \cdot h_n) / 100$$

where:

- **expan:** expansion factor of the tree
- **h:** tree height (m)

- **N:** is the plot density (trees/ha). **Note:** the expansion factor must be taken into account:

$$N = \text{expan}_1 + \text{expan}_2 + \dots + \text{expan}_n$$

- **G:** is the basal area of the plot (m² /ha). **Note:** the expansion factor and the units have to be taken into account:

$$G = (\text{expan}_1 \cdot g_1 + \text{expan}_2 \cdot g_2 + \dots + \text{expan}_n \cdot g_n) / 10000$$

where:

- **g:** tree basal area (cm²)



PiesMayores (trees):

- **Inventory_ID**: **inventory code**, where it is recommended to put the source of the data (equal to plot sheet)
- **Plot_ID**: **plot code** (has to be the same as the code of the plot to which it belongs)
- **Tree_ID**: tree code within the plot
- **species**: **species code**. We will use the coding of the SNFI, as in the Plots sheet (look for it [here](#), appendix 12).

- **expan**: is a variable representing the **number of trees at hectare level represented by each tree in our sample plot**. It is used to extrapolate the values to the hectare. Let's take an example where the area of my plot is 600 m²:

$$\text{expan} = A_{\text{ha}} / A_{\text{plot}} = 10000 \text{ m}^2 / 600 \text{ m}^2 = 16,67$$

where:

- A_{ha} : hectare area (m²)
- A_{plot} : plot area (m²)

- **dbh**: **diameter at breast height** (cm)
- **h**: **total height** (m)
- **g**: tree **basal area** (cm²):

$$g = \pi \cdot (\text{dbh}/2)^2$$



How to create your inventory using yield table data



How to create your inventory using yield table data

To develop that example the next book will be used:

[Del Río, M., López-Senespleda, E., Montero, G. \(2006\). Manual de gestión para masas procedentes de repoblación de *Pinus pinaster* Ait., *Pinus sylvestris* L. y *Pinus nigra* Arn. en Castilla y León. Junta de Castilla y León, Consejería de Medio Ambiente.](#)

You will find the **yield tables** for all 3 species in this [repository](#), but you can use this as a guide to obtain reference data from other publications.



MANUAL DE GESTIÓN PARA MASAS
PROCEDENTES DE REPOBLACIÓN DE
Pinus pinaster Ait., *Pinus sylvestris* L.
Y *Pinus nigra* Arn. EN CASTILLA Y LEÓN

Miren del Río Gaztelurrutia
Eduardo López Senespleda
Gregorio Montero González





How to create your inventory using yield table data

On page 30 we find the **yield tables** for *Pinus pinaster* under different site qualities.

On each of them, **initial stand characteristics** are different (first row; each one corresponding to its site quality) and **different silviculture** will be applied to each type of stand (notice how the density (N) is reduced in the following rows, this indicates that trees are being cut).

To create our inventory we will use only the initial data (first row), the silvicultural activities will be used in the [scenario section](#).

Tabla 2:

Guías de densidad observada por calidades de estación. Para aquellos rangos de edades y calidades de estación en los que no se dispone de datos se presentan los valores estimados en gris o blanco.

Calidad de estación 12							Calidad de estación 15						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)	EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	5,5	1.485	4,8	10,0	11,6	28	20	6,8	1.189	6,1	13,0	15,7	46
30	8,2	989	7,5	15,8	19,4	69	30	10,3	792	9,5	19,8	24,3	106
40	10,4	784	9,7	20,0	24,5	108	40	13,0	628	12,2	24,6	29,8	162
50	12,0	679	11,3	22,9	27,9	141	50	15,0	544	14,2	28,0	33,5	209
60	13,2	618	12,4	25,0	30,2	167	60	16,5	495	15,7	30,4	36,0	245

Calidad de estación 18							Calidad de estación 21						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)	EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	8,2	992	7,5	15,8	19,4	68	20	9,6	851	8,8	18,4	22,7	92
30	12,3	661	11,6	23,5	28,6	148	30	14,4	567	13,6	27,0	32,4	194
40	15,6	524	14,8	29,0	34,5	223	40	18,2	449	17,4	33,1	38,7	289
50	18,0	453	17,2	32,9	38,5	285	50	21,0	389	20,2	37,5	43,0	367
60	19,8	413	18,9	35,6	41,2	333	60	23,1	354	22,2	40,6	45,8	428

Calidad de estación 24						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	10,9	745	10,2	21,0	25,7	119
30	16,4	496	15,6	30,4	36,0	244
40	20,8	393	19,9	37,1	42,6	360
50	24,0	340	23,1	42,0	47,1	456
60	26,4	310	25,5	45,4	50,1	531



How to create your inventory using yield table data

We are going to transcribe the **inventory** into the [Excel template designed for yield tables](#). If you do not remember the meaning of a variable, go back and refresh your explanation.

We will start with the codes:

- **Inventory_ID**: **inventory code**, in this case I selected the document reference (avoid spaces, accents and symbols)
- **Plot_ID**: **plot code** (I selected the site quality to distinguish the origin of the data and to compare).
- **Main_species_ID**: code of the **main species of the plot**. *Pinus pinaster* has the code 26, you can look it up [here](#) (Appendix 12).

Tabla 2:
Guías de densidad observada por calidades de estación. Para aquellos rangos de edades y calidades de estación en los que no se dispone de datos se presentan los valores estimados en gris o blanco.

Calidad de estación 12						
EDAD (años)	Ho (m)	N	Hg (cm)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	5,5	1.485	4,8	10,0	11,6	28
30	8,2	989	7,5	15,8	19,4	69
40	10,4	784	9,7	20,0	24,5	108
50	12,0	679	11,3	22,9	27,9	141
60	13,2	618	12,4	25,0	30,2	167

Calidad de estación 15						
EDAD (años)	Ho (m)	N	Hg (cm)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	6,8	1.189	6,1	13,0	15,7	41
30	10,3	792	9,5	19,8	24,3	104
40	13,0	628	12,2	24,6	29,8	164
50	15,0	544	14,2	28,0	33,5	205
60	16,5	495	15,7	30,4	36,0	246

Calidad de estación 18						
EDAD (años)	Ho (m)	N	Hg (cm)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	8,2	992	7,5	15,8	19,4	68
30	12,3	661	11,6	23,5	28,6	148
40	15,6	524	14,8	29,0	34,5	223
50	18,0	453	17,2	32,9	38,5	285
60	19,8	413	18,9	35,6	41,2	333

Calidad de estación 21						
EDAD (años)	Ho (m)	N	Hg (cm)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	9,6	851	8,8	18,4	22,7	91
30	14,4	567	13,6	27,0	32,4	191
40	18,2	449	17,4	33,1	38,7	286
50	21,0	389	20,2	37,5	43,0	361
60	23,1	354	22,2	40,6	45,8	421

Calidad de estación 24						
EDAD (años)	Ho (m)	N	Hg (cm)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	10,9	745	10,2	21,0	25,7	119
30	16,4	496	15,6	30,4	36,0	244
40	20,8	393	19,9	37,1	42,6	360
50	24,0	340	23,1	42,0	47,1	456
60	26,4	310	25,5	45,4	50,1	531

ID_Inventario		ID_Parcela		ID_especie_principal		Anho	T	N	G	Ho	h_media	dg	V_con_corteza
Del_Rio_et_al_2006		12		26		2006	20	1485	11.6	5.5	4.8	10	28



We already have the “Parcela” (*plots*) sheet filled, and you may have noticed a small detail... and that is that we have no tree data. This is a problem, however, the templates in the “Yield Tables” folder are set up to create a series of trees automatically, take a look at them.

IMPORTANT! If in addition to plot data you have **tree data**, each tree must have associated to it the code of the plot (**Plot_ID**) to which it belongs, otherwise the data will be mixed.

Calidad de estación 12						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	5,5	1.485	4,8	10,0	11,6	28
30	8,2	989	7,5	15,8	19,4	69
40	10,4	784	9,7	20,0	24,5	108
50	12,0	679	11,3	22,9	27,9	141
60	13,2	618	12,4	25,0	30,2	167

Calidad de estación 15						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	6,8	1.189	6,1	13,0	15,7	46
30	10,4	784	9,7	20,0	24,5	108
40	13,0	628	12,2	24,6	29,8	162
50	15,0	544	14,2	28,0	33,5	209
60	16,5	495	15,7	30,4	36,0	245

Calidad de estación 18						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	8,2	992	7,5	15,8	19,4	68
30	11,3	679	11,3	22,9	27,9	141
40	15,6	524	14,8	29,0	34,5	223
50	18,0	453	17,2	32,9	38,5	285
60	19,8	413	18,9	35,6	41,2	333

Calidad de estación 21						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	9,6	851	8,8	18,4	22,7	92
30	14,7	584	13,8	27,8	36,7	177
40	18,2	449	17,4	33,1	38,7	289
50	21,0	389	20,2	37,5	43,0	367
60	23,1	354	22,2	40,6	45,8	428

Calidad de estación 24						
EDAD (años)	Ho (m)	N	Hg (m)	Dg (cm)	G (m ² /ha)	V (m ³ /ha)
20	10,9	745	10,2	21,0	25,7	119
30	16,4	496	15,6	30,4	36,0	244
40	20,8	393	19,9	37,1	42,6	360
50	24,0	340	23,1	42,0	47,1	456
60	26,4	310	25,5	45,4	50,1	531

[illegible]



How to create your inventory using yield table data

If you have covered the plot data, then you will see that this sheet has covered itself. For each plot 9 trees are created that try to represent different **standard trees** that we could find in the stand (you can click on each cell and you will see how they have been calculated).

Although this is a major simplification of the stand, it will be useful as an **example** to practice and see the results.

Note: if you enter more than 5 plots, then drag the contents of the cells of the “**PiesMayores**” (**trees**) sheet so that it autocompletes. If you use less than 5 plots, then delete the contents of the excess tree rows, otherwise the simulator will give you an error.

	A	B	C	D	E	F	G	H
1	ID_Inventario	ID_Parcela	ID_arbol	especie	factor_expansion	dbh	h	g
2	Del_Rio_et_al_2006	12	1	26	165.0	10.0	4.8	78.1
3	Del_Rio_et_al_2006	12	2	26	165.0	10.0	5.5	78.1
4	Del_Rio_et_al_2006	12	3	26	165.0	10.0	4.1	78.1
5	Del_Rio_et_al_2006	12	4	26	165.0	12.0	4.8	112.5
6	Del_Rio_et_al_2006	12	5	26	165.0	12.0	5.5	112.5
7	Del_Rio_et_al_2006	12	6	26	165.0	12.0	4.1	112.5
8	Del_Rio_et_al_2006	12	7	26	165.0	8.0	4.8	50.0
9	Del_Rio_et_al_2006	12	8	26	165.0	8.0	5.5	50.0
10	Del_Rio_et_al_2006	12	9	26	165.0	8.0	4.1	50.0
11	Del_Rio_et_al_2006	15	1	26	132.1	13.0	6.1	132.0
12	Del_Rio_et_al_2006	15	2	26	132.1	13.0	6.8	132.0
13	Del_Rio_et_al_2006	15	3	26	132.1	13.0	5.4	132.0
14	Del_Rio_et_al_2006	15	4	26	132.1	15.6	6.1	190.1
15	Del_Rio_et_al_2006	15	5	26	132.1	15.6	6.8	190.1
16	Del_Rio_et_al_2006	15	6	26	132.1	15.6	5.4	190.1
17	Del_Rio_et_al_2006	15	7	26	132.1	10.4	6.1	84.5
18	Del_Rio_et_al_2006	15	8	26	132.1	10.4	6.8	84.5
19	Del_Rio_et_al_2006	15	9	26	132.1	10.4	5.4	84.5
20	Del_Rio_et_al_2006	18	1	26	110.2	15.8	7.5	195.6
21	Del_Rio_et_al_2006	18	2	26	110.2	15.8	8.2	195.6
22	Del_Rio_et_al_2006	18	3	26	110.2	15.8	6.8	195.6

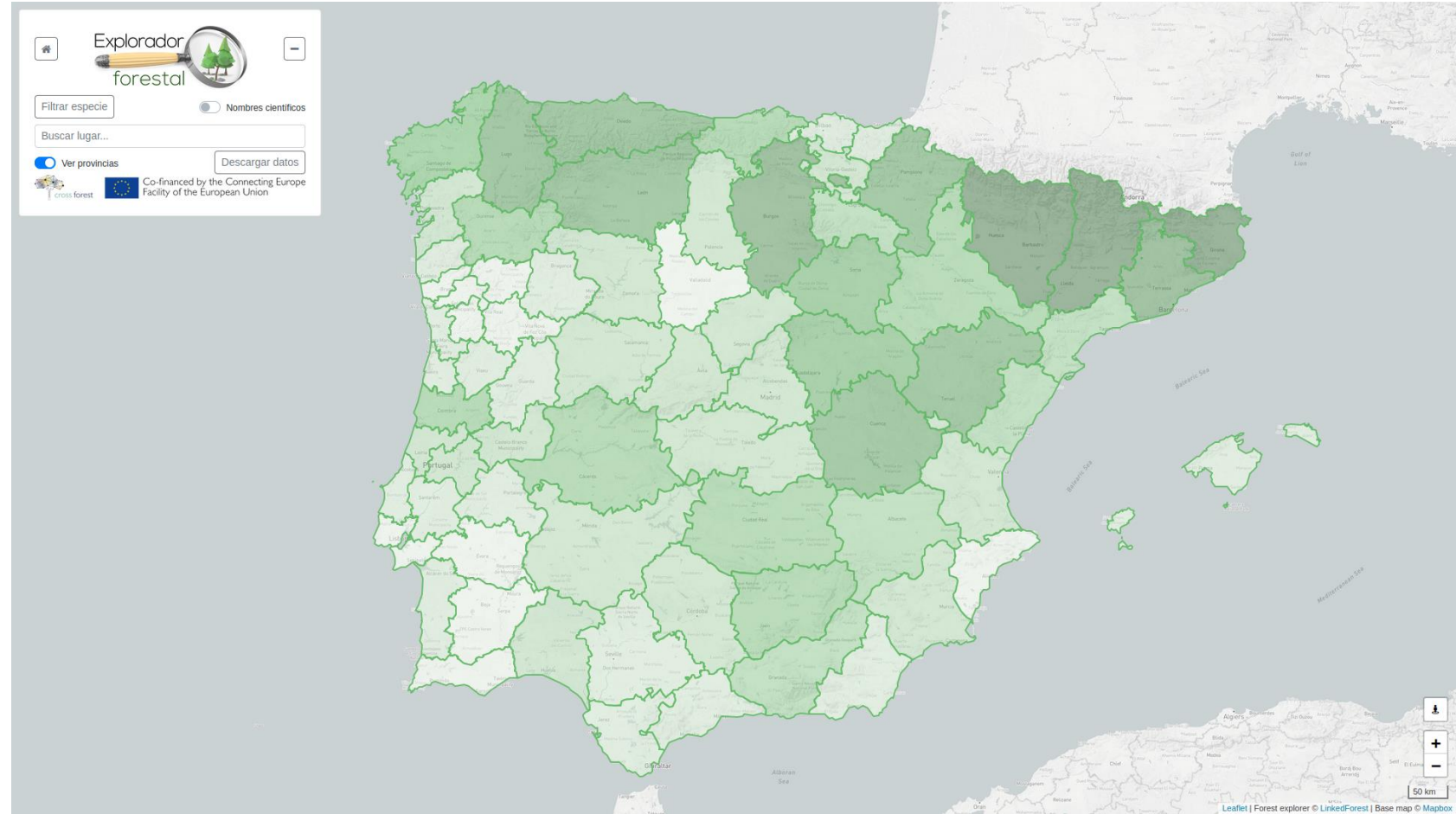


How to create your inventory using SFN1 data



How to create your inventory using SNFI data

To provide **SNFI data** to SIMANFOR we can use the [ForestExplorer](#), which will allow us to view all the inventory plots and select the one that best suits our needs. [Here](#) you will find templates to create your inventory from the SNFI data.

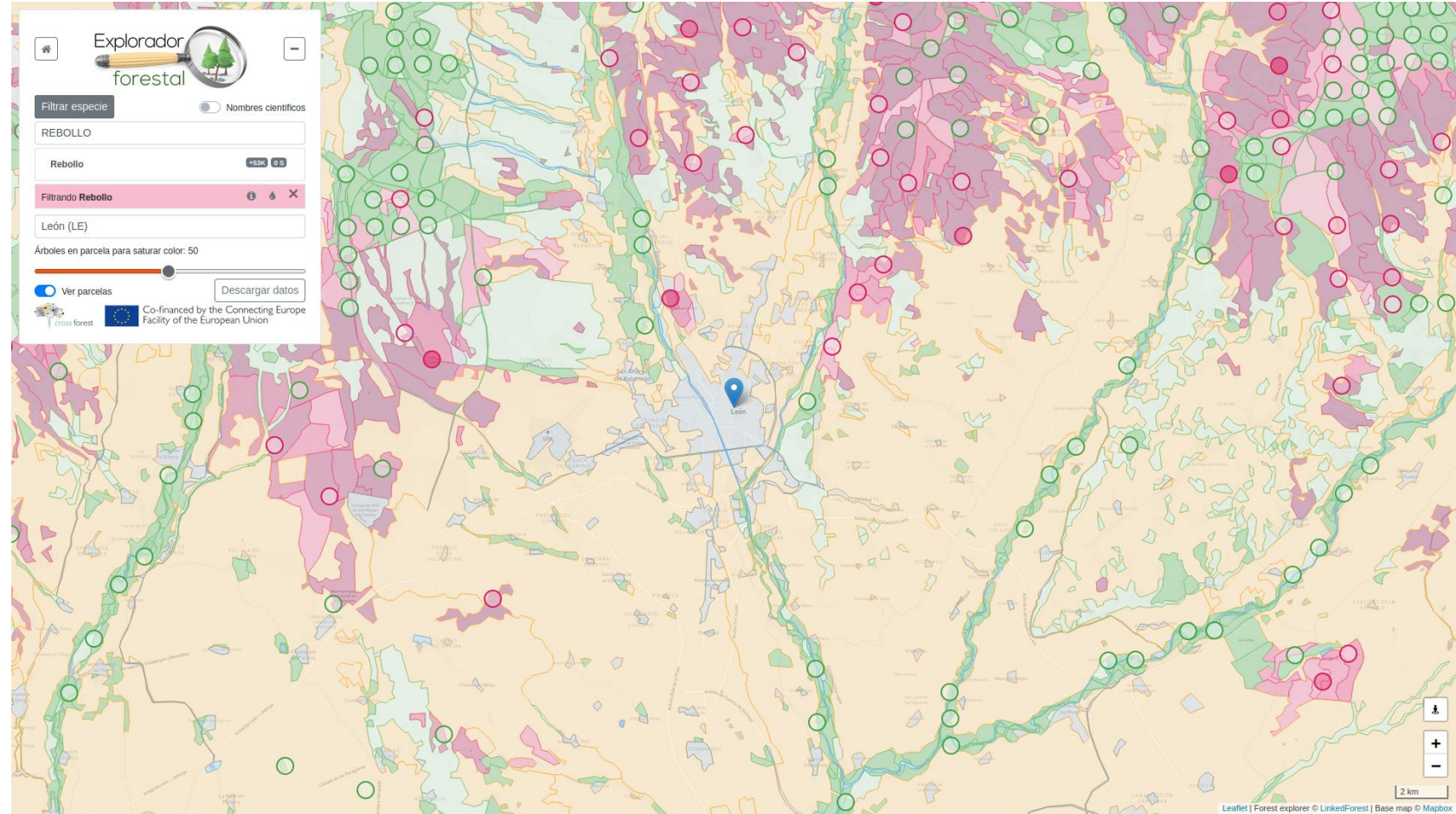




How to create your inventory using SFNI data

In its **search bars** we can filter the plots by species and location. In my case, I am going to look for plots of Pyrenean oak (*Quercus pyrenaica*) in the province of León.

As you can see in the image, the **pink plots** are the ones where the species we are looking for is present (you can change the colour)





How to create your inventory using SFNI data

If we place the mouse over one of them, then a window with the **plot information** will be displayed. On the example shown:

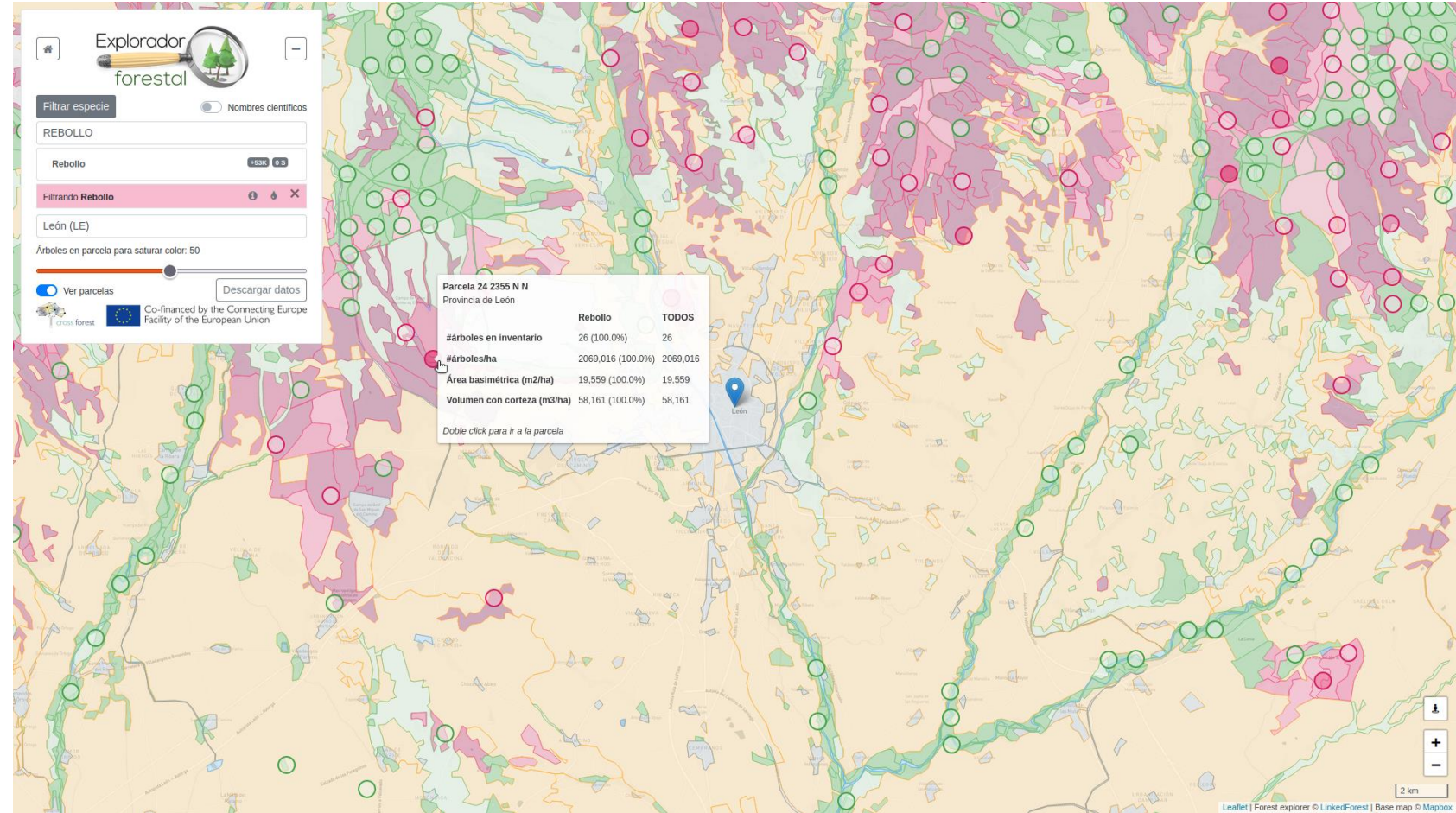
- **Código de parcela (plot code):** **24_2355_N_N**, where 24 is the INE code of the province, 2355 is the plot number within the province, and N_N refers to the plot type.

- **#árboles en inventario (trees in the inventory):** **number of trees** of the target species and totals

- **#árboles/ha (trees/ha):** **plot density** extrapolated to the hectare level

- **Área basimétrica (basal area) (m²/ha):** **basal area** of the target and total species

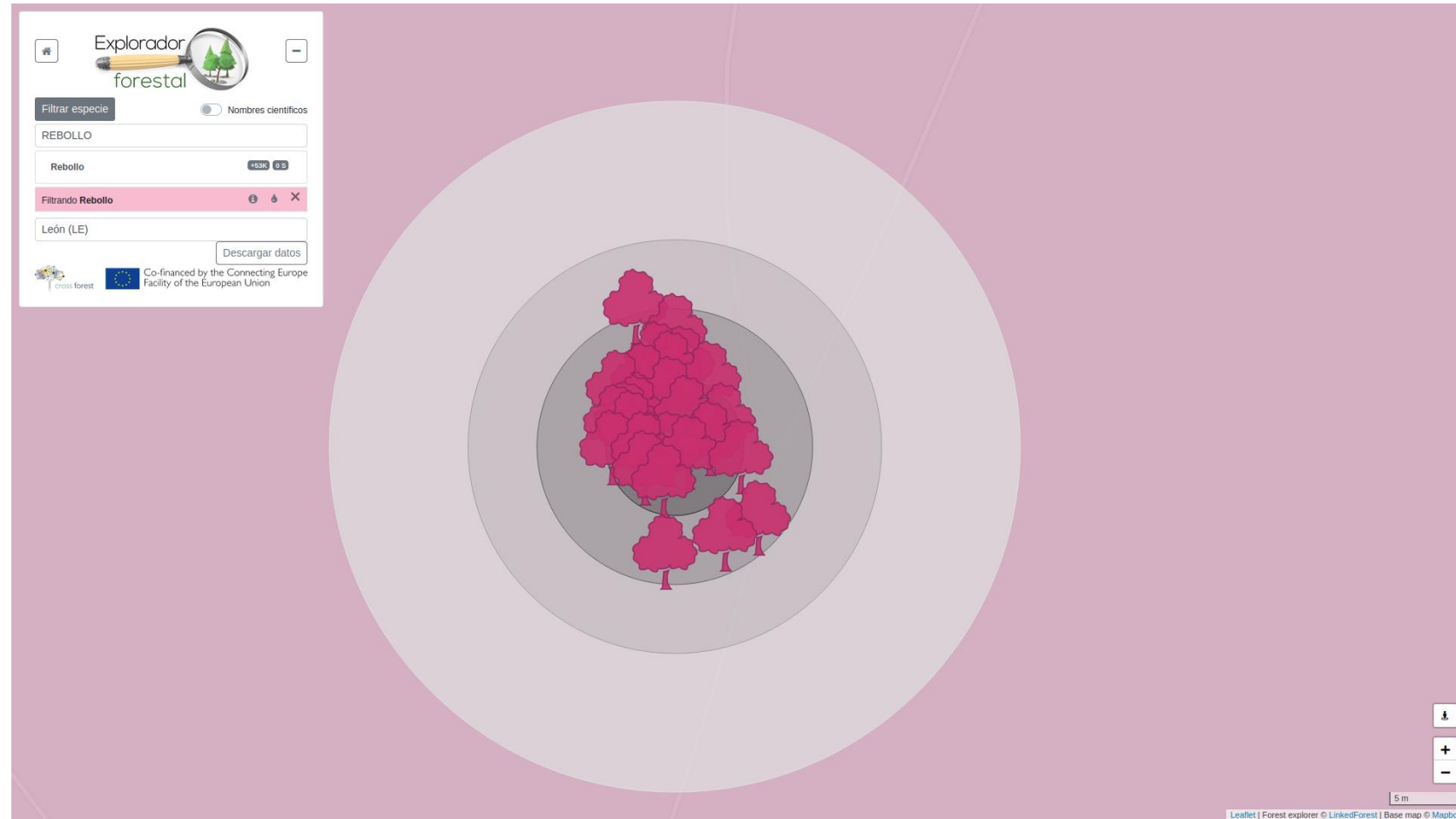
- **Volumen con corteza (volumen over bark) (m³/ha):** **volume of wood over bark** of the target and total species





How to create your inventory using SFN1 data

Double-clicking on the plot will **zoom** in and out, allowing you to see the arrangement of the trees within the plot. In this case all the trees are Pyrenean oaks, but if we had a different species, then the picture would change.

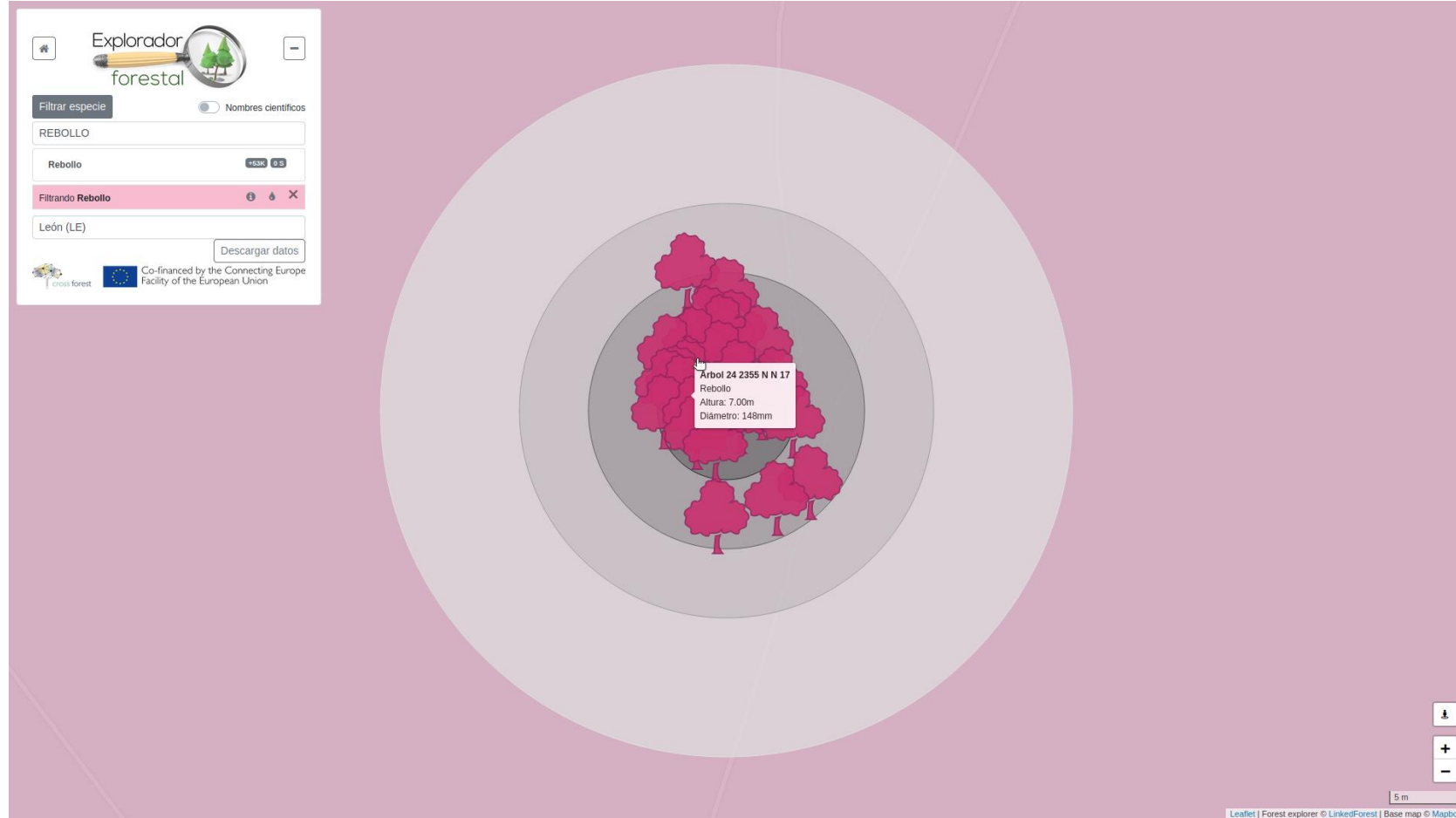




How to create your inventory using SFNI data

By placing the mouse over each **tree**, we can visualize its **information**. For the example shown:

- **Código del árbol (tree code):** **24_2355_N_N_17** is the tree code, where 24_2355_N_N is the plot code and 17 is the tree code inside the plot
- **Especie (species):** “**Rebollo**” (*Pyrenean oak*) is the common name of the tree. If we activate the option “**Nombres científicos**” (*Scientific names*), then “*Quercus pyrenaica*” should be shown
- **Altura (height):** shows the **tree height** (meters)
- **Diámetro (diameter):** shows the mean **normal diameter** (the SNFI has 2 records) (millimetres)

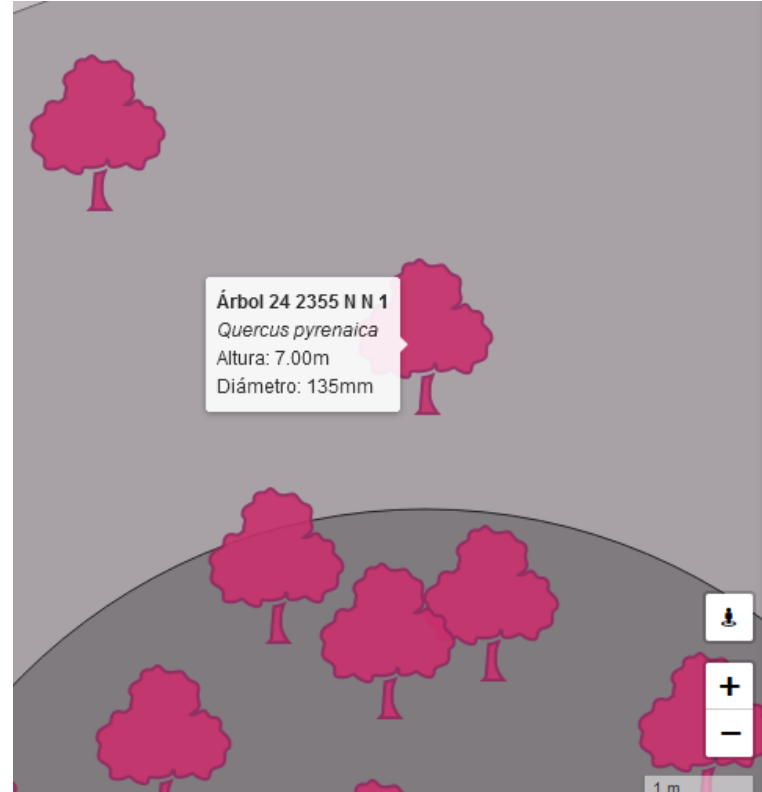




How to create your inventory using SFNI data

With this information, we can build our **inventory**. To do this we will write the following information on the sheet “**PiesMayores**” (*trees*):

- **Tree_ID**: **code of the tree** within the plot (just the last number is needed)
- **species**: **SFNI species code** (search [here](#), appendix 12)
- **dbh**: **diameter** at breast height. **Note**: write it in **cm**, not in mm
- **h**: **total height** in **m**



Árbol 24 2355 N N 1
Quercus pyrenaica
Altura: 7.00m
Diámetro: 135mm

	A	B	C	D	E	F	G	H
1	ID Inventario	ID Parcela	ID arbol	especie	factor expansion	dbh	h	q
2	IFN	24_2355_N_N	1	43	31.8	13.5	7.0	143.1
3	IFN	24_2355_N_N	2	43	127.3	16.3	8.5	208.7
4	IFN	24_2355_N_N	3	43	127.3	8.7	8.0	59.4
5	IFN	24_2355_N_N	4	43	127.3	13.5	8.0	143.1
6	IFN	24_2355_N_N	5	43	127.3	7.8	5.5	47.8
7	IFN	24_2355_N_N	6	43	31.8	14.4	9.5	162.9
8	IFN	24_2355_N_N	7	43	127.3	10.0	6.0	78.5
9	IFN	24_2355_N_N	8	43	31.8	12.9	9.0	130.7
10	IFN	24_2355_N_N	9	43	31.8	16.3	10.0	208.7
11	IFN	24_2355_N_N	10	43	127.3	7.6	4.0	45.4
12	IFN	24_2355_N_N	11	43	14.1	15.8	10.5	196.1
13	IFN	24_2355_N_N	12	43	127.3	14.1	9.0	156.1
14	IFN	24_2355_N_N	13	43	127.3	10.0	6.5	78.5
15	IFN	24_2355_N_N	14	43	127.3	14.5	8.0	165.1
16	IFN	24_2355_N_N	15	43	127.3	12.3	8.5	118.8
17	IFN	24_2355_N_N	16	43	31.8	19.9	8.0	311.0
18	IFN	24_2355_N_N	17	43	127.3	14.8	7.0	172.0
19	IFN	24_2355_N_N	18	43	127.3	10.6	5.0	88.2
20	IFN	24_2355_N_N	19	43	127.3	8.4	6.0	55.4
21	IFN	24_2355_N_N	20	43	127.3	9.5	8.0	70.9
22	IFN	24_2355_N_N	21	43	127.3	10.9	6.5	93.3
23	IFN	24_2355_N_N	22	43	127.3	9.0	7.5	63.6
24	IFN	24_2355_N_N	23	43	31.8	15.3	9.0	183.9
25	IFN	24_2355_N_N	24	43	127.3	12.6	7.0	124.7
26	IFN	24_2355_N_N	25	43	127.3	10.8	7.0	91.6
27	IFN	24_2355_N_N	26	43	127.3	8.9	7.5	62.2

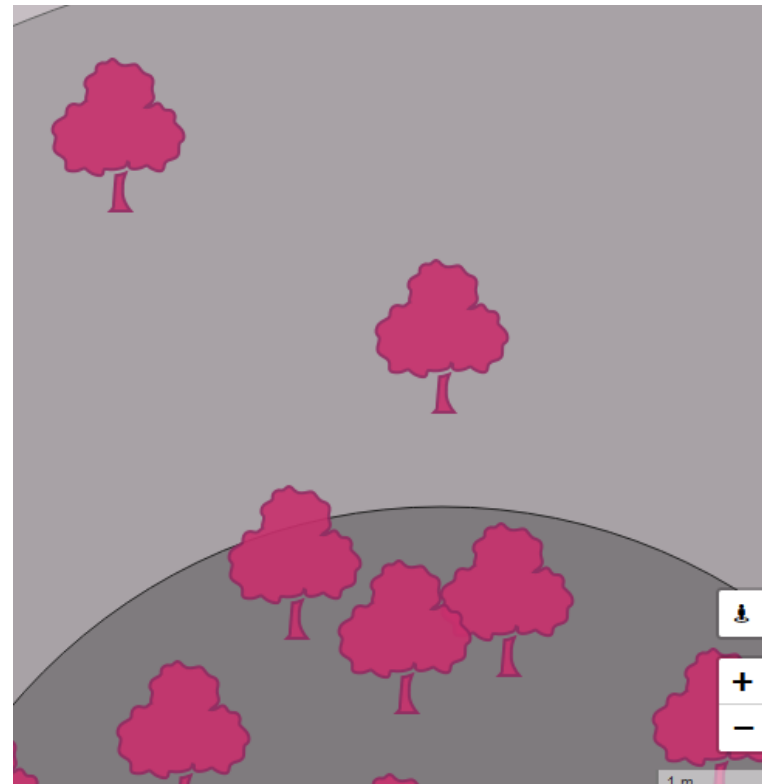
Parcelas PiesMayores



How to create your inventory using SFNI data

Once you start to cover that data, **g** column will be autocompleted:

- **expan**: as the **minimum inventoried dbh** is different on each **concentric circle**, we will use that information to calculate the expansion factor, following that rule:
 - IF dbh < 12.5, expan = 127.32
 - IF dbh < 22.5, expan = 31.83
 - IF dbh < 42.5, expan = 14.15
 - IF dbh >= 42.5, expan = 5.09
- **g**: tree **basal area**, directly calculated from dbh (**cm²**)
- **Inventory_ID** and **Plot_ID**: **inventory** and **plot codes**. Obtained from "Parcelas" (*plots*) sheet



	A	B	C	D	E	F	G	H
1	ID_Inventario	ID_Parcelsa	ID_arbol	especie	factor_expansion	dbh	h	g
2	IFN	24_2355_N_N	1	43	31.8	13.5	7.0	143.1
3	IFN	24_2355_N_N	2	43	127.3	16.3	8.5	208.7
4	IFN	24_2355_N_N	3	43	127.3	8.7	8.0	59.4
5	IFN	24_2355_N_N	4	43	127.3	13.5	8.0	143.1
6	IFN	24_2355_N_N	5	43	127.3	7.8	5.5	47.8
7	IFN	24_2355_N_N	6	43	31.8	14.4	9.5	162.9
8	IFN	24_2355_N_N	7	43	127.3	10.0	6.0	78.5
9	IFN	24_2355_N_N	8	43	31.8	12.9	9.0	130.7
10	IFN	24_2355_N_N	9	43	31.8	16.3	10.0	208.7
11	IFN	24_2355_N_N	10	43	127.3	7.6	4.0	45.4
12	IFN	24_2355_N_N	11	43	14.1	15.8	10.5	196.1
13	IFN	24_2355_N_N	12	43	127.3	14.1	9.0	156.1
14	IFN	24_2355_N_N	13	43	127.3	10.0	6.5	78.5
15	IFN	24_2355_N_N	14	43	127.3	14.5	8.0	165.1
16	IFN	24_2355_N_N	15	43	127.3	12.3	8.5	118.8
17	IFN	24_2355_N_N	16	43	31.8	19.9	8.0	311.0
18	IFN	24_2355_N_N	17	43	127.3	14.8	7.0	172.0
19	IFN	24_2355_N_N	18	43	127.3	10.6	5.0	88.2
20	IFN	24_2355_N_N	19	43	127.3	8.4	6.0	55.4
21	IFN	24_2355_N_N	20	43	127.3	9.5	8.0	70.9
22	IFN	24_2355_N_N	21	43	127.3	10.9	6.5	93.3
23	IFN	24_2355_N_N	22	43	127.3	9.0	7.5	63.6
24	IFN	24_2355_N_N	23	43	31.8	15.3	9.0	183.9
25	IFN	24_2355_N_N	24	43	127.3	12.6	7.0	124.7
26	IFN	24_2355_N_N	25	43	127.3	10.8	7.0	91.6
27	IFN	24_2355_N_N	26	43	127.3	8.9	7.5	62.2



How to create your inventory using SFNI data

That's the **inventory** we will get as an example.

Now, let's look at how to fill the “**Parcelas**” (*plots*) sheet.

ID_Inventario	ID_Parcels	ID_arbol	especie	factor_expansion	dbh	h	g
IFN	24_2355_N_N	11	43	14.1	15.8	10.5	196.1
IFN	24_2355_N_N	9	43	31.8	16.3	10.0	208.7
IFN	24_2355_N_N	8	43	31.8	12.9	9.0	130.7
IFN	24_2355_N_N	24	43	31.8	14.4	9.5	162.9
IFN	24_2355_N_N	16	43	31.8	19.9	8.0	311.0
IFN	24_2355_N_N	1	43	31.8	13.5	7.0	143.1
IFN	24_2355_N_N	23	43	31.8	15.3	9.0	183.9
IFN	24_2355_N_N	24	43	127.3	12.6	7.0	124.7
IFN	24_2355_N_N	2	43	127.3	16.3	8.5	208.7
IFN	24_2355_N_N	26	43	127.3	8.9	7.5	62.2
IFN	24_2355_N_N	22	43	127.3	9.0	7.5	63.6
IFN	24_2355_N_N	21	43	127.3	10.9	6.5	93.3
IFN	24_2355_N_N	25	43	127.3	10.8	7.0	91.6
IFN	24_2355_N_N	3	43	127.3	8.7	8.0	59.4
IFN	24_2355_N_N	4	43	127.3	13.5	8.0	143.1
IFN	24_2355_N_N	5	43	127.3	7.8	5.5	47.8
IFN	24_2355_N_N	7	43	127.3	10.0	6.0	78.5
IFN	24_2355_N_N	10	43	127.3	7.6	4.0	45.4
IFN	24_2355_N_N	12	43	127.3	14.1	9.0	156.1
IFN	24_2355_N_N	13	43	127.3	10.0	6.5	78.5
IFN	24_2355_N_N	15	43	127.3	12.3	8.5	118.8
IFN	24_2355_N_N	14	43	127.3	14.5	8.0	165.1
IFN	24_2355_N_N	17	43	127.3	14.8	7.0	172.0
IFN	24_2355_N_N	20	43	127.3	9.5	8.0	70.9
IFN	24_2355_N_N	19	43	127.3	8.4	6.0	55.4
IFN	24_2355_N_N	18	43	127.3	10.6	5.0	88.2



How to create your inventory using SFNI data

The first columns that we should fill are the ones highlighted in yellow:

- **Inventory_ID:** **inventory code**, where it is recommended to put the source of the data (when filled in, it is auto-filled in the trees sheet)
- **Plot_ID:** **plot code**, which is extracted from the Forest Explorer (when filled in, it is auto-filled in the trees sheet)
- **Main_species_ID:** **code of the main species of the plot** (as there may be several species). For this, we will use the coding of the SNFI (look it up [here](#), Appendix 12)

	A	B	C	D	E	F	G	H	I	J	K
1	ID_Inventario	ID_Parcela	ID_especie_principal	Anho	T	N	G	Ho	h_media	dg	V_con_corteza
2	IFN	24_2355_N_N	43		20	2624.288	0.3	10.0			



How to create your inventory using SFNI data

We will see that some variables will be covered automatically (check that they have used the data from all the trees, it is an Excel function):

- **N**: is the **density** of the plot (trees/ha)
- **G**: is the **basal area** of the plot (m²/ha)

	A	B	C	D	E	F	G	H	I	J	K
1	ID_Inventario	ID_Parcela	ID_especie_principal	Anho	T	N	G	Ho	h_media	dg	V_con_corteza
2	IFN	24_2355_N_N	43		20	2624.288	0.3	10.0			



How to create your inventory using SFNI data

Lastly, we have two important fields missing:

- **T**: is the **average age** of the plot. Since the SNFI only provides it for some more homogeneous plots (i.e., plantations), let's cover the cell with a value that we think may be correct (this is NOT correct, we should discard the plot, but let's do it to have some example data and to be able to continue the explanation)
- **Ho**: is the **dominant height** of the plot in m. It is calculated by averaging the height of the 100 tallest trees in the plot (NOTE, each tree is equivalent to a certain number of trees at the hectare level (expansion factor), so this must be taken into account)

	A	B	C	D	E	F	G	H	I	J	K
1	ID_Inventario	ID_Parcela	ID_especie_principal	Anho	T	N	G	Ho	h_media	dg	V_con_corteza
2	IFN	24_2355_N_N	43		20	2624.288	0.3	10.0			



How to add more than one plot to your inventory



How to add more than one plot to your inventory

This section is only to remind you that the codes of the sheet “*Parcelas*” (*plots*) and “*PiesMayores*” (*trees*) must match (see the image). If this is not the case, then the simulator cannot link the trees to the correct plot.

The same *tree code* can be repeated on different plots, but *not* on the same plot (see the image).

**DON'T MESS
IT UP!**

ID_Inventario		ID_Parcela	especie_principal	Anho	T	N	G	Ho	h_media	dg	V_con_cortez
Del_Rio_et_al_2006		12	26	2006	20	1485	11.6	5.5	4.8	10	28
Del_Rio_et_al_2006		15	26	2006	20	1189	15.7	6.8	6.1	13	46
Del_Rio_et_al_2006		18	26	2006	20	992	19.4	8.2	7.5	15.8	68
Del_Rio_et_al_2006		21	26	2006	20	851	22.7	9.6	8.8	18.4	92
Del_Rio_et_al_2006		24	26	2006	20	745	25.7	10.9	10.2	21	119

ID_Inventario	ID_Parcela	ID_arbol	especie	factor_expansion	dbh	h	g
Del_Rio_et_al_2006	12	1	26	165.0	10.0	4.8	78.1
Del_Rio_et_al_2006	12	2	26	165.0	10.0	5.5	78.1
Del_Rio_et_al_2006	12	3	26	165.0	10.0	4.1	78.1
Del_Rio_et_al_2006	12	4	26	165.0	12.0	4.8	112.5
Del_Rio_et_al_2006	12	5	26	165.0	12.0	5.5	112.5
Del_Rio_et_al_2006	12	6	26	165.0	12.0	4.1	112.5
Del_Rio_et_al_2006	12	7	26	165.0	8.0	4.8	50.0
Del_Rio_et_al_2006	12	8	26	165.0	8.0	5.5	50.0
Del_Rio_et_al_2006	12	9	26	165.0	8.0	4.1	50.0
Del_Rio_et_al_2006	15	1	26	132.1	13.0	6.1	132.0
Del_Rio_et_al_2006	15	2	26	132.1	13.0	6.8	132.0
Del_Rio_et_al_2006	15	3	26	132.1	13.0	5.4	132.0
Del_Rio_et_al_2006	15	4	26	132.1	15.6	6.1	190.1
Del_Rio_et_al_2006	15	5	26	132.1	15.6	6.8	190.1
Del_Rio_et_al_2006	15	6	26	132.1	15.6	5.4	190.1
Del_Rio_et_al_2006	15	7	26	132.1	10.4	6.1	84.5
Del_Rio_et_al_2006	15	8	26	132.1	10.4	6.8	84.5
Del_Rio_et_al_2006	15	9	26	132.1	10.4	5.4	84.5
Del_Rio_et_al_2006	18	1	26	110.2	15.8	7.5	195.6
Del_Rio_et_al_2006	18	2	26	110.2	15.8	8.2	195.6



Example inventories



Inside this [folder](#) you will find **example inventories**. Have a look at the [README](#) deployed on this page and you will see a recommendation about the model that better fits each inventory.

The screenshot shows the GitHub interface for the repository `simanfor/inventarios`. The `ejemplos` folder is selected, displaying a list of files:

File Name	Description	Time
IFN-Qpyrenaica-datos_ejemplo.xlsx	readme e inventarios	4 hours ago
Pnigra_CyL-datos_ejemplo.xlsx	readme e inventarios	4 hours ago
Ppinaster_CyL-datos_ejemplo.xlsx	readme e inventarios	4 hours ago
Psylvestris_CyL-datos_ejemplo.xlsx	readme e inventarios	4 hours ago
README.md	Update README.md	11 seconds ago

The `README.md` file content is displayed below, titled "Ejemplos de inventarios para SIMANFOR". It explains that the folder contains different inventories with data ready for use in SIMANFOR, and lists four examples with their respective models:

- IFN-Qpyrenaica-datos_ejemplo: parcela 24_2355_N_N del IFN3, correspondiente a una masa pura de rebollo (*Quercus pyrenaica*) en la provincia de León. Puede ser utilizado con el modelo `Qpyrenaica__cyL__v01`
- Pnigra_CyL-datos_ejemplo: datos para parcelas con 4 calidades de estación diferentes para pino salgareño (*Pinus nigra*) en Castilla y León, obtenidos de Del Río et al., 2006. Puede ser utilizado con el modelo `Pnigra_stand__CyL__v01`
- Ppinaster_CyL-datos_ejemplo: datos para parcelas con 5 calidades de estación diferentes para pino negro (*Pinus pinaster*) en Castilla y León, obtenidos de Del Río et al., 2006. Puede ser utilizado con el modelo `Ppinaster_me_sim__v01/2`
- Psylvestris_CyL-datos_ejemplo: datos para parcelas con 5 calidades de estación diferentes para pino silvestre (*Pinus sylvestris*) en Castilla y León, obtenidos de Del Río et al., 2006. Puede ser utilizado con el modelo `Psylvestris__sisc__v01/2`



Do you want more?

SIMANF{}R

[introduction](#)

[web](#)

[publications](#)

SIMANF{}R

[inventories](#)

[scenarios](#)

[models](#)

[results](#)

simanfor.data@forest.uva.es