

SIMANFOR

Model for *Pinus sylvestris* Natural stands of Cataluña (Spain)

Model

Psylvestris Cataluña masas naturales

Individual tree growth model for *Pinus sylvestris* in natural stands of Cataluña (Spain)

Model description

- Species: *Pinus sylvestris* L.
- Species SFNI (Spanish Forest National Inventory) code: 21
- Geographical area: Cataluña
- Geographical area (administrative): Lérida, Gerona, Barcelona and Tarragona

Model requirements and recommended use

- Initial inventory requirements: age and dominant height of the plot; expan and dbh of the trees. Basal area, slope, aspect and altitude are variables needed in order to calculate mushroom variables
- Geographical area: Cataluña, closer places and another places with similar characteristics (assuming differences)
- Stand type: monospecific stands
- Execution recommended time: 5 years executions (survival, growth and ingrowth equations developed by using that criteria)
- Site Index is defined as top height at a base age of 100 years



Figure 1: *Pinus sylvestris*



Figure 2: Details of *Pinus sylvestris*

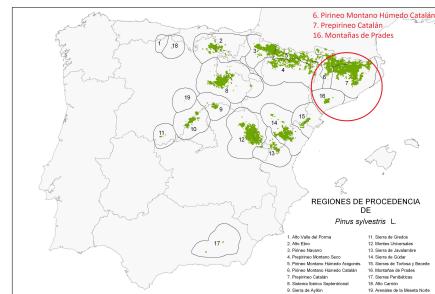


Figure 3: Provenance regions of *Pinus sylvestris* in Spain

Bibliography

SIMANFOR model recommended citation:

SIMANFOR (year). Individual tree growth model independent from distance for scots pine (*Pinus sylvestris*) in Cataluña natural stands (Spain). <https://www.simanfor.es/>

Model components:

- **Site Index equations:**

Palahí M, Tomé M, Pukkala T, Trasobares A, Montero G (2004). Site index model for *Pinus sylvestris* in north-east Spain. *Forest Ecology and Management*, 187(1), 35-47

- **Survival equation:**

Palahí M, Pukkala T, Miina J, Montero G (2003). Individual-tree growth and mortality models for Scots pine (*Pinus sylvestris L.*) in north-east Spain. *Annals of Forest Science*, 60(1), 1-10

- **Diameter growth equation:**

Palahí M, Pukkala T, Miina J, Montero G (2003). Individual-tree growth and mortality models for Scots pine (*Pinus sylvestris L.*) in north-east Spain. *Annals of Forest Science*, 60(1), 1-10

- **Ingrowth equation and distribution:**

Bravo F, Pando V, Ordóñez C, Lizarralde I (2008). Modelling ingrowth in mediterranean pine forests: a case study from scots pine (*Pinus sylvestris L.*) and mediterranean maritime pine (*Pinus pinaster Ait.*) stands in Spain. *Forest Systems*, 17(3), 250-260

- **Generalized height-diameter equation:**

Palahí M, Pukkala T, Miina J, Montero G (2003). Individual-tree growth and mortality models for Scots pine (*Pinus sylvestris L.*) in north-east Spain. *Annals of Forest Science*, 60(1), 1-10

- **General calculations: bal, g, slenderness, normal circumference:**

Standard equations

- **Crown equations:**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris L.*) y pino negral (*Pinus pinaster Ait.*) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Taper equations over and under bark (volume):**

Lizarralde I (2008). Dinámica de rodales y competencia en las masas de pino silvestre (*Pinus sylvestris L.*) y pino negral (*Pinus pinaster Ait.*) de los Sistemas Central e Ibérico Meridional. Tesis Doctoral. 230 pp

- **Biomass equations:**

Ruiz-Peinado R, del Rio M, Montero G (2011). New models for estimating the carbon sink capacity of Spanish softwood species. *Forest Systems*, 20(1), 176-188

- **Technological wood uses information:**

Rodríguez F (2009). Cuantificación de productos forestales en la planificación forestal: Análisis de casos con cubiFOR. In Congresos Forestales

- **Edible and marketed mushrooms equations:**

Palahí M, Pukkala T, Bonet JA, Colinas C, Fischer CR, Martínez de Aragón JR (2009). Effect of the inclusion of mushroom values on the optimal management of even-aged pine stands of Catalonia. *Forest Science*, 55(6), 503-511

- **Marketed lactarius equation:**

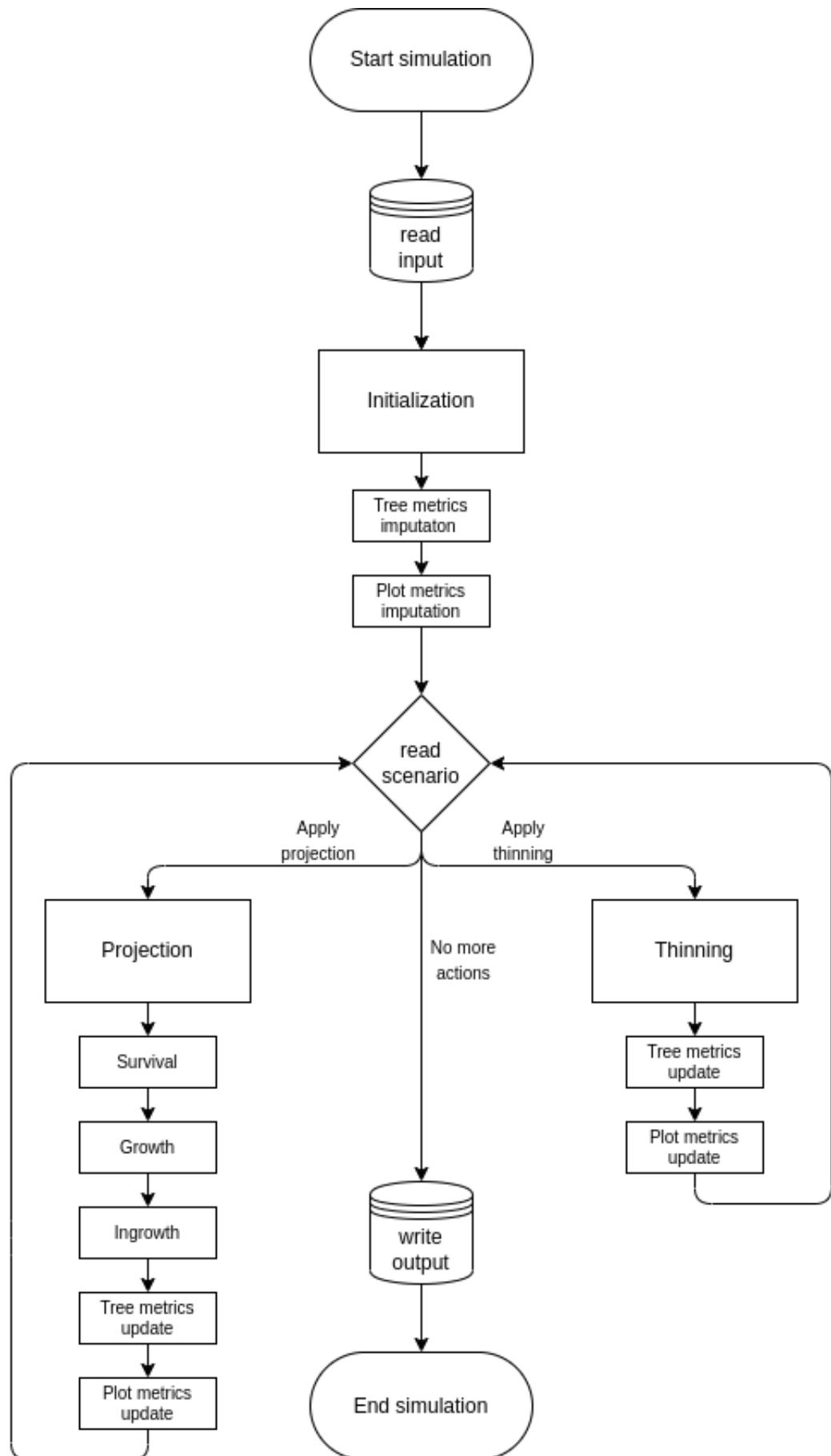
Bonet JA, Pukkala T, Fischer CR, Palahí M, de Aragón JM, Colinas C (2008). Empirical models for predicting the production of wild mushrooms in Scots pine (*Pinus sylvestris L.*) forests in the Central Pyrenees. *Annals of Forest Science*, 65(2), 1

- **Value for Reineke Index equation:**

Aguirre A, Condés S, del Río M (2017) Variación de las líneas de máxima densidad de las principales especies de pino a lo largo del gradiente estacional de la Península Ibérica. 7 Congreso Forestal Español

Figures:

- **Figure 1:** by Vázquez-Veloso, A.
- **Figure 2:** public domain, <https://commons.wikimedia.org/w/index.php?curid=5291505>
- **Figure 3:** extracted from MAPA



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Related information

SIMANFOR - Support System for the Simulation of Sustainable Forest Management Alternatives. Website (<https://www.simanfor.es/>) and GitHub repository <https://github.com/simanfor>

iuFOR - University Institute for Sustainable Forest Management. Website: <http://sostenible.palencia.uva.es/> y <https://iufor.uva.es/>

ETSIIAA Palencia - Higher Technical School of Agricultural Engineering of Palencia. Website: <http://etsiiaa.uva.es/>

UVa - University of Valladolid. Website <https://www.uva.es>

