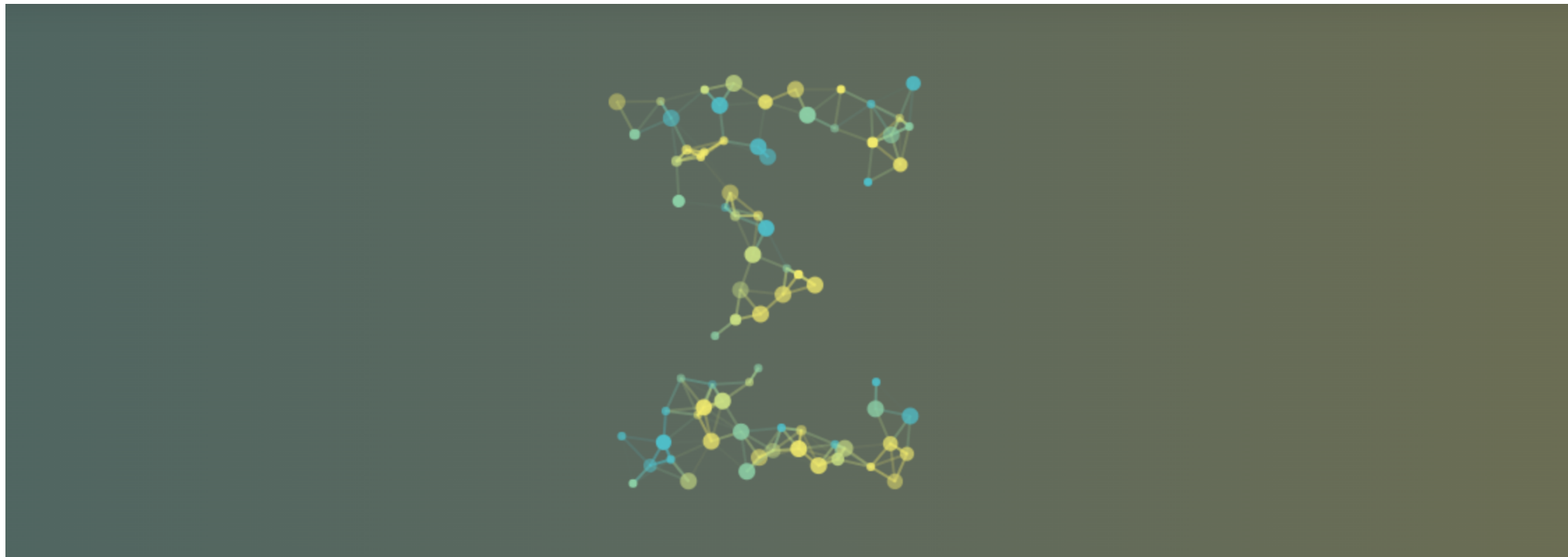


EMF Newsletter May 2023

2023-05-25



Activity conducted at EMF between 01/01/2023 and 31/05/2023

Basic support activity

- **Programming support:** O. Boet, L. da Sois, O. Binks, F. d'Adamo
- **Data management support:** G. Rigola, P. Soler
- **Statistical support:** J. De la Casa, A. Daiyoub, A. Zango, A. Jolivet, A. Vilà, I. Filella, O. Lapidra
- **Modelling support:** S. Silvestre, I. Hernández, J.M. Espelta, J. Vayreda, M. Móstiga

Participation in research projects

- **WILDE** (EU - Researchers: J.M. Espelta, L. Brotons): Project kick-off meeting (<https://www.wilde-project.eu>)
- **RESONATE** (EU - Researchers: J. Martínez, F. Lloret, J.M. Espelta): Assisting in the use of MEDFATE for the evaluation of forest ecosystem services.
- **FORGENIUS** (EU - Researchers: M. Mencuccini): Workshop on parameterization of process-based models.
- **BOMFORES** (Spain - IP: M. De Cáceres): Design of new processes and development of model initialisation routines.
- **COGBUFFER** (Spain, IP: D. Sol): Modeling how decision-making affects population persistence in *Corvus monedula*.
- **CARDIMED** (EU - Researchers: P. Andrés): Modeling and evaluation of NBS for climate-change adaptation, sustainable development and biodiversity conservation in the Mediterranean area.

Participation in knowledge transfer projects

- **Contracte programa / Oficina Catalana de Canvi Climàtic** (Researchers: J. Vayreda, M. Banqu ): Preparation of simulation framework for forest projections including management scenarios.
- **WWF / OECC** (Researchers: E. Doblas, J. Vayreda, M. Banqu ): Final report including the projection of forest dynamics over Spain and the evaluation of C sequestration.

Network building

- Workshop on process-based modelling (parameterization) with researchers from INRAE, under the umbrella of FORGENIUS EU project. 6-9th March.
- Visit of Etienne Tourigny and Isabel Martinez Cano, from Barcelona Supercomputing Center (BSC) with the aim to explore potential collaborations. 18th April.
- Meeting with Maria Gonz lez (UPV), Mario Morales (U. Zaragoza) and Daniel Caviedes (Forschungszentrum J lich, Deutschland) to explore the possibility to couple MEDFATE with the hydrological model SERGHEI (<https://gmd.copernicus.org/articles/16/977/2023/>). 16th March.

Training & mentoring

Courses taught:

- Basic R (Victor/Roberto, 16h, Watering Talents/CREAF)

Mentoring:

- J. D vila (Ph. Student)

Teaching:

- Ecolog a Forestal, explicaci n y uso del Laboratori Forestal Catal  (UAB, 1h, Victor)
- Estudio de Casos en Biolog a Ambiental, acceso a bases de datos de biodiversidad con R (UAB, 1h, Victor)

Model development

Design and implementation:

- Coupling of SurEau-Ecos hydraulic model (<https://doi.org/10.5194/gmd-15-5593-2022>) into MEDFATE.
- Design and implementation of resprouting and fire effects on foliage, buds and cambium (i.e. fire severity).

Parameterization:

- Development of model initialization routines from different national forest inventories (Spain, France, EEUU)
- Implementation of a routine by Ars ne Druel (INRAE) to estimate soil total available water for forest stands, following an ecohydrological hypothesis.

Evaluation:

- Comparison of leaf area index (LAI) estimates derived from leaf biomass allometries vs. remote sensing LAI estimates at the European level.

New software & updates

- New version of package `meteo1and` (v.2.0.0) released on CRAN
- New version of package `medfate` (v. 2.9.3) released on CRAN
- New version of package `meteospain` (v. 0.1.2) released on CRAN
- New version of package `sapFluxnetr` (v. 0.1.4) released on CRAN

New datasets in the EMF catalog

External datasets:

- *ClimPlant v1.2* [<https://doi.org/10.1111/gcb.13303>]: Realized climatic niches of vascular plants in European forest understoreys.
- *Forest Inventory and Analysis (FIA)* [<https://www.fia.fs.usda.gov/>]: The FIA program delivers current, consistent, and credible information about the status of the United States' forests.
- *Global Naturalized Alien Flora (GloNAF)* [<https://glo.naf.org/>]: GloNAF (Global Naturalized Alien Flora) is a living database project about naturalized alien plant species and became a synonym for many related projects dealing with all kinds of scientific and policy relevant questions and studies about alien species (also other taxa) and related data.

CREAF datasets:

- *Long-term hydrological and geochemical datasets (Montseny)* [Anna  vila; <https://zenodo.org/record/7228249>]: Two long-term datasets on the hydrology and hydrochemistry of two small catchments totally or partially covered by holm oak (*Quercus ilex*) forests.

New models in the EMF catalog

- *FATE-HD* [<https://leca-dev.github.io/RFate/index.html>]: FATE is a spatially and temporally explicit vegetation model. It uses plant functional groups (PFG) and integrates important mechanisms driving vegetation dynamics, structure and diversity, such as demographic cycle, obviously, but also seeds dispersal, abiotic filtering or biotic interactions (through the competition for resources like light availability or soil nutrient availability).

Publications developing/using EMF tools

- De C ceres M, Molowny-Horas R, Cabon A, Mart nez-Vilalta J, Mencuccini M, Garc a-Vald s R, Nadal-Sala D, Sabat  S, Martin-StPaul N, Morin X, D'Adamo F, Battlori E, Am ztegui A (in press). MEDFATE 2.9.3: A trait-enabled model to simulate Mediterranean forest function and dynamics at regional scales. *Geoscientific Model Development*

Publications from other collaborations

- Casals P, Gabriel E, De C ceres M, Rios AI, Castro X (in press). Composition and structure of Mediterranean shrublands for fuel characterization. *Annals of Forest Science*.
- Tuomi C, De C ceres M, Grall J, Boy  A, Thiebaut  , Maguer M, Le Garrec V, Broudin C, Houbin, C, Gauthier O (2023). Long-term coastal macrobenthic Community Trajectory Analysis reveals habitat-dependent stability patterns. *Ecography*: e06489 (10.1111/ecog.06489).
- Bachofen C, Poyatos R, Flo V, Mart nez-Vilalta J, Mencuccini M, Granda V, Grossiord C (2023). Stand structure of Central European forests matters more than climate for transpiration sensitivity to VPD. *Journal of Applied Ecology* (10.1111/1365-2664.14383)

EMF online impact

(Online statistics for EMF and LFC between 01/03/2023 and 23/05/2023)

Laboratori Forestal Catal  (LFC):

- *Stats:* 185 visits / 5:46 mins average visit duration / 650 page views
- *Apps most used:* IFN App / Allometrapp / SiteDrought App

EMF Web:

- *Stats:* 423 visits / 5:02 mins average visit duration / 1625 page views
- *Pages most visited:* External models / CREAM models / EMF software



Ecosystem Modelling Facility



WHAT WE DO

- Provide training and technical support for modelling activities to research groups at CREAM.
- Develop and promote the use of process-based and empirical models aimed at predicting the response of terrestrial ecosystems to global change at multiple scales from the forest stand to the region.
- Facilitate discovery of data sets or models relevant for ecosystem modelling activities.
- Develop tools aimed at facilitating the interoperability between data sources and models, and between different models.
- Develop and maintain interactive web applications for ecosystem data exploration and visualization.

CONTACT

Campus de Bellaterra (UAB) Edifici C

08193 Cerdanyola del Vallès

EcosystemModellingFacility@creaf.uab.cat

This action is part of the **Severo Ochoa "ULandscape"** funded in 2019 by the Agencia Estatal de Investigación of the Spanish Ministry of Science and Innovation to support Research Centres of Excellence.



©2022-2023 EMF