

## **NEWSLETTER N°7, September 2020**

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### **1. Cropland Research Group GRA Co-Chairs message**

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This September Newsletter includes plenty of mitigation and adaptation activities associated with land management and also to policy. We start with the importance of fighting climate change by understanding and linking mitigation and adaptation activities to world food provision. The exciting news that Japan has become the first country to include biochar in its inventory report following the IPCC rules is shown, excellent news for farmers wanting to fertilize their fields and foster sustainability. We also describe the main conclusions about how to include more sustainable land use practices like agroforestry in the next European Common Agricultural policies provided by

European Union and National policy makers coming from an International Event organized by the Italian EURAF delegates. Exciting new EU projects such as RED NUEVA aim to evaluate mitigation policies in Spain and GO-GRASS developing more sustainable grass alternative uses through bioeconomy are shown. The successful GO-GRASS session organized in the European Green week event is presented. All these interesting activities as well as the CRG network and country activities will be presented in the forth coming on-line meeting of the GRA CRG this December.

*Source: Croplands Research Group Co-Chairs Team, María Rosa Mosquera-Losada, Ladislau Martin-Neto, Mark Liebig.*

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## 2. Climate change and world food provision

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For decades, climate change has transformed natural resources that influence the global food supply. Climate change causes a decrease in food production due to agricultural programs' failure to adapt and develop new technologies in crop cultivation. The abiotic environment is one of the farming resources that has the most influence during the plant growth process. One of the components of the abiotic environment that changes behavior and cycles is temperature and rainfall. On the one hand, climate change causes an increase in water loss rate from the surface through the evapotranspiration process caused by the rise in the Earth's atmosphere's average temperature. The increase in water loss from the Earth's surface also raises the threat of land drought and land desertification because the water content in an area has reached a critical point (Figure 1).



Figure 1: On the left, [land drought caused by the climate change](#) and on the right, [land desertification](#).

On the other hand, high evapotranspiration causes an increase in rainfall intensity that occurs in a shorter period to damage land resources through erosion processes and flood disasters (Figure 2).



Figure 2: On the left, [soil erosion](#) and on the right, [flooded rice field](#).

Concerning sustainable food production interests, efforts to mitigate and reduce climate change's impact must be a significant concern. Climate change mitigation focuses on understanding and predicting changes in climate behavior and its associated effects. Climate forecasting is expected to map areas on the surface that are likely to experience long dry periods and high-intensity rainfall. Climate change mitigation attempts to predict the emergence of climate behavior that is detrimental to agricultural production. Reduction to climate change is an environmental strategy for reducing negative impacts. The development of new varieties of food crops that are resistant and able to adapt to long drought is an urgent program to maintain food sustainability. Reducing the risk of climate change can be complemented by efforts to reduce the erosion rate that may occur through the application of soil and water conservation programs. The development of water catchment areas using vegetation and mechanical methods is the best concept for harvesting rain and reducing land degradation.

Climate change is the impact of global warming due to increasing carbon concentrations in the atmosphere. Based on this, efforts to reduce ongoing global warming require an agreement between nations to reduce carbon emissions through policies for developing renewable energy and increasing carbon sequestration through a program to green the earth's surface. Discussing climate change and world food provision, there is a conclusion that the mitigation and reduction of agriculture in dealing with and anticipating climate change is essential to maintain world food provision.

Source: Assoc. Prof. Dr. Gunawan Budiyo (Faculty of Agriculture, Universitas Muhammadiyah Yogyakarta, Indonesia).

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### **3. Japan registered "Biochar addition to cropland/grassland soils" as a new J-Credit methodology (agriculture sector) on September 30, 2020**

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Towards zero-emission agriculture, carbon dioxide removal (CDR) or negative emission technology (NET) is required to offset GHG emissions from our necessary agricultural activities. Biochar application to soil is one of the promising NETs included in the [1.5°C IPCC Global Warming Special Report](#) published in October 2018. IPCC also introduced a new methodology (Tier 2 and Tier 3) for estimating the impact of biochar amendments on soil carbon stocks in mineral soils for cropland and grassland in [IPCC 2019 Refinements](#) to 2016 Guidelines, published in June 2019. In response, Japan reported biochar in its latest [National Greenhouse Gas Inventory Report](#), i.e. Japan became the first country to include biochar in its inventory report, although annual carbon sequestration is only 5,000 ton-CO<sub>2eq</sub> in 2018. To promote use of biochar for climate mitigation purpose, Japan registered "Biochar addition to cropland/grassland soils" as a new J-Credit methodology (agriculture sector) on September 30, 2020 (Figure 3). The estimation method follows Japan's National Inventory Report and IPCC 2019 Refinements.

[The J-Credit scheme](#) is designed to use registered methodologies to certify the amount of greenhouse gases reduced and removed by activities within Japan as tradable "carbon credits". J-Credit certification guarantees the reliability of biochar use and allows farmers to use biochar with more confidence. This will increase the use of biochar in the future in Japan. Our research mission is to ensure the proper and sustainable use of biochar for climate mitigation purposes.

**AG-004: Biochar addition to mineral soil in cropland/grassland**

[Mitigation method] ● Stock refractory carbon in mineral soil by adding biochar to cropland and/or grassland.

[Main eligibility criteria] ① To add biochar to mineral soil in cropland/grassland as defined in Article 2 of the Cropland Act.  
 ② Added biochar is: organic carbon content and fraction of biochar certifiable feedstocks/temperature that make it suitable for soil amendment; utilized (including the case of by-product of biochar fuel); and  
 ③ Feedstocks of agricultural origin (including crop residues and other agricultural waste); and  
 ④ Feedstocks of industrial origin (including the case of by-product of biochar fuel); and  
 ⑤ Feedstocks of municipal solid waste (including the case of by-product of biochar fuel); and  
 ⑥ Feedstocks of other origin (including the case of by-product of biochar fuel); and  
 ⑦ Feedstocks of other origin (including the case of by-product of biochar fuel); and  
 ⑧ Feedstocks of other origin (including the case of by-product of biochar fuel); and  
 ⑨ Feedstocks of other origin (including the case of by-product of biochar fuel); and  
 ⑩ Feedstocks of other origin (including the case of by-product of biochar fuel); and

[Credit volume calculation approach] ● CO<sub>2</sub> stock (= Added biochar carbon × Fraction of biochar carbon × 100/44/12) – CO<sub>2</sub> emissions from feedstock production and transportation

[Main monitoring items] ● Quality of biochar is measured by one of the following methods:  
 ① Measuring the organic carbon content, being based on the Japan Biochar Association's specification on the measurement of biochar for carbon stocks in soil  
 ② Measuring the carbon content or degree of refinement, which are measured by validation or first certification. (e.g., by a charcoal refinement meter, etc.)  
 ③ Measuring the carbon content, being based on the Japan Biochar Association's specification on the measurement of biochar for carbon stocks in soil (e.g., by a charcoal refinement meter, etc.)  
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[Diagram of methodology]

Baseline: Mineral soil in cropland/grassland

Biochar addition makes refractory carbon stocked in soil with limited decomposition for a long time

Post-project: Mineral soil in cropland/grassland (CO<sub>2</sub>-converted volume of carbon stock)

Figure 3: J-Credit methodology for biochar (please scan the QR code).

To know more about J-Credit, please visit <https://japancredit.go.jp/english/>.

Source: Ayaka W. Kishimoto-Mo (NARO-Institute for Agro-Environmental Sciences, Japan).

#### 4. Network for Updating Emission Values in Agriculture (Nueva)

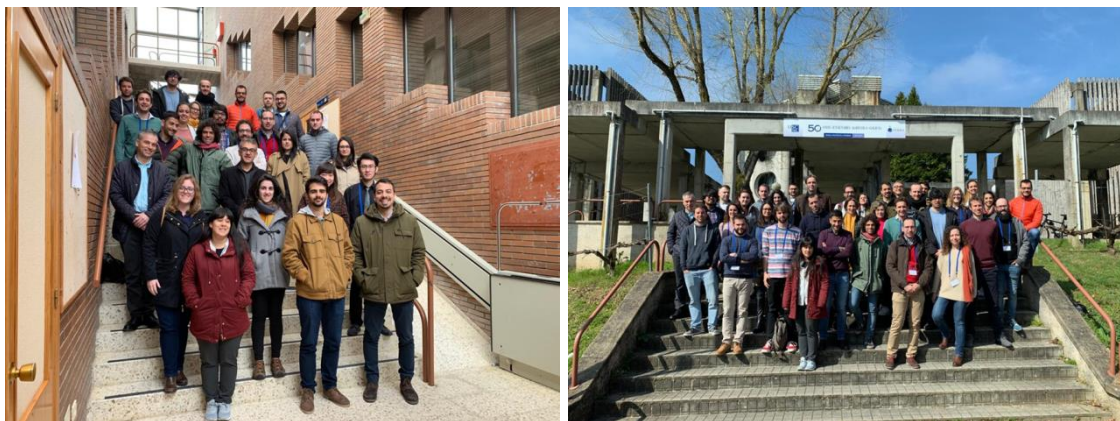


NUEVA (Network for Updating Emission Values in Agriculture) is a three-year project (2018-2021) funded by the Spanish Government. The main objectives are to analyse the state of emission factors of GHG in the Spanish agricultural sector and to propose measures that improve the accuracy of their estimation.

Following the Paris Summit Agreement in Spain there is a clear need to improve the national inventory system so it adequately reports according to the productive reality of the country and eventually the mitigation strategies applied in any activity can be computed. This is clearly limited by the heterogeneity of production systems in Spain and the lack of a coordinated effort at national level to address the peculiarities of these systems. The Network NUEVA is coordinated by David Yáñez-Ruiz and has a multidisciplinary team of nine research organizations in the study of GHG, crop management, C and N cycles in agricultural soils, animal feeding, excreta management, agroforestry systems, inventory calculation and integration and modelling at different scales.

The main activities of the network include:

- i) An international training school (April 2019, Lugo, Spain) co-organized with the COST Action LivaGE (<http://cost-livage.eu>) that provided practical demonstration in the use of a range of GHG measurement techniques in crop and animal sciences (Figure 4).
- ii) Developing decision trees to support comprehensive decision-making criteria to identify the best measurement techniques in different research or commercial scenarios
- iii) A second training school to provide practical training on data processing and calculation of emissions factors (to be held in December 16-17 2020).
- iv) A range of communication and dissemination material (including that from the training schools) made available in the project website: [www.rednueva.es](http://www.rednueva.es)



*Figure 4: Pictures of the training school held in Lugo (NW Spain) in April 2019.*

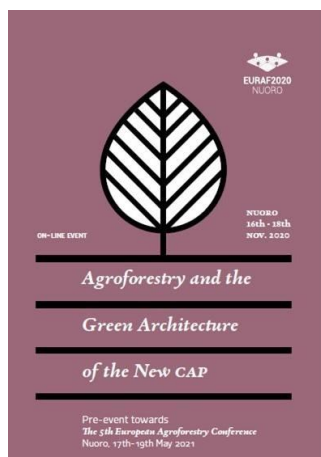
For more information: [david.yanez@eez.csic.es](mailto:david.yanez@eez.csic.es)

*Source: David Yáñez Ruíz (Estación Experimental del Zaidín, CSIC, Granada, Spain).*

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## 5. Agroforestry and Green Architecture of the New CAP

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On the 16<sup>th</sup>-18<sup>th</sup> of November 2020, the EURAF2020 local Sardinian organizers with the support of the EURAF2020 Organizing Committee, and in collaboration with AIAF - the [Italian agroforestry association](#) - and EURAF - the [European Agroforestry Federation](#) - organized the pre-event to the [5<sup>o</sup> European Agroforestry Conference, EURAF2020](#) (17<sup>th</sup>-19<sup>th</sup> of May 2021), entitled “Agroforestry and Green Architecture of the New CAP”.

The event was held within the yearly initiative "Inauguration of the Forestry Year" of the Sardinia Region, Italy, with the opening ceremony during the first day. In the second day, sessions were devoted to Existing Agroforestry Measures. Agroforestry in the current CAP is not largely implemented by farmers, in spite of the strong efforts of the policy makers to move it forward. Main reasons behind are the loss of the eligibility of agricultural lands when measure 8.2 (supporting trees plantings for the “First establishment of agroforestry systems”) is implemented. Other reasons were solved in the OMNIBUS regulation mostly related with the renewal and improvement of already existing agroforestry systems like the dehesa. There are no EU recent data consolidated from member states about agroforestry measures implementation, due to the regrettable COVID crisis. Data up to 2018 show a very limited implementation and the Commission is looking forward for a net increase of agroforestry 8.2 measure implementation. Agroforestry was also promoted by other measures, such as the agri-environmental measures, which are more focused on results than in “restrictions” to fit on agriculture or forestry land. Most of the Rural Development Programs are dealing with the fact that agroforestry is a multipurpose land use system where agriculture and woody components are mixed in the same land parcel and their status can end as either a agricultural or forest land rather than a unique and positive combination of different biotic functional components. This is seen as difficult task for policy makers. Several examples were provided by the different presenters. Many concerns have been described by the different speakers among which the lack of administrative and technical knowledge was highlighted by several of them, but also the lack of local research showing the economic benefits of agroforestry compared with the current land use. This is in line with the challenges and innovations requested by the over 1500 stakeholders from all over Europe described in the recent [AFINET](#) Project: technical, economic (including alternative evaluation and

bioeconomy products development from the woody perennials), and educational and policy challenges.

In the third day, sessions were focused on Future Agroforestry Policies. The new CAP is seeing as an opportunity to overcome the eligibility challenges because it will be based on results payments. It was indeed acknowledged that Agroforestry can be fostered through the eco-schemes Pillar I and through Pillar II. Agroforestry promotion of the Pillar I in the CAP strategic plan regulation is explicit and this practice will be linked to the result indicator 17, which poses a doubt about agroforestry established in the already afforested lands. Moreover, Pillar II promotes agroforestry through agri-environmental measures, where it should link explicitly and promote Ecosystem Services based on the conversion or maintenance of agricultural land, which adds an extra concern about the eligibility concept because the agroforestry measure is often associated rather to a specific forestry measure. In reality, Agroforestry has been extensively recognized as a land use providing several agroecosystem services, so the fact of including trees in farmland or including agriculture/livestock in woodland within the carbon farming opportunity is really acknowledged. The conference ended by the presentation of current relevant projects like H2020 [AGROMIX](#) and [MIXED](#) aiming at the transition of European agriculture towards sustainable mixed and agroforestry farming systems.

It can be concluded that the CAP strategic plans are seen as an opportunity to overcome the “eligibility” challenge associated to the agroforestry implementation. Additionally, a high amount of resources will be developed for local research and innovation projects acting as agroforestry demonstration fields that, within the next CAP will be allowed to establish international networking. The three-day meeting has been closed by a brief summary according to which agroforestry can have multiple types of tree-crop and livestock combinations; can invest in innovation and tradition; and can be able to increase agroecosystem services. On the other hand, eligibility and exploitation in CAP and RDP measures, as well as partly reluctance of farmers and lack of supply chain at local and regional level are strong criticalities. Agroforestry has full potentials not yet exploited. The [Green Deal](#) and the [Farm to Fork Strategy](#) are a valid opportunity for agroforestry, along with the bioeconomy based on trees and shrubs products. Nevertheless, there is still general misunderstanding about the term "agroforestry"; the two sectors, agriculture and forestry are still divided in CAP and Rural Development Programmes measures and there is a real risk to miss the opportunity for a change of vision. There is a high relevance now to collaborate with the Member states about how to include agroforestry in their different Strategic Plans, including Pillar I and Pillar II. Therefore, it has been seen that for the forthcoming CAP, it will be very important that EURAF National Delegates contribute to the movement of Agroforestry within both 8.2 measure and the eco-schemes. A team-work approach is needed integrating all the stakeholders to push agroforestry forward and to promote a European Agroforestry Strategy.



Source: Francesca Camilli (Italian National Research Council), Piero Paris (Italian National Research Council, Italy), Antonio Trabucco (Euro-Mediterranean Centre for Climate Change, Italy), Alberto Mantino (Scuola Superiore Sant'Anna di Pisa, Italy), Antonello Franca (Institute for Animal Production System in Mediterranean Environment ISPAAM, Italy) and María Rosa Mosquera-Losada (University of Santiago de Compostela, Spain)

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## 6. EU Green Week 2020 online event GO FOR GRASS: Exploiting Grassland Potential in the EU circular economy

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On 22 October, the [GO-GRASS](#) project welcomed 90 participants from all over the world to the online event GO FOR GRASS, which took place during the [EU Green Week 2020](#) to highlight the under-utilised potential of grasslands for recycling in the EU. Bénédicte Juillard ([Greenovate!Europe, G!E](#)) moderated the first part of the event, which offered a journey to discover innovative technologies and demonstration cases from five different projects promoting the use of grassland resources in Europe. In the kick-off presentation, Philipp Grundmann ([Leibniz Institute of Agricultural Engineering and Bioeconomy, ATB](#)) highlighted the contributions of the GO-GRASS project to unlocking potential through the development of grass-based circular economy models in the EU. Fallow grassland resources, untapped benefits for society and new business opportunities from emerging bioeconomy markets and technologies are important drivers for the development of innovative value chains based on green fodder. Rommie Van der Weide of [Wageningen University \(WUR\)](#) gave an overview of the main grassland management technologies, followed by a presentation of business models and technical solutions developed within the GO-GRASS project, including 1) the production of high quality goods from low quality roadside grass and natural/fauna grass, presented by Durk Durks (WUR), 2) the production of biochar using grassland sections from wetlands for organic fertilizers, which are developed by Thomas Hoffmann and Thomas Heinrich (ATB), 3) the extraction of proteins from clover, alfalfa and lucerne in a small grass refinery, which was introduced by Morten Ambye-Jensen ([University of Aarhus, AU](#)), and 4) the production of heat-treated, quality-assured bedding from reed grass for canaries, which was discussed by Susanne Paulrud ([Research Institutes of Sweden, RISE](#)).

The second part of the event, moderated by Muluken Adamsaged (ATB), focused on the policy and legal framework, including a lively panel discussion on the challenges and opportunities for grass-based businesses in the EU. Dieter Cuyper (VITO) presented approaches and findings from the [GRASSIFICATION](#) project and James Gaffey ([Institute of Technology of Tralee](#)) responded the same from the perspective of the [Biorefinery Glass](#) project. Maria Rosa Mosquera-Losada ([University of Santiago de Compostela, USC](#)) described the results of the GO-GRASS project on the state of the art and trends of alternative grassland uses in the EU bioeconomy. The

potential of alternative use of grass is huge across Europe as a source of energy, food, feed and nutrients soil supply. Johannes Isselstein ([Georg-August-University Göttingen](#)) discussed innovative options of grassland use for sustainable agricultural intensification, which were investigated in the GreenGrass project. Žymantas Morkvėnas ([Baltic Environmental Forum Lithuania](#)) presented instruments and recommendations for sustainable grassland management from the LIFE [Viva Grass](#) project.

Finally, in a summary of the event, Muluken Adamseged (ATB) highlighted the need to learn from successful business cases and adapt solutions to local conditions by following the principles of inclusivity, integration and cumulativity. All recorded contributions and discussions of the event can be viewed on the website of the [GO-GRASS project](#).

*Source: Philipp Grundmann (Leibniz Institute of Agricultural Engineering and Bioeconomy, Germany), Maria Rosa Mosquera-Losada (University of Santiago de Compostela, Spain), Bénédicte Juillard (Greenovate! Europe, Belgium), Muluken Adamseged Leibniz Institute of Agricultural Engineering and Bioeconomy, Germany).*

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## 7. Upcoming events

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**Due to the global development of the Covid-19 outbreak, some events were postponed. Please see below the new available dates**

### **71<sup>st</sup> Annual Meeting of the European Federation of Animal Science (NEW DATE)**

The 71<sup>st</sup> Annual Meeting of the European Federation of Animal Science will be hosted as a virtual event during **1<sup>st</sup> – 4<sup>th</sup> December 2020**. There will be virtual sessions with speakers and participants. This virtual event will offer the animal science network the best opportunity to share their research in the most updated and scientifically advanced forum in the world. More information [here](#).

### **8<sup>th</sup> ATF-EAAP Special Session (NEW DATE)**

The 8<sup>th</sup> ATF-EAAP special session will be hosted as a virtual event under the topic "What livestock has to offer to biodiversity and healthy soils" on **1<sup>st</sup> December 2020**. The session would like to engage in discussions with farmers, industries, scientists, policy-makers, and society. The

outcomes of the session will be discussed with a large panel of European stakeholders during the 10<sup>th</sup> ATF seminar. More information coming soon [here](#).

### **CMRA 2021 Summer School**

The Leibniz Centre for Agricultural Landscape Research ([ZALF](#)) and the International Crops Research Institute for the Semi-Arid Tropics ([ICRISAT](#)) invite applications for an international summer school entitled “Modelling approaches for climate risk and climate change adaptations in the context of sustainable intensification in semi-arid West Africa” (CMRA2021). The summer school will take place at the ICRISAT regional headquarter in Bamako, Mali, during 21<sup>st</sup> – 28<sup>th</sup> February 2021. The aim of the course is to enhance awareness of the potential role and limitations of crop modelling in assessing climate risk and supporting sustainable intensification among the region’s next generation of researchers and agricultural policy makers. More information [here](#).

### **14<sup>th</sup> European Farming Systems Conference (NEW DATE)**

The 14<sup>th</sup> European Farming Systems Conference (IFSA – European Group) will be held at the University of Évora, Portugal, and hosted by the Institute of Mediterranean Agricultural and Environmental Sciences during **28<sup>th</sup> – 1<sup>st</sup> April 2021**. The main focus of this years’ conference will be Farming Systems Facing Climate Change and Resource Challenges. More information [here](#).

### **II World Congress on Integrated Crop-Livestock-Forestry Systems (NEW DATE)**

The II World Congress on Integrated Crop-Livestock-Forestry (ICLF) Systems will be held in Campo Grande-MS, Brazil, during **3<sup>rd</sup> – 6<sup>th</sup> May 2021**. This congress is an excellent opportunity for exchanging experiences and knowledge as well as updating on the latest research, development, and innovation about ICLF systems around the world. More information [here](#).

### **4<sup>th</sup> Agriculture and Climate Change Conference**

The 4<sup>th</sup> Agriculture and Climate Change Conference will be held in Dresden, Germany, during 9<sup>th</sup> - 11<sup>th</sup> May 2021. The Conference will focus on the likely impact of climate change on crop production and explore approaches to maintain and increase crop productivity into the future. More information [here](#).

**5<sup>th</sup> European Agroforestry Conference (NEW DATE)**

The 5<sup>th</sup> edition of the European Conference on Agroforestry will be held in Nuoro, Sardinia, Italy during **17<sup>th</sup> - 19<sup>th</sup> May 2021**. The conference will bring together worldwide researchers, practitioners, policy-makers, public authorities to discuss the role of research and innovation in agroforestry towards the development of a sustainable European Bioeconomy, while exploring its potential in fostering environmental, economic and social prosperity. More information [here](#).

**18<sup>th</sup> International RAMIRAN Conference (NEW DATE)**

The 18<sup>th</sup> International RAMIRAN Conference will be held in Cambridge, UK, during **20<sup>th</sup> – 23<sup>rd</sup> September 2021**. The conference will focus on developing strategies to maximize the efficiency of organic materials against a background of changing regulation, policy, and market forces, as well as increasing pressure on the environment, soil quality, and food production. More information [here](#).

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**This is your newsletter! If there's anything you think should be included, please send suggestions to [mrosa.mosquera.losada@usc.es](mailto:mrosa.mosquera.losada@usc.es) for the next issue**

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