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24-25 September 2014
Paris - France

ExpeER INTERNATIONAL CONFERENCE

ON EXPERIMENTATION IN ECOSYSTEM
RESEARCH IN A CHANGING WORLD:
CHALLENGES AND OPPORTUNITIES



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temporal signatures of NDVI variation for the main tree species (iii) continue the quinquennial long-term monitoring of community composition and structure in the established network of permanent plots and sampling procedures to be used as ground-truth for the remote sensing images, (iv) exploring and tracking plant community responses and functional relationships of trees to environmental change, and (v) reinforcing and enlarging the collaboration with local researchers in the long-term monitoring program development.

Preliminary results of the Normalized Vegetation Difference Index (NDVI) through time revealed shifts in the riparian cover and suggest species-specific temporal signatures for the dominant trees. At the local scale (permanent plots), our data indicate increasing senescence of wetland population structure in La Rocina stream, associated to the particular persistence strategy maintained by the dominant trees (*Salix sp.*). So far, our results give rise to new questions about the importance of the hydrologic dynamics, the regeneration patterns and the demogenetic structure of these forest populations if we are to understand their driving processes and to preserve their viability on the long term. Therefore, it is of utmost importance to keep up the riparian vegetation monitoring protocol in the long term, maintaining the remote sensing approach combined with the field sampling.

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KEYWORDS: ecosystem monitoring, ecosystem vulnerability, NDVI, remote sensing, riparian.

PLANT BIODIVERSITY AND AIRBORNE POLLEN: NEXT-GENERATION SEQUENCING OF ENVIRONMENTAL DNA.

24th of September - 15:40 > 16:10 Poster Session 3. *New tools to meet new challenges: emerging technologies for exploring the unknown processes in ecosystem science.*

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Airborne pollens reflect differences in the species composition of the local flora and may capture the spreading of alien species. The air biomonitoring may also detect the flowering season of anemophilous taxa as well as the reproductive response of plants to environmental changes at a temporal and spatial scale.

Aim of this research is to characterize the air biodiversity of different habitats - as coded by Natura 2000 and Corine Land Cover - through a DNA metabarcoding approach on environmental samples collected at ground level. The metabarcoding of environmental DNA will allow the taxonomic identification based on specific genetic markers, leading to an estimation of the biodiversity.

The information gathered, complemented with results from traditional approaches, will eventually lead to a characterization of functional and compositional biodiversity in the study area, Eastern Italian Alps. This area can be considered as a case study for Alpine regions where land is exploited for different purposes: residential, cultural (including leisure, recreation and amenity) and natural environment quality (conservation and management).

KEYWORDS: metabarcoding, Natura 2000, Corine Land Cover, Alps.

A PLAN TO IMPLEMENT AN ECO-FRIENDLY AGRICULTURE IN ADOUR-GARONNE WATERSHED (SOUTH WEST OF FRANCE): AGROFORESTRY AND COVER CROPS.

24th of September - 15:40 > 16:10 Poster Session 3. New tools to meet new challenges: emerging technologies for exploring the unknown processes in ecosystem science.

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The objective is twofold: fewer inputs, less tillage, less water pollution, but also more plant, more service provided by agriculture to environment. To achieve this, it uses techniques based on the preservation of soil capital: permanent crop and tree cover.

- A PROJECT SIMPLE, FLEXIBLE, BUT AMBITIOUS AND WITHIN REACH... Reimplanting soil and plant at the heart of agronomy sciences and associating them with a collective water saving represents a double challenge that fills many cross-purposes. The idea is to take the initiative and to experiment a diffuse and preventive action in order to have a sustainable and transposable reply to the challenges we face at all territorial scales. By valuing achievements, by enhancing the existing tools, and by betting on the large capacity of agro-ecosystems to regenerate naturally, we can radically transform our territories without costly investments, just by changing our point of view and our practices.

- UNITING FARMING APPROACHES. Agr'eau is a multi -partner program, built to develop soil cover in Adour -Garonne through knowledge dissemination and through support of local actors, and communication. Agr'eau is the first development program aimed at soil cover and built across a watershed as large as Adour Garonne. Born from farmers' initiative, this major operation spreads over years and offers a multi-stakeholder approach while it crosses sustainable development practices coming from agroforestry and plant cover techniques. Thus, in order to amplify the existing large-scale movement, this program aims to create a development dynamic by relying on the diversity of experiences, creating reliable technical and economical references, and by valuing and disseminating technical knowledge in which farmers are key players.

- A PROJECT WITH, FOR AND BY FARMERS. Beyond an important information program, Agr'eau is a recovery operation of technical and economic references, open to all farmers and putting farmers at the heart of the plan. The idea is to connect different actors of the territory, and implement Agricultural knowledge transfer. This knowledge-sharing approach is opened to all forms of agriculture. To highlight the initiatives of farmers, a network of over 125 pilot farms will be used to create a monitoring tool and acquire new technical references.

KEYWORDS: water resource and quality management, agroforestry, non tillage, biomass, biodiversity, vegetative cover.