Seasonal Trend Analysis of MODIS-EVI time series over Europe (2000-2020)

Oliver Gutiérrez Hernández 1, Luis V. García 2

1 Department of Geography, University of Málaga (UMA). 2 Corresponding author. Email: olivergh@uma.es
2 Institute of Natural Resources and Agrobiology of Seville (IRIAK), Spanish National Research Council (CSIC). Email: lgarcia@csic.es

1. INTRODUCTION

- Global change refers to planetary-scale changes in the Earth system, and more specifically, to interferences and disruptions as a whole produced by human activity on the processes that determine the balance of the planet. Figure 1
- Global warming is part of global change and refers to the long-term heating of Earth’s climate system observed since the pre-industrial period due to human activities, which increases heat-trapping greenhouse gas levels in Earth’s atmosphere. Figure 2
- Concerning that, there is increasing evidence associating vegetation and land-cover changes with warmer temperatures and land-use changes. From the mid-1980s onwards, satellite data has been used to study these processes. In this work, we deal with this research front.

2. RESEARCH OBJETIVES

- This research aims to detect the main trends in the seasonality of vegetation over Europe by using remote sensing gridded data and time series analysis.

3. RESULTS

- From 2000 to 2020, most of the European territory (>70%) has experienced significant trends (p < 0.05) in the seasonality of EVI. Figure 5
- From the European territory, which has shown significant trends in the same period, over the 80% has experienced positive trends of an annual mean (called Amplitude 0 in STA procedure) of EVI. Figure 6
- The EVI fitted seasonal curves modelled for the whole of Europe show a change in the seasonality of vegetation with a greening trend every month of the year. Figure 7

4. CONCLUSIONS

- Preliminary results evidence significant and generalised trends in seasonality of EVI during the last two decades over Europe, mainly with an increase in greenness.
- Future works should analyse trends at biomes and ecoregions scales and evaluate the statistical significance of the observed trends in gridded data.

REFERENCES


Acknowledgement: This research has been supported by the Ministerio de Economía y Competitividad del Gobierno de España through the PAI080580-PAI080580Pesca Project (Ref: CSD2017-90176-P).