



UEL Research & Knowledge Exchange Conference 2013

Call for Abstracts

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Title of Abstract:	A time-frequency analysis on the impact of climate variability on semi-natural mountain meadows
Key Theme/ Key words:	Normalized difference vegetation index NDVI, time varying spectra, Kalman-filter, vegetation dynamics, mountain-meadows, climate variability

Abstract (No more than 400 words):

This paper analyses the impact of climate on vegetation growth for a rural, mountainous region in North-Eastern Portugal. In particular, we measure vegetation growth by using the ten-days synthesis dataset (S10) from Satellite Pour l'Observation de la Terre SPOT-VEGETATION imagery from 1998 to 2011. We examine the dynamic patterns of vegetation growth inferred by the normalized difference vegetation index (NDVI). We test whether the growth pattern of the NDVI has changed due to climate variability and we test the relationship of NDVI with temperature and available soil water. In order to check for changes in the growth cycles we use a time-frequency approach based on Kalman filter regressions in the time domain. We find a change of the cyclical pattern for the spring season and different changes if we take into account all seasons. This suggests that individual seasons may undergo cyclical changes which are different to other seasons. Our analysis shows that temperature and available soil water are the main drivers of vegetation growth. We can also recognise a shift of the relative importance away from temperature to soil water.