Accepted Manuscript

Identifying long-term variations in vegetation and climatic variables and their scale-dependent relationships: A case study in Southwest Germany

Zhiyong Liu, Lucas Menzel

PII: S0921-8181(15)30144-2
DOI: doi:10.1016/j.gloplacha.2016.10.019
Reference: GLOBAL 2507

To appear in: *Global and Planetary Change*

Received date: 4 December 2015
Revised date: 22 August 2016
Accepted date: 29 October 2016

Please cite this article as: Liu, Zhiyong, Menzel, Lucas, Identifying long-term variations in vegetation and climatic variables and their scale-dependent relationships: A case study in Southwest Germany, *Global and Planetary Change* (2016), doi:10.1016/j.gloplacha.2016.10.019

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Identifying long-term variations in vegetation and climatic variables and their scale-dependent relationships: a case study in Southwest Germany

Zhiyong Liu* and Lucas Menzel

Institute of Geography, Heidelberg University, Heidelberg 69120, Germany

Abstract: Geographic time series are usually non-stationary and contain different frequency components (e.g., seasonal variations, long-term and short-term fluctuations) which may significantly affect the overall variance structure in the original data. Based upon the monthly normalized difference vegetation index (NDVI), precipitation and temperature data for six different vegetation types in two precipitation regimes (low and high precipitation regimes) of Rhineland-Palatinate (Southwest Germany), this study aims to examine the temporal trends in the original time series of these variables and their relationships. In addition, the further objectives are to evaluate which time-scale is dominantly responsible for the trend production found in the original data and find out the certain time-scales that represent the strongest correlation between NDVI and climatic variables (i.e., precipitation and temperature). A combined approach using the discrete wavelet transform (DWT), Mann-Kendall (MK) trend test and correlation analysis was implemented to achieve these goals. The trend assessment for the original data shows that the monthly NDVI time series for all vegetation types in both precipitation regimes have upward trends, most of which are

* Corresponding author: Z. Liu, Im Neuenheimer Feld 348, Institute of Geography, Heidelberg University, Heidelberg 69120, Germany. E-mail: zhiyong.liu@geog.uni-heidelberg.de. Tel: +49 6221 54-5571; Fax: +49 6221 54-4422.

Download English Version:

https://daneshyari.com/en/article/5755404

Download Persian Version:

https://daneshyari.com/article/5755404

Daneshyari.com