A Change Oriented Extension of EOF Analysis Applied to the 1996-1997 AVHRR Sea Surface Temperature Data - DTU Orbit (07/09/2017)

A Change Oriented Extension of EOF Analysis Applied to the 1996-1997 AVHRR Sea Surface Temperature Data

This paper describes the application of orthogonal transformations to detect multivariate change in the monthly mean sea surface temperature (SST) as given by the NOAA/NASA Oceans Pathfinder data. The transforms applied include multivariate alteration detection (MAD) variates based on canonical correlation analysis, and maximum autocorrelation factors (MAFs). The method described can be considered as an extension to EOF analysis that is specially tailored for change detection in spatial data since it first maximises differences in the data between two points in time and then maximises autocorrelation between neighbouring observations. The results show that the large scale ocean events associated with the El Nino/Southern Oscillation (ENSO) related changes are concentrated in the first SST MAF/MAD mode and the two first SSH MAF/MAD modes. The MAD/MAF analysis also revealed a spatially correlated structure in the Western Mediterranean Sea that turned out to be related to a strong semi-annual variation in the SST for 1997 which was difficult to resolve from a traditional principal component analysis.

General information
State: Published
Organisations: Image Analysis and Computer Graphics, Department of Informatics and Mathematical Modeling
Authors: Nielsen, A. A. (Intern), Conradsen, K. (Intern), Andersen, O. B. (Ekstern), Plag, H. (ed.) (Ekstern)
Pages: 1379-1386
Publication date: 2002
Main Research Area: Technical/natural sciences

Publication information
Journal: Physics and Chemistry of the Earth (Print)
Volume: 27
Issue number: 32-34
ISSN (Print): 1474-7065
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.378 SNIP 0.793 CiteScore 1.3
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.684 SNIP 1.262 CiteScore 1.66
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.852 SNIP 1.264 CiteScore 1.83
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.697 SNIP 0.998 CiteScore 1.65
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.51 SNIP 0.866 CiteScore 1.19
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.603 SNIP 0.953 CiteScore 1.37
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.621 SNIP 0.879
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.59 SNIP 0.959
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.757 SNIP 1.021
Scopus rating (2007): SJR 0.744 SNIP 0.953
Scopus rating (2006): SJR 0.653 SNIP 1.038
Scopus rating (2005): SJR 0.804 SNIP 1.101
Web of Science (2005): Indexed yes