Scopus

Back to results | 1 of 1

Full Text | View at Publisher | Export | Download | Add to List | More...

International Journal of Global Warming

Volume 9, Issue 2, 27 February 2016, Pages 129-151

Utilising key climate element variability for the prediction of future climate change using a support vector machine model (Article)

Abubakar, A.[a] , Chiroma, H.[bc] , Zeki, A.[d] , Uddin, M.[d]

[a] Department of Information Systems, International Islamic University Malaysia, Gombak, Kuala Lumpur, Malaysia

[b] Department of Artificial Intelligence, University of Malaya, 50603 Pantai Valley, Kuala Lumpur, Malaysia

[c] Federal College of Education (Technical), Gombe, Nigeria

View additional affiliations

View references (59)

Abstract

This paper proposes a support vector machine (SVM) model to advance the prediction accuracy of global land-ocean temperature (GLOT), which is globally significant for understanding the future pattern of climate change. The GLOT dataset was collected from NASA's GLOT index (C) (anomaly with base: 1951-1980) for the period 1880 to 2013. We categorise the dataset by decades to describe the behaviour of the GLOT within those decades. The dataset was used to build an SVM Model to predict future values of the GLOT. The performance of the model was compared with a multilayer perceptron neural network (MLPNN) and validated statistically. The SVM was found to perform significantly better than the MLPNN in terms of mean square error and root mean square error, although computational times for the two models are statistically equal. The SVM model was used to project the GLOT from the pre-existing NASA's GLOT index (C) (anomaly with base: 1951-1980) for the next 20 years (2013-2033). The projection results of our study can be of value to policy makers, such as the intergovernmental organisations related to environmental studies, e.g., the intergovernmental panel on climate change (IPCC). © Copyright 2016 Inderscience Enterprises Ltd.

Author keywords

climate change indicators; global land-ocean temperature; GLOT; support vector machine; SVM

ISSN: 17582083 **Source Type:** Journal **Original language:** English
DOI: 10.1504/IJGW.2016.074952 **Document Type:** Article
Publisher: Inderscience Publishers

References (59)

View in search results format

All Export | Print | E-mail | Save to PDF | Create bibliography

Abraham, C.L., Sydeman, W.J.

1 **Prey-switching by Cassin's auklet Ptychoramphus aleuticus reveals seasonal climate-related cycles of Euphausia pacifica and Thysanoessa spinifera**

(2006) *Marine Ecology Progress Series*, 313, pp. 271-283. Cited 42 times.
doi: 10.3354/meps313271

View at Publisher

Rady, H.A.K.

2 **Shannon Entropy and Mean Square Errors for speeding the convergence of Multilayer Neural Networks: A comparative approach**

(2011) *Egyptian Informatics Journal*, 12 (3), pp. 197-209. Cited 4 times.
doi: 10.1016/j.eij.2011.09.002

View at Publisher

Araghinejad, S.

3 (2014) *Data-driven Modeling: Using MATLAB® in Water Resources and Environmental Engineering*. Cited 13 times.
Springer, New York

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert | Set citation feed

Related documents

Hybridization of haar wavelet decomposition and computational intelligent algorithms for the estimation of climate change behavior
Chiroma, H. , Abdulkareem, S. , Abubakar, A.I.
(2014) Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

Kernel functions for the support vector machine: Comparing performances on crude oil price data
Chiroma, H. , Abdulkareem, S. , Abubakar, A.I.
(2014) Advances in Intelligent Systems and Computing

An intelligent modeling of oil consumption
Chiroma, H. , Abdulkareem, S. , Muaz, S.A.
(2015) Advances in Intelligent Systems and Computing

View all related documents based on references

Find more related documents in Scopus based on:

Authors | Keywords