

[home](#)[about](#)[publishers](#)[editorial boards](#)[advisory board](#)[for authors](#)[call for papers](#)[subscription](#)[archive](#)[news](#)[links](#)[contacts](#)[authors gateway](#)

Are you an author in Thermal science? In preparation.

THERMAL SCIENCE

International Scientific Journal

[Dimitrij Najdovski](#), [Ivo Šlaus](#), [Aleksander Zidanšek](#)

SELF ORGANIZED CRITICAL DYNAMICS OF THE SUSTAINABLE DEVELOPMENT

ABSTRACT

Meadows, Randers, and Meadows developed a computer model, which studied relations between global resources, production, and consumption. Their model solves a simple system of ordinary differential equations under different scenarios and predicts the future of variables like population, food production, and various measures of pollution and use of resources. Due to the complexities of the observed system, such a simple model can not take into account all significant parameters and therefore cannot be used for accurate long term predictions. Therefore we developed a neural network based model, which we tested with historical data to reproduce the Meadows results. We also used this model to cluster countries based on similarity as measured by the observed variables in an attempt to predict, which characteristics are most significant for their development.

KEYWORDS

[sustainable development](#), [neural networks](#), [self organization](#)

PAPER SUBMITTED: 2008-03-03

PAPER REVISED: 2008-08-01

PAPER ACCEPTED: 2008-09-14

DOI REFERENCE: [TSCI0804113N](#)

CITATION EXPORT: [view in browser](#) or [download as text file](#)

THERMAL SCIENCE YEAR 2008, VOLUME [12](#), ISSUE [4](#), PAGES [113 - 120]

REFERENCES [view full list]

1. Meadows, D. H., Randers, J., Meadows, D. L., Limits to Growth: The 30-Year Update, Chelsea Green Publishing Company, New York, USA, 2004
2. Meadows, D. H., Randers, J., Meadows, D. L., Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future, Chelsea Green Publishing Company, New York, USA, 1993
3. ***, Climate Change, The Scientific Basis: Contribution of Working Group I to the Third Assessment Report of the IPCC (Intergovernmental Panel on Climate Change) (Ed. J. T. Houghton), Cambridge University Press, Cambridge, UK, 2001, see also:

[Authors of this Paper](#)[Related papers](#)[Cited By](#)[External Links](#)

www.ipcc.ch/pub/reports.htm

4. Meadows, D. L., World3 Model, University of New Hampshire, Durham, N. C., USA, see also: www.unh.edu/ipssr/index.html
5. Lu, J., et al., Adaptive Networks, in Cognitive Networks: Towards Self-Aware Networks, (Ed. Qusay H. Mahmoud), John Wiley & Sons, West Sussex, UK, 2007
6. ***, Central Intelligence Agency, The 2008 World Factbook, Skyhorse Publishing, 2007, see also www.cia.gov/library/publications/the-world-factbook, 2008

PDF VERSION [DOWNLOAD]

SELF ORGANIZED CRITICAL DYNAMICS OF THE SUSTAINABLE DEVELOPMENT

