Nieuwsbrief Studiekring Milieu jaargang 17, **2010/01**

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Staat het al in je agenda van 2010?

Vergeet je niet aan te melden voor het symposium van 2 februari a.s. “Balancing on Tipping Points” over Alternatieve Evenwichten ter ere van Marten Scheffer.

Meer info in deze nieuwsbrief en op

http://www.klv.nl/nl/Activiteiten/Pages/symposiummartenscheffer.aspx

FROM THE EDITORS

Dear readers...

Here is the newsletter of Studiekring Milieu. Having a multi-lingual board now, this newsletter is both in English and in Dutch. We have a report from our very successful excursion to the VAR last November, an introduction by Huub Rijnaarts, the new professor Environmental Technology, and an outlook to the symposium “Balancing on Tipping Points” on the theory of Alternative Stable States of Marten Scheffer.

We are considering of going digital with this newsletter. We think this is a good idea, it gives us an opportunity to restyle the newsletter, make better use of links to internet pages, and last but not least it is more environmentally friendly (it saves trees). So probably next newsletter will be delivered in your mailbox !

Marieke de Lange

UPCOMING ACTIVITIES STUDIEKRING MILIEU

Balancing on Tipping Points – 2 February 2010

On 2 February we organize together with the Natuurwetenschappelijk Gezelschap Wageningen a mini-symposium to honour the Spinozaprize won by Marten Scheffer. You’ve already received an invitation for this by surface mail. Here we give some background information on the speakers.

We invited four scientists with different backgrounds to present their view on the alternative stable state theory. They will illustrate the theory with cases ranging from lakes (clear or turbid), social systems (poor or rich), terrestrial ecology (vegetation or desert), to climate research (can we predict tipping points in the climate system?). These presentations are followed by the lecture of Marten Scheffer on “Kritische transities in natuur en maatschappij” within the series of lectures organised by the ‘Natuurweten-schappelijk Gezelschap Wageningen’

The symposium will start with a brief introduction by Marten Scheffer on his theory of alternative stable states. Then four presentations will each give another application of this theory.

Program (lectures in English):
15.30 – 16.00: registration and coffee
16.00 – 16.05: opening by Gerard Blom (chair of Studiekring Milieu)
16.05 – 16.15: introduction on alternative stable states by Marten Scheffer
16.15 – 16.45: Harry Hosper (Waterdienst)
16.45 – 17.15: Sybren Drijfhout (KNMI)
Break with refreshments
17.45 – 18.15: Robert Lensink (Wageningen Universiteit/Universiteit Groningen)
18.15 – 18.45: Johan van de Koppel (NIOO-Yerseke)
Break with soup and snacks
19.45 – 21.30: lezing Marten Scheffer (in Dutch) with a break from 20.30 to 20.45.

The symposium will take place at the Leeuwenborch, room C64 (large lecture room), Hollandseweg 1, Wageningen

The registration form is printed on the back of this newsletter.

Harry Hosper will give the first presentation, titled:
Clear water lakes in the Netherlands: myth or reality?

Harry Hosper works a senior advisor at Rijkswaterstaat Waterdienst. Before Waterdienst was formed, he worked at RIZA for many years (since the 1970's), playing a leading role in lake restoration and biomanipulation of lakes. He coined the term "Actief Biologisch Beheer".

Sybren Drijfhout will follow with a presentation titled:
Tipping elements in the climate system.

Sybren Drijfhout is a senior researcher at KNMI. His main research interest resides in the ocean circulation. He is specialized in the Global Conveyor Belt, the thermohaline circulation and its role in (rapid) climate change; mesoscale eddies, and eddies in the Southern Ocean, and small-scale mixing.

His presentation will focus on the following topics. Temperature rise associated with anthropogenic climate change is most times viewed as a gradual change from present day conditions to, if our emissions of fossil carbon dioxide are not drastically reduced, ultimately those resembling the former greenhouse climates of the late Palaeocene, and early Eocene. In the paleorecord, however, a lot of evidence for more abrupt changes can be found. Apart from a gradual rise of global mean temperatures it is therefore expected that more abrupt changes may take place in the coming centuries. The last IPCC report, for instance, included a paragraph on future abrupt changes and tipping elements. A recent article on the subject contained a "burning embers" graph showing the most important tipping elements in the climate system and the likelihood of crossing these thresholds as a function of global mean temperature rise. This graph motivated the international community to commit themselves to a two degree temperature rise (or less), to avoid dangerous climate change. In this presentation I will shortly review the most important tipping elements in the climate system, and illustrate the basic mathematics that give rise to these tipping elements by discussing the physics that determine the ocean's thermohaline circulation. This is the archetypal tipping element in our climate, its potential collapse having led to disaster movies like "The day after tomorrow". I will finish with a discussion to what extent the climate can be monitored for such abrupt changes and whether Marten Scheffer's theory of early warning signals is applicable to the climate of the earth.

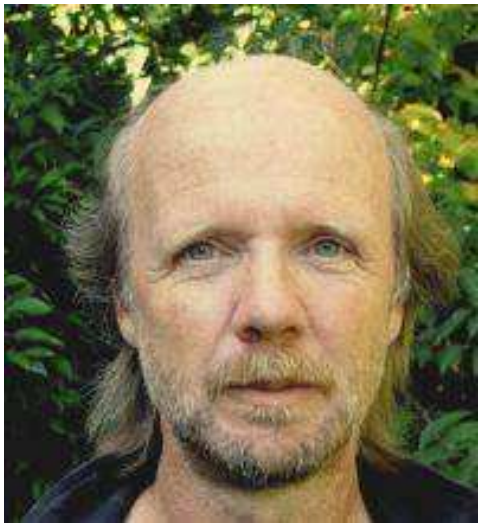
After a break for drinks, **Robert Lensink** will give the third presentation, titled:
Poverty traps and credit in developing countries

Robert Lensink is a Professor in Finance and Financial Markets at the University of Groningen, and a Professor of Development Economics at Wageningen University. His main research interests are Development Finance, Development Economics, Corporate Finance, and International Finance.
His talk will give examples of tipping points from a different area of research. Can you get people from one stable state (poverty) to another stable state (richness)? Are micro-credits a useful tool to release people from a poverty trap?

Johan van de Koppel will be the last speaker. Title of his talk is:
Alternate stable states are everywhere! Or not?

Johan van de Koppel is a member of the Spatial Ecology group at NIOO-Yerseke since 2002, first as a postdoc researcher, and as a tenured senior scientist since May 2007. His area of expertise is the mathematical modelling of ecosystems. At NIOO, he studies the importance of positive feedback processes in affecting how coastal ecosystems respond to changing conditions. The latest work focusses on the role of scale of feedback processes, and how they influence ecosystem structure and functioning. The prime study systems are mussel beds, tidal flats, and salt marshes of the Schelde estuaries and the Wadden sea. The theory that is developed, however, is not only applicable to marine ecosystems. It provides a framework for understanding the dynamics of various systems with positive feedback, ranging from arctic salt marshes to tropical savanna's.

After a break with soup and sandwiches, the symposium will continue with the lecture **Marten Scheffer** will give for the Natuurwetenschappelijk Gezelschap Wageningen.
His presentation will be in Dutch and is titled: *Kritische transities in natuur en maatschappij.*



Marten Scheffer is hoogleraar aquatische ecologie en waterkwaliteitsbeheer aan de WU. Zijn werk richt zich naast dat vakgebied op stabiliteit, chaos en verandering in een breder scala aan complexe systemen. Naast zijn werk aan kantelpunten in complexe systemen, ontwikkelde Scheffer met zijn collega Egbert van Nes een radicaal nieuwe theorie voor de evolutie van het immense aantal soorten op aarde, die suggereert dat de bulk van de soorten 'meer van hetzelfde' en dat dus niet alle soorten een eigen niche hebben. Ook liet hij met anderen zien dat ecosystemen fundamenteel chaotisch zijn, en daardoor in hoge mate onvoorspelbaar.

Marten Scheffer is editor van 'Ecosystems' en

'Ecology and Society'. Marten Scheffer is auteur van twee wetenschappelijke boeken, 'Ecology of Shallow Lakes' bij Kluwer en 'Critical Transitions in Nature and Society' bij Princeton University Press en een populair wetenschappelijk boek, 'Vijver, Sloot en Plas' samen Jan Cuppen bij Tirion. Marten Scheffer is lid van het Bestuur van de Resilience Alliance, het Beijer Institute en het European Santa Fe Institute 'Para Limens'. Hij richt momenteel samen met een team uit tien landen het 'South American Institute for Resilience and Sustainability Studies' SARAS, op. In 2009 is de NWO-Spinozaprijs toegekend aan Marten Scheffer.

Hoewel verandering in complexe systemen zoals samenlevingen of ecosystemen meestal geleidelijk gaat zijn er opvallende uitzonderingen op die regel. Visstanden kunnen plotsklaps instorten, net als het klimaat, financiële systemen of staatsstructuren plotseling na lange periode van stabiliteit kunnen veranderen. Ik zal in mijn lezing uiteenzetten, hoe sommige van die scherpe omslagen kunnen samenhangen met toenemende fragiliteit van het evenwicht in een systeem, net zoals dat gebeurt bij een kano waarin men langzaam steeds meer naar een kant gaat hangen. De ecosystemen van meren (mijn eigenlijke vakgebied) neem ik als uitgangspunt voor een tocht langs koraalriffen, het klimaat en de financiële markten.

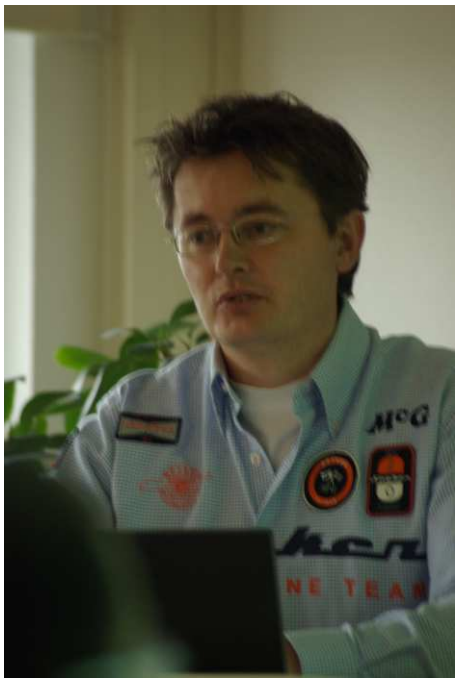
Sustainable Cities - new approaches in water, energy and material cycles – May 2010

Together with the Urban Environmental Management group at WU the Studiekring Milieu plans a mini-symposium for mid May on the subject of sustainable cities. Exact information on the date will follow later.

REPORT EXCURSION TO THE VAR RECYCLING PLANT, WILP, 20-11-2009

On Friday 20th a group of mainly students from Wageningen University gathered at the Forum building to set off for a visit, organized by the Studiekring Milieu, to the waste recycling facility of the VAR company. Established in 1981, VAR started by taking over the management of the original landfill on the location near Wilp. Today the company has matured into a provider of complete waste processing technologies; focusing mainly on material and energy recovery from waste. Its core business is waste management, but the company has branched into various operational departments: including a minerals division, sorting division, biogenic, energy and engineering divisions. There are two facilities managed by the company: the plant were the excursion took place (were most of the company's activities are carried out) and the plant at Spijk, were selected waste fractions (mainly plastics, wood and carpets) are processed into a fuel ("fluff"), which is mainly sold across the border to Germany. Part of the original landfill has been already removed and recycled due to the discovery of arsenic pollution in the ground. At the moment VAR manages to keep the amount of landfilled waste to a minimum, and by recycling the leachate over the top of the landfill it can increase the amount of recovered methane and, at the same time, reduce the period needed to stabilize the waste. The leachate from the non-stabilized landfills is also sold to the nearby paper industry as it is rich in nitrogen. The company employs about 200 people, and in 2008 it processed an impressive 1 300 000 tons of waste. (for more information: www.var.nl).

Upon arriving at the waste processing plant we were greeted by Mr **Michel Buitenhuis** of the engineering department, who gave us a presentation about the company and the activities carried out at Wilp. In addition to the history of the company, he explained the various technical aspects of the waste sorting and processing, the effort VAR puts into



constant technical innovation and the search for new markets, as well as some of the challenges it had to face in the recent years. We learned that currently Germany is the leading country for processing plastics, that VAR does not have a license for processing hazardous waste (in fact the few employees at the sorting installation are only needed to check for unwanted materials), that it has patented an innovative digestion/composting system which allows to efficiently remove the large amounts of sand (up to 20%) present in their garden waste, as well as the various steps involved in the processing of the different waste fractions.

One particularly interesting aspect is that the large amount of compost stored at the plant serves both as a product (the company has its own quality-certified brand) and as a buffer for regulating the loading rate of the four anaerobic digesters which operate all year round and produce up to 600 Nm3/ hour of biogas. These digesters are operated automatically, by continuous feeding (40 times per day), and process a waste with about 30% dry matter content ("dry" digestion). The energy demand for their operation is kept at a minimum thanks to the fact that the heat produced during aerobic treatment is re-used to maintain the anaerobic digesters at thermophilic conditions (around 50 ℃). After the presentation a bus tour of the facility gave the visitors a more tangible overview of the various operations, and the strategies adopted by VAR to improve operational efficiency. Even the sheep, which were allowed to graze freely on the covered landfill, served the purpose of keeping the grass trimmed and compacting the landfill surface: we were explained that this reduces the amount of air trapped in the landfill.

After the presentation given by Michel Buitenhuis, it was the turn of Mr **Coert Petri**, from the water board Rijn and IJssel, who introduced us to an innovative concept which is being developed by the Dutch water boards to develop an energy-neutral (and possibly even energy-producing) process for wastewater treatment in The Netherlands. The main focus of this concept is to turn the currently higly energy expensive treatment systems (he explained that about twice as much energy needs to be supplied for treatment operations, compared to the energy that is extracted) into an energy-neutral system, and, in the long term, even energy-producing.

The Energiefabriek concept involves three scenarios, which progressively scale up technologies and the use of different waste streams to finally be able to reach an energy-positive wastewater treatment process. The base scenario is one in which the efficiency of the treatment process would be enhanced by a more effective primary sedimentation (using chemicals), high-efficiency gas engines and thermal pre-treatment of the sludge would then enhance product utilization. The more ambitious scenarios then envision the

use of extra biomass feedstock (food garden and agriculture wastes) in the process, and even the use of fuel cells to optimize the energy recovery from biogas. For more information visit www.energiefabriek.com

At the end of the day the students returned to Wageningen, now having a precious experience and good knowledge of how waste is transformed into valuable products in The Netherlands.

Francesco Kinsky, student at Wageningen University

FROM THE FIELD

Careers: Huub Rijnaarts

New professor Environmental Technology at Wageningen University

Hello dear SKM newsletter readers. September 1st 2009, I started as the new full time professor at the sub-department of Environmental Technology at Wageningen University. My focus in research and teaching will be on advanced water and material treatment and reuse. I strongly believe that putting innovative technologies into a framework of environmental management is essential in creating sustainable societies. Therefore I am also very glad that we can welcome the Urban Environmental Technology and Management group to our sub-department, also per September 1st 2009. We are already making strong progress in forming a new teaching and research program in this area.

Something about my background: After having studied Environmental Sciences and Technology at WU, I did my PhD also here in Wageningen (1994) in a cooperation project between the groups of microbiology and physical and colloid chemistry. Bacterial adhesion and biodegradation of sorbed organic pollutants were my topics. After that I was asked to start up a technology group on in situ groundwater and sediment bioremediation at TNO and became finally head of the department of soil and water quality at Deltares in Utrecht. In all these years, my teams closely worked together with WU, and also in my new position, collaboration within Wageningen, with Deltares, TTIW/Wetsus, other universities and (international) institutes is high on my agenda.

In the past I have been involved in SKM activities and I am looking forward contributing to upcoming ones!

Huub Rijnaarts

REGISTRATION FORM MINI-SYMPOSIUM

I would like to attend the mini-symposium “Balancing on tipping points” on Tuesday February 2nd, 2010.

I am:
- o A member of Studiekring Milieu or of Natuurwetenschappelijk Gezelschap Wageningen and will pay € 15
- o Not a member of Studiekring Milieu and will pay € 20
- o A student and will pay € 15
- o A student-member of Studiekring Milieu and will pay € 10

I have paid the amount of € ……. to bank account 4074415 of Studiekring Milieu, Rotterdam, please indicate: “mini-symposium SKM 2 February 2010”

Please send/mail/fax this form before January 25th 2010, to:
KLV
PO Box 79
6700 AB Wageningen
Fax: 0317-483976
email: secretariaat.klv@wur.nl
website: www.klv.nl

COLOFON
DEZE NIEUWSBRIEF IS EEN UITGAVE VAN DE STUDIEKRING MILIEU VAN HET KLV.

De studiekring heeft als doel het vormen van een netwerk van hoger opgeleiden die werkzaam zijn in de milieusector, dat tevens als platform kan dienen ten behoeve van initiatieven rond onderzoek, beleid en maatschappelijke activiteiten. Daarnaast streeft de kring naar kennisuitwisseling tussen Wageningen Universitiet en de beroepspraktijk. De nieuwsbrief verschijnt drie à vier maal per jaar en wordt gestuurd aan de leden van de studiekring. Meer informatie over de studiekring is te vinden op internet http://www.klv.nl/

Aanmelding voor het lidmaatschap en adreswijzigingen*:* Cis Doorman, bureau KLV, cis.doorman@wur.nl

Redactieadres Nieuwsbrief
Marieke de Lange, tel. 0317-460053, email: marieke.delange@wur.nl
Kopij bij voorkeur aanleveren per e-mail in Word. Kopij voor de eerstvolgende nieuwsbrief: 15 mei 2010.