

DYNAQUAL

Presented here is the eighth DYNAQUAL Newsletter. DYNAQUAL stands for 'DYNAMics in groundwater and surface water QUALity'. By means of this newsletter we want to inform everybody interested in the proceedings of the DYNAQUAL-project.

DYNAQUAL update

Since the last newsletter we worked extremely hard to finish our theses. Joachim already delivered a full manuscript to his supervisors for some final feedback. Ype still has time until August to work on his last chapter and his synthesis. In this newsletter we once again summarize the newest DYNAQUAL results in an accessible way.

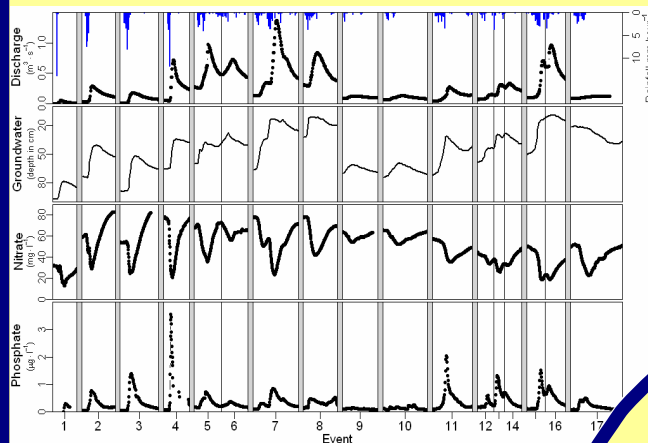
Dynamics in water quality are predictable

Measuring the water quality response to rainfall events was one of the main objectives of DYNAQUAL. At the outflow location of the Hupsel catchment, we installed a Hydrion and a Phosphax analyzer for continuous measurements of nitrate and phosphorus concentrations. These measurements beautifully showed the concentration changes caused by different types of rainfall events. The phosphorus concentrations repetitively peaked shortly, while the nitrate concentrations decreased during events (see below). These concentration changes are crucial for the total nitrate and phosphorus loads that leave the catchment. Through statistical analyses, we related the nitrate and phosphorus response to measurements of precipitation, discharge, and groundwater levels. We used these statistical models to reduce the bias in total load estimates from weekly concentration measurements from 20% to 1% for nitrate and from 63% to 5% for phosphorus.



Date for Joachim's thesis defense assigned!

29 October 2010, 16h15; block this date in your agenda. This will be the day of the first real DYNAQUAL thesis defense ceremony. In the senate hall (picture below) of the Academy building of Utrecht University (picture above) Joachim will go through fire and water to defend his PhD thesis. Five renowned scientists have been invited to evaluate the manuscript. After their approval, the thesis can go to press, probably in September. Meanwhile, the 5 opponents will brood on some tricky questions to bombard the obedient and unsuspecting young scientist with during the ceremony. After 45 minutes, Joachim will be released from his sufferings by the 'Hora est' of the Beadle, after which the celebrations can start!



Flashback

On May 1st 2006, Joachim Rozemeijer and Ype van de Velde started the DYNAQUAL project, DYNAMics in groundwater and surface water QUALity. The bulk of the project is financed by Deltares. Furthermore, RIVM, Alterra, Wageningen University and Utrecht University are involved in DYNAQUAL. The final goal of DYNAQUAL is to improve understanding of dynamics in groundwater and surface water quality. This understanding can be used for better utilization of the intrinsic information value of the expensive water quality measurements of regional groundwater and surface water quality monitoring networks.



DYNAQUAL



Vienna and San Francisco

Congresses are excellent opportunities to generate new ideas, to discuss the DYNAQUAL results with colleagues and to place our research in an international context. Previous month, Ype went to Vienna to visit (for the third time) his favorite congress, the General Assembly of the European Geosciences Union (EGU). He presented his new approach for modeling dynamic travel time distributions of water in the Hupsel catchment. Together with 4500 other oral presentations and over 9000 posters, Ype's talk attracted over 10.000 geoscientists to Vienna! Yet, this ain't big enough for Joachim. He preferred to go and have a look at the annual Fall Meeting of the American Geophysical Union (AGU). No less than 16.000 geo-scientists traveled to San Francisco 2 weeks before Christmas to attend this conference. Joachim's talk was about the water quality response to precipitation events and the opportunities of continuous water quality measurements for water quality research. It was a great congress with a lot of very clear and interesting presentations. Just the trip back home was somewhat disastrous. Only after an extra night in Manchester we managed to reach an extremely cold and snowed in Holland. By the way, the extremely steep streets and the Golden Gate bridge in San Francisco and the Sissi-palaces in Vienna are worth a visit!



Reactions of reviewers

We try to publish as much DYNAQUAL results as possible in international scientific journals. After submitting a manuscript, it is judged by two or three anonymous scientists. While some of these reviewers are wildly enthusiastic about our work, others are less impressed...



"Congratulations with your fantastic fieldwork"



"These results have very important implications for environmental policy and water-resource management in light of mandates to improve overall water quality in the face of climate change and natural variability."



"It was a pleasure to review a manuscript in as good shape as this one."



"The paper is in general extremely well written and wonderfully concise."



"I found myself rereading this particular sentence a number of times and still don't quite understand what you mean."



"It is not clear what science advance(s) has been made"



"The main problem of the manuscript is that the chapters abstract, introduction, and conclusions seem not to be in a final stage yet."



Drains are important!

From our measurements, tile drains appear to be very important for water and solute transport in agricultural catchments. The drains at our experimental field accounted for 80% of the water discharge and 90-94% of the nutrient and heavy metals load towards the surface water. Changes in the drain discharge caused by varying weather conditions are an important driver for the large natural dynamics in surface water quality.

Finally

Do you have questions, remarks or tips as a result of this newsletter?

Do you want us to start or stop emailing you this newsletter?

Do you know other people that might be interested?

Just let us know by email (dynaqual@tno.nl) or phone (Ype: 0031-30-2564817 or Joachim: 0031-30-2564724)

