

June 2011

Welcome

This year started with a rather severe flood especially in the central and lower parts of the Meuse basin. Although it was not a major one, it came very sudden. Only a couple of months later it seemed as it would never be raining again. High temperatures, lots of sunshine and very little rainfalls were responsible for a very dry spring. As such, 2011 is becoming a real climate-change-year: high waters and low waters. Isn't it great AMICE exists? In this issue you can find out all about our latest actions. If you missed the first issues of Meuse and Climate, they can still be downloaded from our website: [number 1](#), [number 2](#), [number 3](#). We don't know whether this summer will be hot or cold, wet or dry, but anyhow, we hope it will be a good one for all of you!

Word from the president of the GTI, cross-disciplinary working group on floods

What's the mission of the GTI?

The GTI brings together representatives from regional and provincial administrations (town and country planning, environment, facilities and transport, agriculture, local authorities) concerned by the 'floods' topic as well as an expert group from the universities. It follows through the Plan PLUIES (inundation prevention plan) of the Walloon Region and the mapping of flood-prone areas. Moreover the Walloon Government asked the GTI to also study the drought/low flow topics and the effects of global warming on the hydrological cycle.

Why is the GTI a Partner in AMICE?

In the light of climate evolutions as predicted by the IPCC and in the light of the effects these can have on floods and low flows, it was necessary that the GTI study these aspects in order to integrate them in the plan PLUIES. The AMICE project, fitting into a global study on the scale of the International Meuse basin, offered a good opportunity to fill in this gap.

What do you think about the importance of international collaboration along the river Meuse?

It has already existed with the International Meuse Commission (IMC) for more than 10 years but projects like AMICE can reinforce it. It is necessary because the water does not take into account our man-made borders. A coordinated and concerted management is the best solution for its residents to live better together on the Meuse.

Is the river Meuse important to you, personally?

Yes, because she is the cradle of the Meuse culture and she waters all of the cities that made out her richness over the centuries. In the view of sustainable development, the Meuse will continue to play an important role in the economic and cultural exchanges between the countries and regions of the river basin.

Do you have a message for the AMICE Partners?

Continue boosting and enlarging the activities of the IMC in a multidisciplinary and transnational perspective.



Mr. P. Dewil, President of the GTI, cross-disciplinary working group on floods

In this issue:

Word from Mr. P. Dewil	1	Hydraulic modelling finished	5
Site visit in Germany	2 - 3	Transnat. flood management exercise	6
AMICE film ready	3	News from the Cluster SIC Adapt!	6
A very dry spring	4	Coming soon	6
Consequences for the partners	4	AMICE figures	6

Site visit to the Rur dam system in Germany on April 6th and 7th 2011

1. The lectures

AMICE Partners and followers had the opportunity to visit and discover the complex Rur dam system. German AMICE partners of Aachen university and the Waterboard Eifel-Rur organised the event. As there was much to explain and still more to visit, participants were invited to come and start on a Wednesday evening.



At Aachen University, we were welcomed by prof. Nils Huber who gave an introduction on Aachen.

The city is located on a tributary of the Meuse, the Wurm, and has a long history, dating back from Neolithic times. The city is most famous for the Emperor Charlemagne.

The University is reknown for its Engineering departments.

Gerd Demny and Christof Homann from the Waterboard Eifel-Rur (WVER) talked about the Rur catchment area, the reservoir system and its functioning as well as the different issues at stake regarding climate change.



The Rur reservoirs system has a total volume of 302 million m3. It is used for flood protection, for low-water enrichment, provision of drinking water as well as power generation. Managing so many different uses involves computer aided solutions and plans. Good weather forecasts, with reliable trends on several months are also required for the decision making process.

Results from AMICE's wet and dry scenarios are put in the softwares to evaluate impacts from climate change. Extracting high-quality drinking water could be a problem in the future if the weather gets drier and the volumes stored become less important.

The last speaker was Benjamin Sinaba from Aachen University. He talked about the modeling and risk analysis that is being carried out through the AMICE project.

All of these lectures can be downloaded [here](#).



2. Gurgling waters

Mr. Demny also invited us to a guided fountain tour through the city of Aachen. Gurgling waters indeed! In a profusion of forms and features.

The weather was wonderful for a tour and our guide told us the crusty stories of each fountain with enthusiasm ! We started on the ancient location of the Roman baths and ended in front of Charlemagne's Cathedral.



The water from this fountain is very rich in minerals from the underground and has a really special smell.

Fountains tell the story of Aachen, its crafts and its trades. Water brings wealth to whom knows how to manage and preserve it.



3. The visit

At 8 am participants took the bus to bring them to the Rur reservoirs. First stop was at the Obermaubachdam where a new fish path could be visited.





The migration of the fish is also being monitored through a complex system of doors and steps. A large window was built for the public to take the chance to see the first salmon come back to its native waters !



Then the bus brought us to the National Park Gate Rurberg where the exhibition was visited. We learned about the local species and their complex relations with the water environment, some species creating potential damage, others relying on the waters high quality for their survival.



The boat trip to the really impressive Urft dam was pure joy.



The visit into the very 'bowels' of the dam was even more impressive. We followed the tunnels built to survey the dams movements and water leaks through the rock.



All Participants learned a lot during the Visit, enjoyed amazing landscapes and built new ties for the future !



Urgent matter: the AMICE-film is ready!

And it can be seen [here!](#) in Dutch, French or German.

This interactive web-based documentary tells about the Meuse in 15 stories. It's about rain and clouds, water and sources, nature and culture, industries old and new, recreation and also international collaboration. The Meuse is full of tales. This film shows how they bubble up from the river itself . You will meet the Meuse-people and learn about them. After exploring the 15 clips you'll understand why we love the river Meuse, why she has become our river and why we want her to be adapted to climate change.

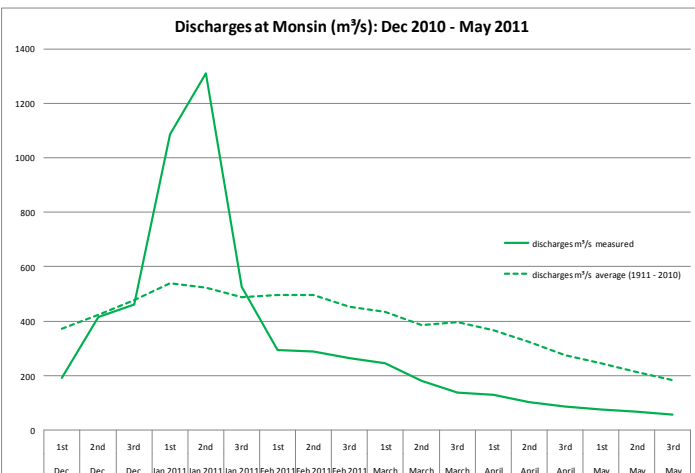
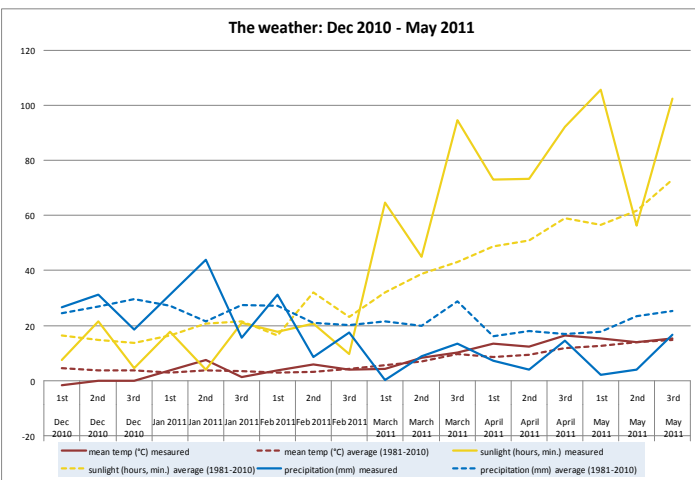


A very dry spring

This spring may well have given us a glimpse of what climate change may bring.

The first graph (data source: <http://www.meteo.be>) shows mean temperatures (red), mean precipitation (blue) and mean hours of sunshine (yellow). Measured data over the period December 2010—May 2011, per decade in Brussels are represented in plain lines and averages over the period 1981-2010 in dot lines.

It is clear that the dry period already started in March. Many hours of sunshine (record value 3rd decade of March) caused high evapotranspiration on an already very low precipitation trend; hence the mean temperature also rose (very exceptional high values for 2nd and 3rd decades of April).



This reflects neatly in the second graph (data source: FHR Antwerp) that shows discharges at Monsin (near Liège) over the same period. Averages are calculated over 1911-2010. A correlation coefficient of 0.74 could be calculated between the precipitation and discharge values. A negative correlation of -0.61 exists between the hours of sunshine and discharges.

Climate Changing ? Meuse Adapting !

Consequences for AMICE partners: the NV De Scheepvaart and the Albert Canal

In dry periods, it is possible that the water level in the Albert Canal, that is fed by the River Meuse, drops. In Genk, on May 31st, it was 25 cm lower than normal. Several measures had to be taken. The first one was the reduction by 50% of the water take-up for irrigation of farm land and nature by May 16th. By May 26th, this take-up was reduced with 75%. Another measure was to have the sluices work in a more economical way: only when the sluice is full of ships, they get locked through. This happens every year, but usually only in summer or autumn. In the third place, the load of the ships had to be limited; last time this had been necessary dates back in 2005.

One of the actions carried out partly in AMICE is adapting the sluices so that in the future, more water can be saved.

Consequences for AMICE partners: realization of the works at Steenbergse Vliet had to be changed

In The Netherlands, clay is needed in order to reinforce the dikes along the IJsselmeer. Due to low discharges in the rivers Meuse and Rhine, it was not possible to transport full shiploads with clay for these dike reinforcement works.

At the Steenbergse Vliet, a side channel is dug out in order to give more space to the River. At first, the plan was to transport the dug-out soil by truck to be used by a number of farmers in the region. But now it was decided it could better be used at the IJsselmeer instead. So it was brought to that area and the local farmers had no profit from it. Drought can indeed have quite unforeseen consequences.



AMICE assessed the impact of climate change on flood characteristics along the whole course of the river Meuse

The Action "Hydraulic modeling" in the AMICE project has been coordinated by the University of Liege (ULg-HACH). It started in 2010 and is now finished. The main achievement is the delivery of new flood maps along the whole course of river Meuse, from spring to mouth. These new flood maps account for the hydrological impact of climate change, in line with the scenarios already developed in AMICE ([click here](#) for more information or have a look at Meuse & Climate n°2) .

An innovative transnational methodology has been developed by ULg-HACH to combine existing state-of-the-art modelling procedures from the different regions. The methodology has been built upon the specificities of regional hydraulic models and has been formally approved by all involved partners. It results in a combination of steady and unsteady flow modelling, assuring continuity of discharge and water depth across each border. It has enabled us to perform the first transnationally coordinated hydraulic modeling of river Meuse from spring to mouth.

As a main deliverable of this action, AMICE is now able to provide flood extents along the river Meuse from Neufchâteau in France to Keizersveer in the Netherlands. These results are available for the 100-year flood in the present-day climate (base scenario) as well as for the time horizons 2021-2050 and 2071-2100. As a major conclusion, these maps have revealed a significantly higher impact of climate change on water depth in the central part of the basin compared to the upper and lower parts (see graph below).

The final report of this action will soon be published and a summary will be prepared afterwards. These report and results constitute key inputs for the damage evaluation conducted in the next Action.

AMICE is also looking for connections with other initiatives in order to exchange knowledge and outputs. One of these is the RheinBlick 2050 research project ; a discussion is started on the opportunity to carry-out a similar study on the Meuse basin.



Flood extension for Q100 in the time horizon 2071-2100. Map from Givet (France) to Keizersveer (the Netherlands)

On December 16th, the preliminary results of this Action were presented in Liège. The speakers demonstrated that thanks to AMICE, the Meuse countries have the opportunity to share data and methodologies to the benefit of all Partners. This cooperation already lead to a better understanding of the basin characteristics, the improvement of hydraulic models and risk assessment methodologies.

The programme and all presentations can be [downloaded here](#).

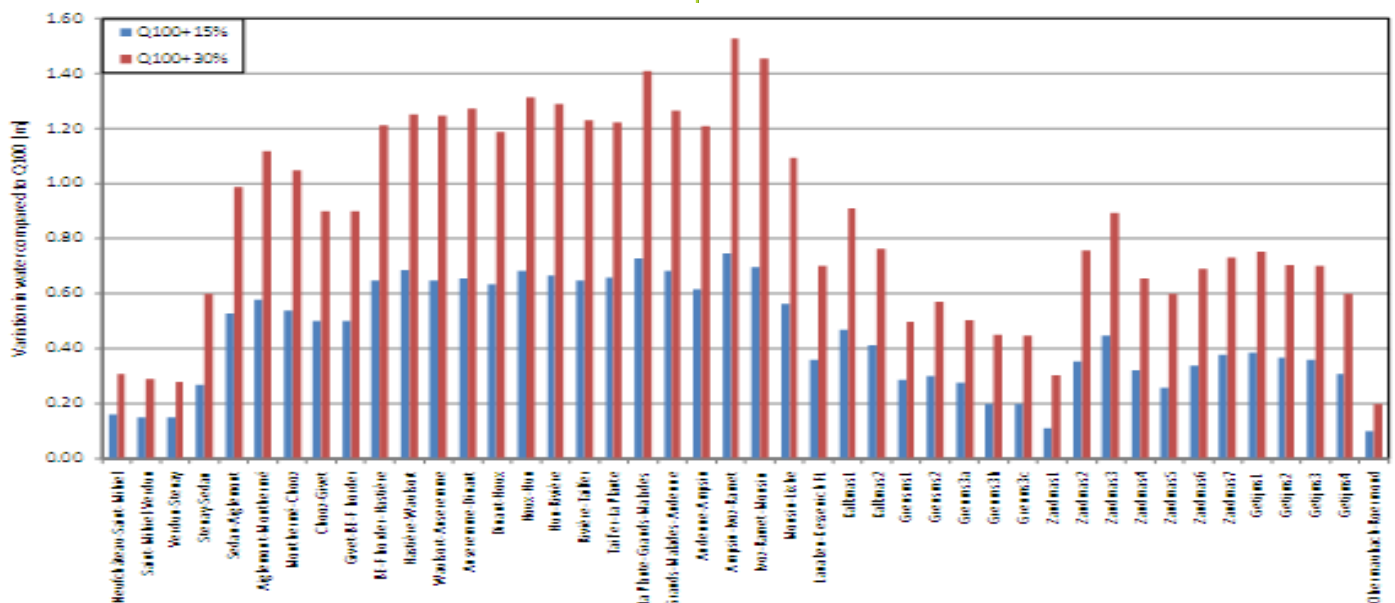


Figure 5-10 : Variation in water depth compared to Q₁₀₀ along each reach

Transnational flood crisis management Exercise - Kick Off Meeting

On February 23rd, was held the Kick-off meeting for the AMICE Transnational flood exercise, gathering 33 crisis managers from France, Belgium, the Netherlands and Germany.

The discussions were chaired by Willem Schreurs, the Secretary General of the International Meuse Commission. Clearly, it is important to match expectations, especially considering the different backgrounds and cultures from the stakeholders involved. The Kick Off Meeting is considered a first step on the road to a common exercise.

Each country was offered the opportunity to share its experience with the floods that occurred on the Meuse basin in December 2010 and January 2011. Speakers called for a better information sharing, especially in the warning phase.

The VIKING project was presented. This initiative aimed at improving crossborder exercises on the Rhine basin, and their feedback will help us build the AMICE Exercise.

In the afternoon, 2 workshops were organized for French-speaking and Dutch-speaking participants, in order to collect their wishes in a bottom-up process.

After a brief discussion to clarify some points, the following is decided:

- The exercises will take place on November 7th (Vosges), 8th and 9th (Meuse), 10th (Ardennes), 16th and 17th (Wallonia).
- A response cell can be created in the Netherlands to test information sharing as well.
- Observers tours are being organized to enable crisis managers from foreign countries to witness how a flood crisis is handled in each region and organization.
- All scenarios will be based on the '2050 flood', the level of the 100-return period flood, as calculated in WP1 for the period 2021-2050 under the 'wet' climate-change scenario.

[Click here](#) to learn more about it:



News from the cluster



SICadapt! is a cluster of 8 projects from the Interreg IV B Programme all dealing with climate change adaptation in different sectors. On June 20th and 21st the first Cluster Expert Board meeting was held at Holzwickede near Dortmund; it was hosted by the Cluster's Lead-Partner Lippe-Verband.

The meeting was organized in 4 thematic action field workshops (on built, social, natural and water environments) and a plenary session. In this scope both Benjamin Dewals from ULg-HACH and Piet van Iersel from Waterschap Brabantse Delta were asked to present the results of their activities within AMICE. Maïté Fournier acted as an action field speaker. There were also two AMICE-posters on the different pilot investments. Possible links with other projects popped up, which is of course a main goal of the Cluster.

The programme and the presentations can be downloaded from the Cluster website: www.sic-adapt.eu.

Around 60 participants from 8 EU Member States including Austria and Finland and from all of the Cluster's projects joined the meeting.

Coming soon

Not to miss! Check our [website](#) for the most recent information

- October 2011: site visit to the almost finished Steenbergse Vliet investment. Come and appreciate what's been achieved since our visit in April 2010 and grab the opportunity to experience the brand new GPS-route! Were not there? Well, this is the occasion to get updated!
- January 12th-13th 2012: IWASA 42nd International Symposium on Hydraulic Engineering in Aachen. Theme this time is 'Flood Waters—A permanent Challenge'. At least 5 presentations will be linked to AMICE-actions.

Some AMICE figures	2009-2012
17 partners	budget: 8.9 million €
4 countries	ERDF: 2.8 million €

Contacts and credits:

AMICE Lead Partner - Coordinator : Maïté Fournier (EPAMA)
 AMICE Communication Officer : Martine Lejeune (RIOU)
 AMICE logo conception : Olivier Drogue