

June 2013

Welcome

Well, yes, we have to face the fact: AMICE is (almost) finished and this is the very last issue of Meuse and Climate. It's been a really great discovery travel along the River Meuse, her character and surprises and challenges and of course, most of all, her people! All this culminated in a really fantastic final conference in Sedan. And now, how will life develop after AMICE, or will there be a life after AMICE altogether? Well, to answer this, just read the interview with Mr. Bachy, EPAMA's President below and things will become very clear indeed. See you at AMICE 2! (but for sure, it will have a different name).

Of course, as usual, [numbers 1 to 6](#) of Meuse and Climate are still available from the website.

Word from the EPAMA, AMICE 's lead-partner

We are all here together for the AMICE final conference. Our first question is : What does the Meuse mean to you ?

A poet would say that the Meuse is quite of a beguiling river. She can be truly whimsical. In peace time she unites different regions and lands. The Meuse is a strong economic axis but she can cause huge damage. The more downstream, the more the inundations tend to be catastrophic.

There are no inundations indeed on the Plateau de Langres while downstream areas are quite often submerged. That is why management on the basin level is important. EPAMA is fully concerned with this approach.

As the EPAMA President, can you give us an idea of the importance of your organisation when it comes to the management of the Meuse river basin ?

The EPAMA presents an original and exemplary approach that is based on dialogue between all the communities of the Meuse river basin. The EPAMA engages in risk-management and takes the appropriate measures in order to ensure the proper functioning of existing infrastructures that already proved their usefulness. For now, it is important to redirect our activities in order to make them compatible with what happens in other regions and countries.

From this viewpoint, what does the AMICE project mean to you ?

What we saw with AMICE is that different european partners were willing to pool their competences in order to reduce flood risks by means of scientific, participative and political cooperations.

AMICE is a good example of an ever more united Europe. It was

my pleasure to present this novel transnational initiative at the World Water Forum at Marseille, this past year.

How would AMICE best be continued ?

Many people would be disappointed if I would say that there won't be an « AMICE 2 » project !

I truly expect us to formulate a new set of common proposals so that this transnational cooperation can be secured by means of an « AMICE 2 « project.

And, at the end ?

Many thanks to all of you for this conference ! Participants, lecturers, politicians, administrators, students, the AMICE partners and the EPAMA crew all did a fantastic job !



Mr. Bachy, EPAMA's President at AMICE's final conference in Sedan, March 2013

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Bridging Gaps! AMICE's final conference in Sedan, March 13th-15th



Days and days of frantic preparation at EPAMA's premises really paid off!

Unforgettable, our final conference:

- all of our 17 partners present on Thursday
- about 200 participants from 7 countries
- a welcome party and welcome speeches at Sedan's medieval Castle
- 5 sessions, 12 lectures, a tale and a teaser
- an extremely interesting IPCC key-note speaker
- 5 workshops
- a conference book
- a conference dinner at Donchéry Castle
- city and castle guided tours
- 17 stands to visit in the exposition room
- a panel discussion
- a cartoonist
- and, as if to illustrate climate change: the whole of the land covered in a thick snow blanket!



EPAMA's example of a house liable to flooding could be visited at the final conference



A photo report as well as all of the presentations and the cartoons can be downloaded from the website.

AMICE finished? AMICE lives on!

For sure, AMICE's life continues through the web. Lots of information is already available:

The project's homepage:

www.amice-project.eu

All the newsletters:

<http://www.amice-project.eu/en/resume.php>

The interactive film on the River Meuse

<http://www.amice-film.eu>

The Meuse bibliography database

<http://www.amice-project.eu/biblio>

During the final conference, presidents of EPAMA and the IMC signed a convention. This means that at the end of the project the website will be hosted by the IMC and all publications will be available from the homepage.



Bridging Gaps indeed!



News from the investments.

Steenbergse Vliet

The project works were finished last year. Now the area is used for walking and fishing, but it is a good spawning place for fish. Some dead fishes were found on the banks of the newly made waters; they were captured by sea gulls and other fish eating predators. On the banks young black poplars and willows grow; some of them are already more than one meter high. A new plant species also was discovered: Swamp ragwort (*Senecio congestus*). It is a beautiful plant which grows in the new ditch along the new made summer dike.

When walking around there now, in summer and during breeding time more than 25 species of birds can be observed. There is a new colony of Sand martins (*Riparia riparia*) with more than 20 nests. This and more species could not be found before. This is due to the fact there are some very steep banks and this is exactly what Sand martins like. Also the Grebe (*Podiceps cristatus*) is found there. This indicates that fishes are abundant in the area.

In future a management plan has to be made. This should be done with the maintenance department of the water board together with ecologists to ensure a good future functioning.



Swamp ragwort and the steep bank where Sand martins breed

Hydrological effect of a wetland restoration: case study in the Belgian ardennes.

Natural retention of water by wetlands is often presented as a way to prevent from floods, by decreasing peak discharges and releasing water during low flows. This has been one of the motivations for many wetland restoration projects, although the hydrological success of these technics depends heavily on wetland type, size, local context of the restoration. It is therefore important to get better insights on the hydrological outputs of such restoration projects as the method could reveal to be an interesting tool for water managers in a climate changing context.

To assess the water retention perspectives of the Belgian Ardennes developed in Working Project 2, the hydrological modelling of two instrumented watersheds was carried out. One of the watersheds (Emmels/Born watershed) contains a wetland that has been progressively restored by Natagora/BNVS, while the other (Recht watershed) does not and was used for comparison purposes. Using hydrological models allows us to understand on the long term and globally the main characteristics of the two basins, which was not achievable by the only mean of flow and meteorological readings from AMICE measurement stations.

What the study revealed was rather interesting as the watershed that hosts the wetland did not show, on average and proportionally to the size of the basin, lower peak discharges than the other watershed. Studying hydrological processes at a lower scale revealed that the impact the wetland actually has on the total watershed daily flows is limited. The main reason is most likely to be linked with the relative size of the wetland as it corresponds to approximately 3% of the total drained area. Modifications of soil properties do have a significant effect on hydrological processes at the wetland scale, which tends to confirm that it is a matter of size. A scenario with typical wetland properties led to a global humidification of the soil profile, but no buffer or "sponge" effect was observed at the catchment's outlet.

The accuracy of both models was still limited by the quite poor simulation of snow accumulation and melting processes, which are significant in this area. Also, the recent activity of beavers in the wetland of the Born watershed increased the measurement uncertainties, and might induce changes in the hydrological regime of the area in the coming years.

This study highlighted that wetland restoration do not systematically lead to a buffer effect of floods and low flows on a basin scale. Success of such operation depends on the local context, the size of the wetland but also on the objectives of the restoration. Furthermore, it points out the relevance of making a feasibility study before any action is undertaken, and of the use of hydrological models.



Snow accumulation and melting processes are very common in both Basins, which resulted in difficulties modelling the highest peak discharges

Some AMICE figures

2009-2013

17 partners

4 countries

Budget : 8.9 million €

ERDF : 2.8 million €

The Rur-basins: results presented

On June 12th our German partner, the waterboard Eifel-Rur (WVER) presented the results of the investigations and research carried out in the AMICE project to their stakeholders.



Burgau Castle in Düren is a beautiful place to meet with stakeholders



Some 40 people attended the meeting

German partners ready for lecturing



Some 40 participants were welcomed by Mr. Steegmans, the Head of the Department. Then a series of lectures was held by our three German partners in order to present:

- The importance of the Rur-reservoirs for the river Maas.
- The dependencies of our (local) water management from other activities in the Maas (NWE) basin and vice versa.

The need of support by the NWE-programme:

- Hydrological and hydraulic models had to be set up for the climate investigation. Without the founding from the NWE programme this could not have been done. The models will help us also for all other investigations in the reservoir system in the future.
- The understanding in how climate change will affect the local hydrology could only be made regarding the whole Maas basin, so our work needed input from the other international partners in the AMICE-project and vice versa.

The main outputs of the project and their impact on future planning and measures at the Rur reservoirs or downstream.

Participants were very attentive and asked really good questions. For some of them it was the first time they realized that there are very different issues at stake concerning the Rur basins and that you really cannot change one without influencing the others. Informing stakeholders is not daily business for WVER, but this turned out to be a very good idea.

[You can download the presentations here](#) (in German)

Hotton: project summary

The project carried out in Hotton is oriented towards a global management of extreme discharges (floods and low flows) of the river Naives and its tributaries, but also towards the rehabilitation of the whole of the catchment basin.

The AMICE project in Hotton was split into two parts, one part including all of the engineering works:

1. building of a dike with cyclo-pedestrian track;
2. building new infrastructures to control discharges including a gate and a low-water bed in order to facilitate fish migration;
3. building a wide thunderstorm overflow to limit water speed and to protect people present on the dike in case of overflow;
4. installation of fences, didactic signs, garbage bins;
5. incorporation of a system preventing beaver ascent in the plain of Ny as well as allowing fish migration;
6. building of an entrance adapted to farming needs;
7. preservation of hedges and of the riparian forest;
8. building of a trap for driftwood adapted to small rivers.



Infrastructure to control discharges including a gate and a low-water bed

The second part consisted of compensation for nature losses (Natura 2000) and of the control of the Naives stream.

It included:

1. locational study of an automated limnimeter with two alarms connected by mobile phone;
2. digging and plantation of ponds to increase biodiversity;
3. building of pontoons in order to avoid damage of the banks by cattle trampling;
4. installation of four watering places engineered to prevent blooming of cyanobacteria in the river bed;

This kind of pontoons avoids damage of the banks by cattle trampling



Watering place engineered to prevent blooming of cyanobacteria in the river bed;

As to conclude:

Reproduction of this kind of project in all the tributaries of any river would lead to the alleviation of flooding accidents.

Low-flow management has proven that good maintenance combined with local measures allows to recover healthy rivers.

The proposed measures can be used in numerous brooks and small rivers.

[Read more here.](#)

Research. Climate change and land use modification : modelling of combined hydrological impacts.

Climate change will lead to changes in agronomic practices aiming at maintaining agricultural productivity. Adaptation strategies can also lead to a changing land use.

Combined effects of climate change and land use on the hydrology of watersheds has been evaluated by Gembloux Agro-Bio Tech using prospective simulations (hydrological modelling EPIC-grid) on a number of sub-basins of the rivers Meuse, Thyria and Méhaigne.

Simulations were carried out for time horizons 2012-2050 and 2071-2100 with two climate change scenarios that were generated using the perturbation tool CCI-HYDR. The scenario 'High' is based on a future situation with wet winters and dry summers whereas the scenario 'Low' considers a future with dry winters as well as dry summers. Flooding risks are more important in the 'High' scenario than in the 'Low' one, the latter being more critical for drought and low water.

The hydrological effects of the changes in the grassland/arable field ratio in the agricultural area are tested. In this application forested and inhabited surfaces as well as natural environments are not changed.

The outcomes from the hydrological model and the scenario 'High' show a 21% to 42% increase in maximum discharges for a 100 year return period for the 2071-2100 time horizon under unchanged land use. A modification of the grassland/UAA (useful agricultural area) ratio also influences the maximum discharges. An increase in the percentage of grassland leads to a decrease of these maximum discharges (see figure). This decrease can ease the increase in flooding discharges caused by climate change without however completely compensating their effects.

The climate scenario 'Low' leads to a 14% to -26% decrease in low flow discharges (Q95) under unchanged land use conditions. An increase in the proportion of grassland in the watershed allows to significantly limit the decrease in low flow discharges.

It is clear that changing land use as well as agricultural practices provide interesting moderation levers against the effects of climate evolutions.

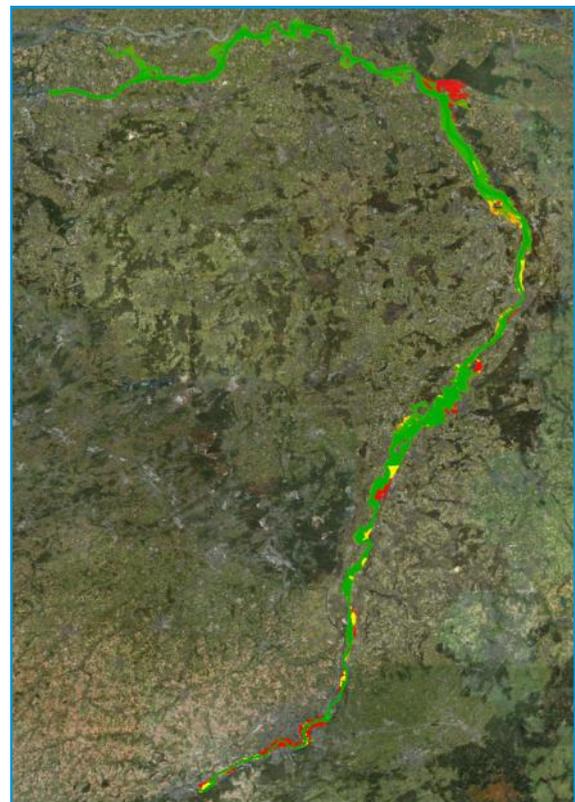


This photo clearly shows the contrast between the ploughed and the non-ploughed part of a field

Research: A coordinated hydraulic modelling from Ampsin to Maaseik performed by Liege University and Rijkswaterstaat / Deltares

In the AMICE project a coordinated procedure was set up to conduct the first hydraulic modelling of the entire Meuse River, from sources to mouth. For the considered climate scenario, the expected future inundation characteristics were computed for the time horizons 2021-2050 and 2071-2100. The results showed that the increases in future flood levels are about twice as high in the central part of the Meuse basin compared to the upper and lower parts, which may be explained by the morphology of the Meuse valley.

However, the characteristics of the hydraulic models used for this analysis differed significantly from one region to the other (e.g., 1D vs. 2D, steady vs. unsteady). Therefore, a refined analysis of inundation modelling along a 100 km long transnational section of the Meuse, between Ampsin and Maaseik, using very similar models for the whole computation (2D unsteady models): WOLF 2D (University of Liege) and WAQUA (Rijkswaterstaat / Deltares) was carried out. As a result, damping of the flood waves could be quantified and the relevance of using a steady model could be assessed.



The new detailed 2D hydraulic simulations demonstrated that only a very limited damping of the flood waves occurs along the simulated reaches. From the perspective of the variation in peak discharge, the study concludes that running the hydraulic model in steady mode makes perfectly sense. Nonetheless, the steady computations lead to some overestimations of the inundated extent and of the stored volume in the floodplains.

The 2D unsteady model set up in this refined analysis constitutes a tool of primary interest, which is readily available to design and evaluate protection measures for flood-prone areas such as Liege.

More information will soon be available in a comprehensive report (check our website).

News from the Cluster

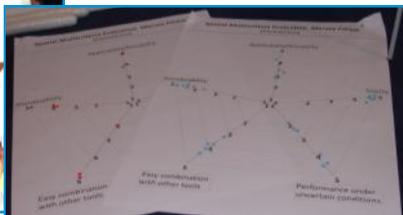
Well, the SIC Adapt! cluster's activities are finished too. There was the final conference in Lille (FR) at the end of January, which was attended by experts from 7 EU-countries.



The eight Cluster projects showcased good practices in four interactive workshops. One of these was on the Tools developed within the Cluster and it was prepared by AMICE and ForestClim. In a market-place setting 5 tools could be visited. For AMICE there was the Flood crisis management platform and database, presented by CETMEF. After every 'visit' participants were asked to evaluate the tool against several criteria using 'our' spiderweb-method. It was a very lively workshop indeed.



François Hissel explaining the tool and an example of the spiderwebs.



The Policy Recommendations which are worked out by the Cluster consortium were officially handed over to EU Commissioner Conny Hedegaard, DG Climate Action. In her speech she said: "Adaptation to the impacts of climate change is one of the most fundamental challenges for land use planning in Europe. Initiatives like SIC Adapt! help policy makers to choose the best solutions for their citizens. The 8 transnational projects make those efforts certainly more efficient. My congratulations for the work done!"



Click [here](#) for photos, conclusions and documents

EU Commissioner Mrs. C. Hedegaard receives the Policy recommendations from mr. E. Grün, Board member of Lippeverband (DE).

Cluster video

The Cluster now also has its own video. In 11 minutes it tells you all about the cluster and its results. Riou made the concept and wrote the texts and all 8 cluster projects contributed. A fine example of cluster collaboration! You can [view](#) the film from the website.



And now? Up to ... something new and dazzling

At the last partners meeting in Liège on June 7th, partners decided it would be nice to go on and to capitalize on AMICE's successes. New partnerships, challenging ideas, unexpected combinations and lots of creativity.

Ideas are plenty! We would gather them from brainstorming conducted during the project also from the outcomes of the workshops during the final conference. Putting them together into a really innovative and dazzling project will be a big challenge. You surely will hear more about it!



Celebrating the old AMICE and trinking on new collaborations!



And isn't this a clear message? Lots of people joined in to sing THE song. Roberto Epple, from European Rivers Network and one of the speakers at the AMICE final conference, made a video of the singing team. [You can download it from the website.](#)



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Climate Changing ? Meuse Adapting !