

THE EUROPEAN JUNIOR SCIENTIST WORKSHOPS - A FLYING START FOR DOCTORAL STUDENTS

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ABSTRACT

In this paper a workshop format is described that proved to be successful to introduce young researchers such as doctoral students into ongoing research in their subject. The workshop stimulates active participation and helps to create an international network. The origin and history, the main features behind the concept and the experience so far are described. Future options and prospects are briefly discussed.

KEYWORDS

Doctoral students, water, environment, research, network, international, Europe

HISTORY

Ten years ago, back in November 1989, an invitation was sent for "...a very informal meeting where the idea is to bring young colleagues together to have some days of intensive professional discussions and some time to learn to know each other". With this invitation the "First European Junior Scientist Workshop" (EJSW) was launched, that was held 15 -18 March 1990 at EAWAG's Kastanienbaum Research Station on the shore of Vierwaldstädter See close to Lucerne in Switzerland. The workshop was a smash success. Apparently a concept was found that was worthwhile to be repeated - 13 times until today.

What turned out to be a flying start for many fresh Ph.D. students who participated in these workshops, actually started as a far less altruistic project. The members of the IAWPRC (later IAWQ, today IWA) Task Group on Real Time Control of Urban Drainage Systems were just about leaving the age of being junior. They discovered that their future professional career would distract them from concentrating on detailed research because soon they would have to take over other duties. The hypothesis was that it is the young scientists who generate new developments and innovative ideas. The conclusion was to keep close to them, and thus avoid to be overtaken by a new group that suddenly has the better ideas.

This intrigue theory turned out to be nonsense. But the vehicle EJSW to cope with the risk of becoming professionally old-fashioned turned out to be the right thing to provide young scientists with what they need most: break isolation and have some inspiring discussions in a co-operative environment.

WHO IS A JUNIOR?

One definition of the task for a doctoral student is to find a solution to an unsolved scientific problem. By definition, the fresh doctoral student neither finds a solution ready at hand nor has discussion partners in the vicinity who share the same problem. The academic supervisor might be busy, does not want to deal with "trivial" problems, and always is the boss but not necessarily a friend. Especially in academic environments without a structured curriculum for doctoral students, sometimes a lot of trial-and-error is necessary to get the research going. Funds are limited, time is short, and competition with the co-students might be stiff. These are no good conditions to learn from and support each other. Isolation, and sometimes frustration, of the doctoral student can be the consequence. Obviously, also other young colleagues are in similar situations, e.g. a junior engineer in a company. In fact, age is not a good criterion at all. A "junior" with respect to EJSW can conveniently be defined as a colleague who actually is engaged in detailed research work.

EUROPEAN JUNIOR SCIENTIST WORKSHOPS

European Junior Scientist Workshops shall provide an opportunity for young colleagues to present ideas, plans, and preliminary results of their own research in an inspiring, friendly, co-operative, and non-competitive environment. They shall fit the professional and personal needs of the participants. The idea is not only to listen and to watch, neither only to talk and to dominate, but to learn from and help each other in solving scientific problems.

EJSW are informal, international and inexpensive, but no compromise with respect to professional efficiency is made. Obligations are to be fulfilled, and active participation is a must. The typical participant would present his or her doctoral research project, the approach and the preliminary results, and would expect a critical but constructive discussion with the audience. There are always some other participants who deal with similar problems. The optimum outcome might be a revised concept for the own project plus a network of international colleagues that continues to function much longer.

EJSW are not supposed to copy professional "senior" meetings nor are they meant to compete with them. There are no colour brochures, low (or even no) budget, no keynote lectures, no awards, no fees and no profits.

The concept of EJSW has been applied successfully on quite a spectrum of water related subjects and organised in various European countries. Tab. 1 summarises the EJSW that have been or will be held so far.

THE CONCEPT

Any EJSW starts with an idea about the subject of the workshop. A doctoral student, together with the academic supervisor, takes an initiative and plans a workshop that fits to the needs of the doctoral student. Known international scientific environments are contacted, and soon the core of a programme is defined and some potential participants are listed. Subsequent mouth propoganda fills the open spaces, and the organisational groundwork can start.

Proven features of EJSW

EJSW have a specific topic that is research-oriented. Participants must have a project that is related to that topic. However they do not need to have results, let alone final results. It can be quite interesting to present and discuss a project plan, hypotheses, preliminary results, etc. I can be even more interesting to discuss a problematic project where unexpected results are causing headaches.

EJSW are informal, but sincere and professional. Although the venue might be as simple as a mountain cottage a complete professional infrastructure should be available, e.g. computer, printer, copy-machine, overhead and slide projectors, flipchart. Soon this list will be augmented with mobile phone and Internet connection.

Table 1: List of European Junior Scientist Workshops

no.	Place	Date	Topic (abbreviated)
1.	Kastanienbaum, Switzerland	15 -18 March 1990	Real Time Control
2.	Kastanienbaum, Switzerland	4 -7 April 1991	Stormwater Infiltration
3.	Terschelling, the Netherlands	22 - 25 September 1991	Operations Research
4.	Saint-Victor-sur-Loire, France	9 - 12 April 1992	Uncertainty Analysis
5.	Klintholm, Denmark	1 - 4 October 1992	Stormwater Infiltration
6.	Kastanienbaum, Switzerland	3 - 6 July 1993	Re-Use of Water
7.	Cernice, Czechia	2 -5 June 1994	Integrated Urban Storm Runoff
8.	Deventer, the Netherlands	22 -25 September 1995	Urban Rain as a Resource
9.	Kilve, United Kingdom	10 - 15 April 1996	Impacts Urban Drainage on Treatment plants and Receiving Waters
10.	Tautra, Norway	24 - 27 May 1997	Infrastructure Deterioration
11.	Eekholt, Germany	12 - 15 February 1998	Sustainable Sanitary Engineering
12.	Prefailles, France	12 - 15 March 1998	Stormwater infiltration
13.	Dresden, Germany	8 - 12 September 1999	Service-life management of water systems

EJSW last four days, i.e. either Thursday through Sunday or Saturday through Tuesday. The reason is that participants can profit from the "Saturday night rule" and do not need to buy expensive full fare air tickets. Another important reason is that the junior is investing a weekend that would otherwise be free time. This is a good argument in order to get permission from the superior to participate on the two other workdays. This argument has repeatedly proven to be valuable especially for young colleagues from private companies.

There are three working sessions per day, e.g. morning 9-12h, afternoon 14-17h, evening 19-22h. However, the programme is flexible such that an excursion can be made whenever weather conditions are favourable. The net working time will then typically be 7-8 sessions, i.e. 2, 3, 3, and 1 on the consecutive days minus 1-2 for excursions.

EJSW should not have more than 20 participants. Any number above 20 would increase the administrative burden, make it difficult to find a suitable venue and, most importantly, prevent the participants to get acquainted with each other.

EJSW must be held at a remote, non-urban location, preferably in a nice surrounding. The exotic location raises expectations, and the contrast of a picturesque location and serious work is inspiring. An important aspect is also that nobody can run away and thereby disturb the development of a group identity. With that respect previous organisers have been very successful. Among the venues of EJSW were:

- a house directly at the shore of a lake in Switzerland,
- a farm on a Dutch North Sea island,
- a chateau in France,
- the cottage of a sailing club in Norway,
- a wildlife natural reserve in Germany, and many more.

Every participant must give a presentation about his or her ongoing project. Since nobody is able to present the final results, a mutual understanding is created that research is not easy and that the problems of others are similar to the own problems. Presentations about non-finished projects and unsolved problems can provoke a discussion that can be far more constructive than discussing results of a finished project.

The EJSW is a multiple language event. Presentations and discussions are in English, though. Participants are encouraged to use any other language outside of the technical sessions. Thereby, the cultural identity of participants is acknowledged and other cultural contributions or activity might be stimulated (e.g. meals, performances, music).

Each participant must submit a paper in English well before the workshop takes place. With email today there is no problem to circulate all papers beforehand such that the participants know what to expect. Experience shows that most participants do read the material beforehand.

After the workshop, the papers are internally reviewed by rotation, and a set of proceedings is compiled and sent to every participant. Further circulation is depending upon agreement of all participants. For some participants this is the first "publication" and as such, both, a challenge and a good exercise. However, it is obvious that the quality of the contents cannot match internationally accepted scientific standards in all cases.

Participants also share the organisational tasks of which there are three types: A chairman leads through a session, and tries to make his/her session as inspiring, interesting and smooth-going as possible. A reporter tracks the discussions and conclusions. He or she summarises them, both, in writing (to be included in the proceedings) and orally, i.e. presented before the next day starts. This task is demanding but also rewarding. It is always advisable to have reporters, but it is simply a necessity if work in groups needs to be coordinated. The third task is the function of an "advocatus diaboli", i.e. a person who triggers the discussion after a presentation or after a session. Experience shows that this function is least important, though, simply because discussion usually kicks-off without delays. All three functions are assigned beforehand, involve all participants and can rotate.

The venue should have simple comfort ("backpack and sleeping bags"). Luxury accommodation in single hotel rooms is expensive and also counter-productive for the social process. Whenever possible, the participants should do the cooking by themselves ("bring your own recipe!"). It is striking how fast participants get acquainted with each other when they stand in the kitchen, prepare and cook a meal together, and do the dishes afterwards. Needless to say, that the social function of a meal featuring "home-made" specialities outperforms whatever might happen in a restaurant (mobbing is great fun). The shopping needs to be done by somebody else, though. For this purpose it is most practical to engage a graduate student who likes to get an idea of what postgraduate research looks like.

So far, any participation fee for EJSW could be avoided. The direct costs for the participants are for the trip to and from the venue and for the food for which cash is collected during the meeting. Other expenses should either be avoided or the organiser should find a sponsor. In cases, these were the Swiss Federal Institute for Environmental Science by allowing their lake research laboratory to be used, a French municipality to use their guest-chateau as venue, or Norwegian funds reserved from a priority research programme to rent a

cottage on an island. Obviously, sponsors are necessary, but the budget requirements are so low and the required personal initiative and input so high that it should not be difficult to persuade a potential sponsor.

A final recommendation to the seniors: Keep out, or at least, keep silent! Assume a role as the godfather and the one person who collected the funds that were necessary to stage the EJSW but, by all means, do not scare the participants by dominating the discussions, and do not defend "your" student when the going gets tough.

Options and variations over a theme

Research might involve new methodologies little known to participants. Interdisciplinary subjects require knowledge from several fields that cannot be expected from all participants. In these cases an option is asking some of the participants to run a tutorial on such subjects. This can create a common knowledge base that is useful for the following discussions of specific presentations.

Another option is to move from the frontal presentation style of meeting towards round table and group work with plenary sessions in between. This might be an interesting option for poorly defined or interdisciplinary subjects where problem analysis and formulation of solution strategies are required rather than a discussion of results.

Although the scientific contents of a presentation are most important they have to be presented in an attractive, or at least in an understandable way. The friendly atmosphere of junior scientist workshops provide a good opportunity to give each participant feedback on the style, format and layout of the presentation: What was well done? What can be improved?

Especially evening sessions are well suited to try unconventional forms of topical work. On the Terschelling EJSW a role-play was improvised where water management problems in the borderland of science, engineering, politics and public opinion were illustrated in form of an improvised debate amongst participants who acted as stakeholders. The performance was much to the joy and astonishment of, both, the actors and the audience.

Although the social aspects of self-organisation are very important (kitchen- and house-work, other cultural contributions) it is quite difficult to co-ordinate these activities within a stiff scientific programme. It is wise to reserve enough time for and co-ordinate these activities, e.g. to make sure that one does not have a central role in the kitchen and, at the same time, and has to write the session report to be presented after the lunch break.

No-shows are a problem on meetings that are free of charge. It is worthwhile to charge a reasonable deposit beforehand, which is refunded upon arrival, or balanced against the cash that is necessary to shop for food and drinks - obviously without refund for no-shows.

OPEN QUESTIONS AND THE FUTURE

Participants at EJSW have usually been invited through mouth propaganda. No open call for papers were issued. Obviously this approach has the disadvantage that a biased view is introduced already before the workshop starts. In principle, by controlling the participation one also controls the outcome. On the other hand, it is the academic supervisor and the doctoral student who are taking the initiative. Therefore, it must be allowed to control the programme such that it serves the purpose best, namely to boost the research of the junior.

The EJSW is not EJSW[®], it is not a protected trademark. Anyone, who wants to organise one can do it. The author has, until today, tried to keep counting the number of EJSW and to encourage colleagues to organise

one. This approach is not very effective in terms of "spreading the word", though. This paper is the first publication about the EJSW as a workshop concept, and it also marks the beginning of an effort to find an administrative home for the concept.

This year the merger of IAWQ and IWSA will become a reality, and it is an interesting option to ask IWA to take the EJSW under its umbrella. The author is a member of a newly established IWA Standing Committee for Young Professionals, where the suggestion will be placed. With the backup of that large organisation we might be required to cancel the European from the name (the European Union partly sponsored the first EJSW) but the number of Junior Scientist Workshops hopefully will increase so much that counting becomes a problem.

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REFERENCES

Proceedings have been produced of all EJSW that have been held so far. However, their publication mostly did not follow established routines, and their circulation is usually only amongst the participants plus a few more copies retained by the organiser. A few examples are given below:

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An overview over the abstracts of Røstum et al. (1997) can be obtained at:

http://www.ntnu.no/~wos/publicat/Abstracts/deterioration_of_built_environment.html