

## **Report of the Czech National Committee for Hydrology (CNCH) on UNESCO IHP related activities (June 2016)**

### **1. ACTIVITIES UNDERTAKEN IN THE PERIOD JUNE 2014 – MAY 2016**

#### **1.1 Meetings of the CNCH**

##### 1.1.1 Decisions regarding the composition of the CNCH

In February 2015, an Executive Committee meeting was held at the Czech University of Life Sciences in Prague that was attended also by two additional members of the CNCH. It was pointed out there that the CNCH has a weak connection to the valuable and prolific UNESCO FRIEND-Water programme. The scientific secretary advised to appoint a new correspondent regarding this programme because the old one finished her activities associated with it. In May 2015, when the plenary session was organized at the T. G. Masaryk Water Research Institute, p.r.i., the correspondent was elected there. At the same time, a new national correspondent for the IAHS International Commission on Remote Sensing was designated, who should attend the CNCH plenary sessions when necessary.

The former chairman Dr. Josef Hladný was retired but he still tries to cooperate with the current CNCH, although without his personal electronic mail box, which, of course, has to be deleted from the contact details published on the UNESCO websites.

Still, it applies that the CNCH has its additional connections to:

- Czech National Committee of Geodesy and Geophysics,
- Czech National Committee for Disaster Reduction,
- Czech Committee of the International Commission on Irrigation and Drainage,
- Czech National Committee for the UNESCO Programme on Man and the Biosphere,
- Czech National Committee for IGCP,
- Czech National Committee for Cooperation with IOC.

The relationships with the IAHS scientific committees mediated through a vice-chairman and several national correspondents, apart from the exception mentioned above, remain the same as well. Unfortunately, there was no success concerning the post of the correspondent for the Panta Rhei scientific decade.

Besides, each of the members of the CNCH maintains his/her own relationships closely linked to his/her professional specialization.

##### 1.1.2 Status of IHP-VIII activities

The table (survey 2013) through which the persons from the Czech Republic can be contacted by the UNESCO Secretariat when a need arises was filled with the contact details, predominantly on the workers of the Czech Hydrometeorological Institute (CHMI). Mainly, the experts are prepared to participate in focal areas 1.1, 1.4, 1.5, 6.3 (Dr. Jan Daňhelka),

1.3 (Mr. Ondřej Ledvinka), 2.4 (Dr. Vít Kodeš), 5.1, 5.2 (Mr. Šimon Bercha) and 6.2 (Mr. Libor Ducháček). They are also highly interested in activities related to the following associated programmes: FRIEND-Water, International Drought Initiative (IDI) and International Flood Initiative (IFI).

*The Global Map of Groundwater Vulnerability to Floods and Droughts* was published in 2015, in preparation of which an external coworker of the CNCH played a major role.

In March 2015, the chairman of the CNCH was a member of the delegated national group visiting Sendai, Japan due to the meeting on disaster and risk reduction which was closely connected to IHP Theme 1 and the UN-Water family in general.

The CNCH working group on the history of hydrology in the Czech Lands together with other members of the CNCH attempted to inform about the UNESCO IHP/IHD celebrations of the 50<sup>th</sup> anniversary during several sessions that took place mainly in 2015. It also resulted in the published chapter about the history of the CNCH and its predecessors. It was a perfect timing since also the Czech hydrological service celebrated 140 years of its existence just in 2015.

In March 2016, the CNCH scientific secretary visited Slovenia where a meeting of IHP Electoral Group II was held aiming to prepare a strategy of the future IHP-related activities in this region.

A member of the CNCH participated in several meetings regarding the Regional Cooperation of the Danube Countries, as it has been already a tradition.

## **1.2 Activities of the CNCH at national level**

### **1.2.1 National scientific and technical meetings**

The CNCH co-organized another part of the conference of 5-year cycle called 'Hydrology Days 2015'. It was held in October 2015 in Bratislava, Slovakia and was attended by a wider range of nationalities (besides Slovaks and Czechs also people from Sweden, Germany or Poland) than usually had been in the past. The reason was that the conference was merged with the conference 'River Basin and Flood Risk Management 2015' which ensured also the financial support from the local ministries and the Visegrad Fund.

In December 2015, a conference called 'Flash Floods' was held in Prague which was organized by a vice-chairman of the CNCH.

A CNCH member organizes the regular conference called 'Adolf Patera Workshop'. Two of them took place in Prague in November 2014 and December 2015.

### **1.2.2 Participation in IHP Steering Committees/Working Groups**

In September 2015, a vice-chairman of the CNCH took part in another 'ERB Workshop and Steering Committee' held in the Netherlands.

### 1.2.3 Supported or sponsored projects

The Czech Republic did not support or sponsored projects during the period of report.

### 1.2.4 Collaboration with other national and international organizations, programmes and committees

In September 2014, the CNCH chairman hosted a meeting of the WMO Commission for Hydrology Advisory Working Group in Prague. It lasted several days.

In November 2014, a conference belonging to the EGU Leonardo cycle took place at the Czech University of Life Sciences in Prague. It was entitled 'HYPER Droughts – HYdrological Precipitation, Evaporation and Runoff Droughts' and, as its title suggests, it was devoted to various types of droughts. The conference was attended by a lot of experts from abroad (e.g. USA, Western Europe).

At the turn of June and July 2015, another IUGG General Assembly was held in Prague. A vice-chairman helped with the organization of IAHS sections.

The cooperation with the Slovak Committee for Hydrology (SCH) is traditional. The scientific secretary of the CNCH started to serve as a co-organizer for the Czech side regarding the 'Conference of Young Experts' and also was a member of the evaluation committee at the section dedicated to young hydrologists in Novembers 2014 and 2015.

Some of the national correspondents served as members of scientific committees as regards other local conferences or seminars (e.g. 'Snow Meetings' in the Czech Republic and Slovakia).

In springs 2015 and 2016, regular conferences of the Czech Bioclimatological Society took place in the Czech Republic. These conferences were attended also by some members of the CNCH because the topics addressed there (irrigation, soil and agricultural drought) were closely related to hydrology.

### 1.2.5 Other initiatives

The website of the CNCH (<http://cnvh.cz/>) has proved to be a suitable tool for informing public and other experts about the UNESCO, IAHS and WMO water-related activities. Therefore, we continued in maintaining it and, as time permitted, we updated and added a great deal of information there. In spring 2015, a section that lists a number of hydrological textbooks written in Czech and English, and that are recommended by the members giving the lectures at Czech universities was added. In March 2016, another section was added that offers selected CHMI data for study and scientific purposes. Primarily, the data on the experimental basins in the Jizera Mountains can be downloaded after filling a form.

Two Czech hydrologists were awarded the A. R. Harlacher Prize in 2015 – Dr. Ladislav Kašpárek and Mr. Jan Kubát who were members of the

predecessor of the CNCH and worked or still work for the CHMI hydrological service. On the other hand, Dr. Hladný was awarded the Ľudo Molnár Prize by the Slovakian colleagues during the Hydrology Days 2015.

The CNCH Executive Committee contributed to the prepared publication on the history of UNESCO IHD/IHP on the occasion of the celebration of its 50<sup>th</sup> anniversary, which resulted in a two-page chapter in the final book.

Because in June 2013, the Czech Republic experienced regional floods mainly on the Vltava River and its tributaries, the CNCH members in cooperation with the CHMI hydrologists contributed to the translation of a publication describing the event and the weather conditions preceding this event. The publication that was released at the end of 2014 was sent to the Czech Commission for UNESCO and to the Permanent Delegation of the Czech Republic to UNESCO. The publication can also be downloaded from the CHMI publishing house websites.

On the contrary, in 2015, a long-lasting drought hit the territory of the Czech Republic. Therefore, the experts from the CNCH helped with the preparation of evaluation reports. Also, this drought spell was the topic of one of the seminars organized by the Czech National Committee for Disaster Reduction. A more close cooperation between this body and the CNCH can be expected as regards the organization of other seminars concerning hydrometeorological extremes.

### **1.3 Educational and training courses**

#### 1.3.1 Contribution to IHP courses

The CNCH did not contribute to IHP courses during the reporting period.

#### 1.3.2 Organization of specific courses

The CNCH was not involved in organization of specific courses during the reporting period.

#### 1.3.3 Participation in IHP courses

The CNCH did not receive any reports that Czech experts participated in international IHP courses in the past two years.

### **1.4 Cooperation with the UNESCO-IHE and/or international/regional water centres under the auspices of UNESCO**

The leader of the working group focusing on the education of hydrology in the Czech Republic (and a vice-chairman of the CNCH) reported that his connection to the UNESCO-IHE was renewed in 2015.

It still applies that the CNCH expresses its interest in the activities of UNESCO category-2 water-related centres (e.g. ecohydrology in Poland, natural disasters reduction in Japan, groundwater and drought in the Netherlands, and climate change in Serbia).

## 1.5 Publications

Probably, the following contribution to a UNESCO IHP book is the most valuable:

**CNCH**, 2015. Czech Republic. Building cross-border awareness of water issues, in: *Water, People and Cooperation. 50 Years of Water Programmes for Sustainable Development at UNESCO*. UNESCO, Paris, France, pp. 98–99.

Then, the translation of the publication about the floods in 2013 that occurred in the Czech Republic can be mentioned:

**Daňhelka, J.**, Kubát, J., Šercl, P., Čekal, R. (Eds.), 2014. *Floods in the Czech Republic in June 2013*. Czech Hydrometeorological Institute, Prague.

Furthermore, the following scientific papers, articles in proceedings or book chapters can be considered (only the publications of CNCH members are listed, information about the publications of IAHS national correspondents can be found in Scopus or ISI Web of Knowledge for instance):

Bernsteinová, J., Bässler, C., Zimmermann, L., **Langhammer, J.**, Beudert, B., 2015. Changes in runoff in two neighbouring catchments in the Bohemian Forest related to climate and land cover changes. *Journal of Hydrology and Hydromechanics* 63, 342–352. doi:10.1515/johh-2015-0037

**Blazkova, S.D.**, Beven, K.J., Smith, P.J., 2012. Transport and dispersion in large rivers: application of the aggregated dead zone model, in: Wang, L., Garnier, H. (Eds.), *System Identification, Environmental Modelling, and Control System Design*. Springer London, London, pp. 367–382.

Borrelli, P., Panagos, P., **Langhammer, J.**, Apostol, B., Schütt, B., 2016. Assessment of the cover changes and the soil loss potential in European forestland: first approach to derive indicators to capture the ecological impacts on soil-related forest ecosystems. *Ecological Indicators* 60, 1208–1220. doi:10.1016/j.ecolind.2015.08.053

Brázdil, R., Chromá, K., Řezníčková, L., Valášek, H., Dolák, L., Stachoň, Z., **Soukalová, E.**, Dobrovolný, P., 2014. The use of taxation records in assessing historical floods in South Moravia, Czech Republic. *Hydrology and Earth System Sciences* 18, 3873–3889. doi:10.5194/hess-18-3873-2014

Dohnal, M., Černý, T., Votrubová, J., **Tesař, M.**, 2014. Rainfall interception and spatial variability of throughfall in spruce stand. *Journal of Hydrology and Hydromechanics* 62, 277–284. doi:10.2478/johh-2014-0037

Dusek, J., Dohnal, M., Snehota, M., Sobotkova, M., Ray, C., **Vogel, T.**, 2015. Transport of bromide and pesticides through an undisturbed soil column: a modeling study with global optimization analysis. *Journal of Contaminant Hydrology* 175-176, 1–16. doi:10.1016/j.jconhyd.2015.02.002

Dusek, J., **Vogel, T.**, 2016. Hillslope-storage and rainfall-amount thresholds as controls of preferential stormflow. *Journal of Hydrology* 534, 590–605. doi:10.1016/j.jhydrol.2016.01.047

- Dusek, J., **Vogel, T.**, 2014. Modeling subsurface hillslope runoff dominated by preferential flow: one- vs. two-dimensional approximation. *Vadose Zone Journal* 13. doi:10.2136/vzj2013.05.0082
- Dvořáková, Š., **Kovář, P.**, Zeman, J., 2014. Impact of evapotranspiration on discharge in small catchments. *Journal of Hydrology and Hydromechanics* 62, 285–292. doi:10.2478/johh-2014-0039
- Fárek, V., **Unucka, J.**, 2015. Results comparison of the flow direction and accumulation algorithms together with distributed rainfall-runoff models in Czech Switzerland national park, in: Růžičková, K., Inspektor, T. (Eds.), *Surface Models for Geosciences, Lecture Notes in Geoinformation and Cartography*. Springer International Publishing, Cham, pp. 87–98.
- Fárek, V., **Unucka, J.**, Ponížilová, E., Gergelová, M., Židek, D., Pallós, R., 2014. Assessment of the runoff conditions of small ungauged catchments using GIS and fully distributed hydrologic models. *Acta Montanistica Slovaca* 19, 22–30.
- Fišák, J., **Tesař, M.**, 2015. Evaluation of the contribution of deposited precipitation. *Advances in Meteorology* 2015, ID 472963. doi:10.1155/2015/472963
- Hall, J., Arheimer, B., Aronica, G.T., Bilibashi, A., Boháč, M., Bonacci, O., Borga, M., Burlando, P., Castellarin, A., Chirico, G.B., Claps, P., Fiala, K., Gaál, L., Gorbachova, L., Gül, A., Hannaford, J., Kiss, A., Kjeldsen, T., Kohnová, S., Koskela, J.J., Macdonald, N., Mavrova-Guirguinova, M., **Ledvinka, O.**, Mediero, L., Merz, B., Merz, R., Molnar, P., Montanari, A., Osuch, M., Parajka, J., Perdigão, R.A.P., Radevski, I., Renard, B., Rogger, M., Salinas, J.L., Sauquet, E., Šraj, M., Szolgay, J., Viglione, A., Volpi, E., Wilson, D., Zaimi, K., Blöschl, G., 2015. A European Flood Database: facilitating comprehensive flood research beyond administrative boundaries. *Proceedings of the International Association of Hydrological Sciences* 370, 89–95. doi:10.5194/piahs-370-89-2015
- Jančíková, A., **Unucka, J.**, 2015. DTM impact on the results of dam break simulation in 1D hydraulic models, in: Růžičková, K., Inspektor, T. (Eds.), *Surface Models for Geosciences, Lecture Notes in Geoinformation and Cartography*. Springer International Publishing, Cham, pp. 125–136.
- Jaroš, L., **Starý, M.**, Březková, L., 2016. A stochastic approach to the operative control of flood flows through a reservoir. *Journal of Hydrology and Hydromechanics* 64, 91–96. doi:10.1515/johh-2016-0012
- Kaiglová, J., Jiřinec, P., **Langhammer, J.**, Ingeduldová, E., Chalupová, D., Ferenčík, M., Jánský, B., 2015a. Numerical modeling of heavily polluted fine-grained sediments remobilization in northern Czech Republic. *Ecohydrology & Hydrobiology* 15, 111–124. doi:10.1016/j.ecohyd.2015.02.001
- Kaiglová, J., **Langhammer, J.**, Jiřinec, P., Janský, B., Chalupová, D., 2015b. Numerical simulations of heavily polluted fine-grained sediment remobilization using 1D, 1D+, and 2D channel schematization. *Environmental Monitoring and Assessment* 187. doi:10.1007/s10661-015-4339-3
- Kovář, P.**, Bačinová, H., 2015. Impact of evapotranspiration on diurnal discharge fluctuation determined by the Fourier series model in dry periods. *Soil and Water Research* 10, 210–217. doi:10.17221/122/2015-SWR
- Kovář, P.**, Bačinová, H., Loula, J., Fedorova, D., 2016. Use of terraces to mitigate the impacts of overland flow and erosion on a catchment. *Plant, Soil and Environment* 62, 171–177. doi:10.17221/786/2015-PSE
- Kovář, P.**, Heřmanovská, D., Hadaš, P., Hrabalíková, M., Pešková, J., 2016. Water balance analysis of the Morava River floodplain in the Kostice-

Lanžhot transect using the WBCM-7 model. *Environmental Monitoring and Assessment* 188, Article no. 74. doi:10.1007/s10661-015-5080-7

**Kovář, P.**, Hrabalíková, M., Neruda, M., Neruda, R., Šrejber, J., Jelínková, A., Bačínová, H., 2015. Choosing an appropriate hydrological model for rainfall-runoff extremes in small catchments. *Soil and Water Research* 10, 137–146. doi:10.17221/16/2015-SWR

**Kovář, P.**, Pelikán, M., Heřmanovská, D., Vrana, I., 2014. How to reach a compromise solution on technical and non-structural flood control measures. *Soil and Water Research* 9, 143–152.

Kulasova, A., Beven, K.J., **Blazkova, S.D.**, Rezacova, D., Cajthaml, J., 2014a. Comparison of saturated areas mapping methods in the Jizera Mountains, Czech Republic. *Journal of Hydrology and Hydromechanics* 62, 160–168. doi:10.2478/johh-2014-0002

Kulasova, A., **Blazkova, S.**, Beven, K., Rezacova, D., Cajthaml, J., 2014b. Vegetation pattern as an indicator of saturated areas in a Czech headwater catchment. *Hydrological Processes* 28, 5297–5308. doi:10.1002/hyp.10239

**Kulhavý, Z.**, Fučík, P., 2015. Adaptation options for land drainage systems towards sustainable agriculture and the environment: a Czech perspective. *Polish Journal of Environmental Studies* 24, 1085–1102. doi:10.15244/pjoes/34963

**Langhammer, J.**, Su, Y., Bernsteinová, J., 2015. Runoff response to climate warming and forest disturbance in a mid-mountain basin. *Water* 7, 3320–3342. doi:10.3390/w7073320

**Ledvinka, O.**, 2015. Scaling of low flows in Czechia – an initial assessment. *Proceedings of the International Association of Hydrological Sciences* 366, 188–189. doi:10.5194/piahs-366-188-2015

**Ledvinka, O.**, 2015. Evolution of low flows in Czechia revisited. *Proceedings of the International Association of Hydrological Sciences* 369, 87–95. doi:10.5194/piahs-369-87-2015

**Ledvinka, O.**, Lamacova, A., 2015. Detection of field significant long-term monotonic trends in spring yields. *Stochastic Environmental Research and Risk Assessment* 29, 1463–1484. doi:10.1007/s00477-014-0969-1

**Ledvinka, O.**, 2015. Nonstationarities in technical precipitation series in Czechia. *Acta Hydrologica Slovaca* 16, 199–207.

Lichner, Ľ., Cerdà, A., **Tesař, M.**, Rajkai, K., 2014a. Biohydrology research after Landau 2013 conference. *Journal of Hydrology and Hydromechanics* 62, 253–257. doi:10.2478/johh-2014-0041

Lichner, Ľ., Dušek, J., **Tesař, M.**, Czachor, H., Mészároš, I., 2014b. Heterogeneity of water flow in grassland soil during irrigation experiment. *Biologia* 69, 1555–1561. doi:10.2478/s11756-014-0467-4

Marton, D., Menšík, P., **Starý, M.**, 2015a. Using predictive model for strategic control of multi-reservoir system storage capacity. *Procedia Engineering* 119, 994–1002. doi:10.1016/j.proeng.2015.08.991

Marton, D., **Starý, M.**, Menšík, P., 2015b. Analysis of the influence of input data uncertainties on determining the reliability of reservoir storage capacity. *Journal of Hydrology and Hydromechanics* 63, 287–294. doi:10.1515/johh-2015-0036

Marton, D., **Starý, M.**, Menšík, P., 2014. Water management solution of reservoir storage function under condition of measurement uncertainties in hydrological input data. *Procedia Engineering* 70, 1094–1101. doi:10.1016/j.proeng.2014.02.121

Marton, D., **Starý, M.**, Menšík, P., Paseka, S., 2015. Hydrological reliability assessment of water management solution of reservoir storage capacity in conditions of uncertainty, in: Andreu, J., Solera, A., Paredes-

- Arquiola, J., Haro-Monteagudo, D., van Lanen, H. (Eds.), Drought: Research and Science-Policy Interfacing - Proceedings of the International Conference on Drought: Research and Science-Policy Interfacing, Valencia, Spain, 10-13 March 2015. CRC Press/Balkema, Leiden, the Netherlands, pp. 377–382.
- Mensik, M., Marton, D., **Stary, M.**, 2015. Using predictive model for strategic control of multi-reservoir system storage capacity, in: SGEM2015 Conference Proceedings. Presented at the 15th International Multidisciplinary Scientific GeoConference SGEM 2015, International Multidisciplinary Scientific Geoconference, Albena, Bulgaria, pp. 729–736. doi:10.5593/SGEM2015/B31/S12.094
- Mensík, P., **Starý, M.**, Marton, D., 2014. Using predictive model of mean monthly flows for large open reservoirs hydropower control. Procedia Engineering 89, 1486–1492. doi:10.1016/j.proeng.2014.11.435
- Miřijovský, J., **Langhammer, J.**, 2015. Multitemporal monitoring of the morphodynamics of a mid-mountain stream using UAS photogrammetry. Remote Sensing 7, 8586–8609. doi:10.3390/rs70708586
- Navrátil, T., Shanley, J., Rohovec, J., Oulehle, F., Krám, P., Matoušková, Š., **Tesař, M.**, Hojdová, M., 2015. Mercury in stream water at five Czech catchments across a Hg and S deposition gradient. Journal of Geochemical Exploration 158, 201–211. doi:10.1016/j.gexplo.2015.07.016
- Šípek, V., **Daňhelka, J.**, 2015. Modification of input datasets for the Ensemble Streamflow Prediction based on large-scale climatic indices and weather generator. Journal of Hydrology 528, 720–733. doi:10.1016/j.jhydrol.2015.07.008
- Šípek, V., **Tesař, M.**, 2015. Validation of a mesoscale hydrological model in a small-scale forested catchment. Hydrology Research 47, 27–41. doi:10.2166/nh.2015.220
- Šípek, V., **Tesař, M.**, 2014. Seasonal snow accumulation in the mid-latitude forested catchment. Biologia 69, 1562–1569. doi:10.2478/s11756-014-0468-3
- Šír, M., **Tesař, M.**, Lichner, Ľ., Czachor, H., 2014. The effect of grass transpiration on the air temperature. Biologia 69, 1570–1576. doi:10.2478/s11756-014-0469-2
- Tlapáková, L., Žaloudík, J., **Kulhavý, Z.**, Pelíšek, I., 2015. Use of remote sensing for identification and description of subsurface drainage system condition. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis 63, 1587–1599. doi:10.11118/actaun201563051587
- Vogel, T.**, Votrubova, J., Dusek, J., Dohnal, M., 2016. Mesoscopic aspects of root water uptake modeling – hydraulic resistances and root geometry interpretations in plant transpiration analysis. Advances in Water Resources 88, 86–96. doi:10.1016/j.advwatres.2015.12.006
- Vojvodikova, B., **Unucka, J.**, Ceselsky, J., 2015. Industrial zone between economy and environment, in: SGEM2015 Conference Proceedings. Presented at the 15th International Multidisciplinary Scientific GeoConference SGEM 2015, International Multidisciplinary Scientific Geoconference, Albena, Bulgaria, pp. 355–362. doi:10.5593/SGEM2015/B53/S21.046



## 1.6 Participation in international scientific meetings

### 1.6.1 Meetings hosted by the country

In September 2014, the chairman of the CNCH (who is also a member of the WMO Commission for Hydrology, CHy) hosted a meeting of the CHy Advisory Working Group in Prague.

The new CNCH national correspondent for FRIEND-Water, at the same time a representative of the T. G. Masaryk Water Research Institute, p.r.i., and the Czech University of Life Sciences) co-organized the EGU Leonardo conference called 'HYPER Droughts'. It took place on the campus of the Czech University of Life Sciences in Prague in November 2014.

At the turn of June and July 2015, there was held the '26<sup>th</sup> General Assembly of the International Union of Geodesy and Geophysics (IUGG2015)' in Prague. It was attended by hydrologists from abroad as well as by some CNCH members. They actively participated in this session (oral and poster presentations).

In May 2016, a symposium called 'Living Planet' took place in Prague. This meeting is usually attended by experts in remote sensing (e.g. NASA, ESA), but also some hydrological presentations were on the agenda (floods, wetlands, hydrology in Africa, databases, big data, etc.).

### 1.6.2 Participation in meetings abroad

In September 2014, a vice-chairman of the CNCH took part in the '15th Biennial Conference of the Euromediterranean Network of Experimental and Representative Basins (ERB)' held in Coimbra, Portugal. The vice-chairman also served as a member of the international scientific committee there.

Also in September 2014, a delegation from the CHMI (whose members were also the CNCH members) visited Deggendorf, Germany. The reason was the '26<sup>th</sup> Conference of the Danubian Countries on Hydrological Forecasting and Hydrological Bases of Water Management'.

The '7th Global FRIEND-Water Conference' was attended by the scientific secretary of the CNCH and the new national correspondent for FRIEND-Water programme in October 2014 that was held in Montpellier, France. The attendees presented the topics regarding the downscaling of climate models and highlighted some issues associated with statistical hydrology.

In March 2015, some members of the CNCH contributed to the conference held in Valencia, Spain. This conference was dedicated to addressing drought-related issues and bridging gaps between science and policy.

At the beginning of July 2015, another short course on copulas in hydrology took place at the University of Pau and Pays de l'Adour, France. These courses are co-organized by the IAHS International Commission for Statistical Hydrology (ICSH). The scientific secretary of the CNCH was an attendee of this course.

In November 2015, three conferences/workshops took place in Addis Ababa, Ethiopia – ‘Alexander von Humboldt Conference’, another ‘EGU Leonardo Conference’ and ‘STAHY’15’ (a workshop of statistical hydrology). The scientific secretary of the CHCH was a partaker of this meeting where also a poster presentation was exhibited regarding different techniques capable of detecting trends in hydrometeorological series (including proposed new ones).

In April 2016, another general assembly of the European Geosciences Union (EGU) took place in Vienna, Austria. Since the scientific secretary of the CNCH started to work on a new granted project at the CHMI, he and his colleagues prepared a poster presentation for this occasion. This presentation summarized the activities related to the derivation of *N*-year discharges in (also ungauged) small catchments in the Czech Republic.

## **1.7 Other activities at regional level**

### **1.7.1 Institutional relations and cooperation**

In July 2015, some negotiations regarding the position of the CNCH were initiated at the Ministry of the Environment of the Czech Republic. The aim of these negotiations was to improve the position of the CNCH in the local governmental frame. The negotiations resulted in the formal letter sent from the ministry to the director of the CHMI asking him for the establishment of the Secretariat of the CNCH as a new organizational part of the CHMI. In fact, the CNCH should become an advisory body serving to the director of the CNCH whose membership should be more or less the same.

In March 2016, a meeting of IHP Electoral Group II was organized by the Slovene national committee. The scientific secretary of the CNCH was a partaker there. The report from this meeting points out a poor situation regarding this group of countries within the UNESCO IHP family. Besides some proposed remedies listed in the report, it was decided that these meetings should take place at least once in a year. The Czech Republic could host one of these near-future meetings.

### **1.7.2 Completed and ongoing scientific projects**

Here, again, only the most important projects from the CNCH point of view are listed despite there are more of them.

In 2014, a project devoted to adaptation to and mitigation of climate change impacts in water resources management (TA02020320) was finished in cooperation with some members of the CNCH.

At the beginning of 2016, works on short-living grant project dedicated to the derivation of *N*-year discharges in small (ungauged) catchments (TB050MZP018) were initialized. The members of the CNCH who also work at the CHMI participate in this project that should end in November 2016.

## **2. FUTURE ACTIVITIES**

### **2.1 Activities planned until December 2016**

The establishment of the Secretariat of the CNCH (or the CNCH Secretariat) at the CHMI is expected at the turn of summer and autumn of 2016.

At the same time, the Statute of the CNCH should be changed relative to the changes that are awaited. When preparing the new Statute we were inspired by the Statute of the Czech Commission for UNESCO.

The next (in fact 16<sup>th</sup>) part of the biennial ERB conferences will take place in Bucharest, Romania at the beginning of September 2016. Some Czech hydrologists including a vice-chairman of the CNCH (who is a traditional member of scientific committee) are going there.

The scientific secretary of the CNCH plans to take part in the next 'STAHY'16' workshop that will be held in Quebec, Canada at the end of September 2016.

Also, the scientific secretary plans to visit Bratislava, Slovakia during the next 'Conference of Young Experts' either as a contributor or a member of an evaluation committee.

The above grant project (TB050MZP018) should be finished by November 2016 in cooperation with hydrologists at the CHMI.

The plenary session of the renewed CNCH (with the statute and some members changed) should take place in autumn 2016.

Because at the CHMI, also the Czech National Committee for Disaster Reduction is operating and this body organizes valuable seminars for hydrologists as well, we expect a good cooperation with it.

### **2.2 Activities foreseen for 2017-2018**

Although the translation of the CNCH website was planned, it could not have been done since the scientific secretary of the CNCH is extremely busy. However, the translation can be foreseen for the next period. It should definitely contribute to a better visibility of the CNCH and UNESCO IHP activities.

The international conference entitled 'Water Resources Management 2017' is planned to be held in Prague, Czech Republic in July 2017. The hydrologist from the CNCH should definitely contribute to it.

During the meeting in Slovenia, it was decided that the next conference of Danubian countries will be held in Sofia, Bulgaria, but no earlier than in late 2017. Definitely, the hydrologists from the CNCH should visit this session and will contribute to the agenda there.

Some of the CNCH experts may visit the next EGU general assemblies in 2017 and 2018 where hydrological sections are very frequent.

### **2.3 Activities envisaged in the long term**

The CNCH is prepared to support the IHP-VIII activities through the experts mentioned above.

The CNCH will further support the SCH and the Slovak Hydrometeorological Institute (SHMI) activities, namely co-organizing the valuable conferences of young experts (hydrologists, water managers and climatologists).

Further maintenance of the CNCH website is envisaged.