

---

**IGU Commission for Water Sustainability (C40)**  
**Quadrennial Report for the period:**  
**2012-2016**

*Compiled by Frank Winde*

**Submitted to:** Secretary-General and Treasure, IGU, Prof. Michael E Meadows

**cc:** Members of proposed SC of Commission

**Date of submission:** 26.02.2016

<i>Contents:</i>	<i>Page</i>
<b>Background to the Commission</b>	<b>2</b>
<b>1. Membership</b>	<b>2</b>
<u>A. Steering Committee members during 2012-16</u>	
<u>B. Number of members on mailing list</u>	
<u>C. Website</u>	
<b>2. Meetings</b>	<b>5</b>
<u>A. Commission meetings 2012-2016</u>	
<u>B. Brief summary of meetings</u>	
<u>C. Planned meetings for 2016</u>	
<b>3. Networking and communication</b>	<b>10</b>
<u>A. Collaboration within IGU</u>	
<u>B. Collaboration outside IGU</u>	
<u>C. Cooperative efforts with ISSC/ ICSU programs</u>	
<u>D. Collaboration projects between Commission members</u>	
<b>4. Publications</b>	<b>13</b>
<u>A. Newsletters and Annual Reports</u>	
<u>B. Special journal issues</u>	
<u>C. Books</u>	
<b>5. Archival contributions</b>	<b>14</b>
<b>6. Continuation</b>	<b>14</b>
<u>A. Name of Commission.</u>	
<u>B. Mission of Commission</u>	
<u>C. List of individuals for SC 2016-2020</u>	
<u>D. Summary work plan 2016-2020</u>	

## Background to the Commission

The Commission started as Study Group on Hydrological Extreme Events founded by Dr. JAA Jones (Wales) in 1998. The Study Group was upgraded to Commission status in 2002 and renamed to “Commission for Water Sustainability”.

Following the retirement of several founding members the composition of the Steering Committee (SC) changed drastically and repeatedly just before the reporting period. Further changes were implemented during the reporting following the retirement of founding member Prof. Kazuki Mori in 2014 and the ending of the term of Prof. C. Cassardo in 2015.

Owing to a perceived decline in activities and attendance of meetings over the past few years the outgoing chair, supported by the majority of SC members at the time, proposed to close the Commission at the next Congress in Beijing. Following strong encouragement from IGU executives to reconsider this decision, the decision was reversed and a new chair and SC appointed who are now committed to continue with the Commission as a much needed exchange platform for water scientists with geographical as well as other disciplinary backgrounds.

## 1. Membership

### A. Steering Committee members during 2012-16

#### *Chair:*

Prof. Claudio Cassardo, Italy (Chair: 2011-15, web manager: 2002-12, SC: 2002-15)  
University of Turin, Turin, Department of Physics, Via Pietro Giuria 1, 10125 Torino, Italy. Phone: +39-011-670-7407. Fax: +39-011-236-7407. E-mail: [claudio.cassardo@unito.it](mailto:claudio.cassardo@unito.it).

#### *Vice-chair:*

Prof. Kazuki Mori, Japan (Vice Chair: 2012-2014, SC: 2002-2014)  
Nihon University, Tokyo, Department of Geosystem Sciences, College of Humanities and Sciences, 25-40 Sakura-josui 3-chome, Setagaya, Tokyo 156-8550. Phone: +81-3-3329-1151. Fax: +81-3-5317-9430. E-mail: [kzmori@chs.nihon-u.ac.jp](mailto:kzmori@chs.nihon-u.ac.jp).

#### *Secretary*

Prof. Olga E. Scarpati, Argentina (SC: 2004-)  
La Plata National University and Technical Research Council, Buenos Aires, Department of Geography, Serrano 669 (1414), Phone: +54-114-855-7199 Fax: +54-114-856-2751 E-mail: [olgascarpati@yahoo.com.ar](mailto:olgascarpati@yahoo.com.ar)

#### *Members (alphabetical order)*

Dr. Ivan Canjevac, Croatia (SC: 2013-, Website manager: 2012-)  
University of Zagreb, Faculty of Science, Department of Geography, Marulicev trg 19/II, 10000 Zagreb, Croatia, [canjevac@geog.pmf.hr](mailto:canjevac@geog.pmf.hr)[mailto:](mailto:canjevac@geog.pmf.hr), Tel. 0038514895424, Fax 0038514895440, Skype name: naumovac

Prof. Natalia L. Frolova, Russia (SC: 2012-)  
Lomonosov State University, Moscow, Department of Hydrology, Faculty of Geography, GSP-1, 119991, Leninskie Gory, MSU. Phone: +7 (495) 939-15-33 E-mail: [frolova\\_nl@mail.ru](mailto:frolova_nl@mail.ru)

Prof. Chansheng He, USA (SC: 2011-),  
Western Michigan University. Wood Hall, Department of Geography, Western Michigan University, 3234 Wood Hall, Kalamazoo, MI 49008-5424. Phone: (269) 387-3425 Fax: (269) 387-3442 E-mail: [he@wmich.edu](mailto:he@wmich.edu).

Prof. Alessandro Leto, Italy (SC: 2014-)  
University for Foreigners, Perugia, [Department](#), [Postal address](#), [email@address.country](#), [Tel.](#), [Fax](#), [Skype name](#)

Prof. Hideo Oyagi, Japan (SC: 2014-)  
Nihon University, Tokyo, Department of Geosystem Sciences, College of Humanities and Sciences, 25-40 Sakura-josui 3-chome, Setagaya, Tokyo 156-8550. [oyagi.hideo@nihon-u.ac.jp](mailto:oyagi.hideo@nihon-u.ac.jp), [Tel.](#), [Fax](#), [Skype name](#)

**Prof. Trahel Gerasim Vardanian, Armenia (SC: 2012-2014)**

Yerevan State University, Department of Physical Geography; 1 Alek Manoukian st., 375049, Yerevan, Republic of Armenia.  
Phone: +55-06-61-44-08-80 Fax: (3742) 151087 E-mail: tvardanian@ysu.am

**Prof. Frank Winde, South Africa (Chair: 1/2016-; Vice chair: 1-12/2015, SC: 2012-)**

North-West University, Vaal Triangle Campus, Vanderbijlpark, Geography and Environmental Studies, PO Box 1174, Vanderbijlpark, 1900; [frank.winde@nwu.ac.za](mailto:frank.winde@nwu.ac.za), [frank.winde@gmail.com](mailto:frank.winde@gmail.com), Tel. +27 724059561, +49 17696001533, Skype: frank.winde

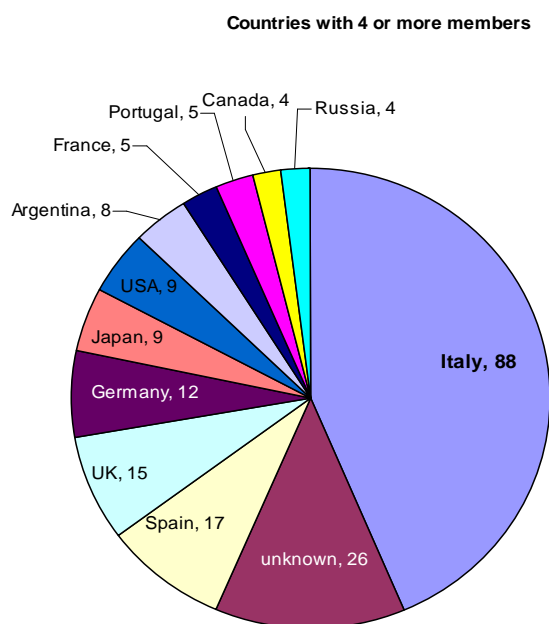
*Honorary member*

**Prof. emer. JAA (Tony) Jones, Wales/ UK (founder, commission chair: 2002-2011),**

Institute of Geography and Earth Sciences, University of Wales, Aberystwyth. SY23 3DB, UK. Phone: +44(0)1970 622633 (sec)/622595 (direct) Fax: 44(0)1970 622659 E-mail: [tonyandjenjones@btinternet.com](mailto:tonyandjenjones@btinternet.com)

**B. Number of members on mailing list**

Following efforts to update by the past chair, Prof. Cassardo, to clean up the mailing list and gradually remove unresponsive/ inactive members that no longer participate in the Commission the total number of members (or rather recipients of email) was reduced from close to 400 to 236 (as of April 2014). However, the shortened list still contains a significant number of inactive and some retired members and needs further consolidation. Identified by country-ID in the email address this membership shows the following geographical distribution (Fig. 1):



**Fig. 1:** Country of origin and no. of recipients on the mailing list of the Commission (as of April 2014), indicating countries with 4 or more members. The category "unknown" refers to recipients whose email address has no country id (e.g. .com).

Countries with less than 4 members include the following:

3 members: *Armenia, Croatia, India, South Africa*

2 members: *Iran, Ireland*

1 member: *Chile, China, Czech Republic, Hong Kong, Israel, Kuwait, Lithuania, Mexico, Netherlands, Romania, Singapore, Slovenia,*

*South Korea, Switzerland, Ukraine*

In total there are **32 countries** represented on the Commission’s mailing list. The distribution of mail recipients across major global regions is shown in Tab. 1:

Tab. 1: Major regions of residence of recipients on the Commission’s mailing list

Europe	160	77%
Asia	18	9%
N-America	14	7%
S-America	9	4%
Africa	3	1%
Middel East	2	1%
M-America	1	0%
Australia	0	0%
<b>total</b>	<b>207</b>	<b>100%</b>
<b>North</b>	194	94%
<b>South</b>	13	6%

From the above statistics it appears that efforts need to be made to ensure a higher representation of water scientists from the developing countries (the global ‘South’) especially from water-stressed regions such as the Middle East, but also from Africa and Middle America.

### C. Website

The website is managed by Dr. Ivan Canjevac from the University of Zagreb using Wordpress servers as free-of-charge hosts: <https://iguwater.wordpress.com/>.

## 2. Meetings

### A. Commission meetings 2012-2016

The Commission organised a total of five meetings during the reporting period (Tab. 2).

**Tab. 2:** Commission meetings held in the period 2012-2016

Location	Dates	Type	No. of participants*
Cologne, Germany	26-30 Aug. 2012	IGU Congress	60
Kyoto, Japan	11-15 Aug. 2013	IGU Regional Conference	50
Lanzhou, China	12-17 Aug. 2013	Commission Meeting	150
Dubrovnik, Croatia	24-28 Aug. 2014	Commission Meeting	50
Moscow, Russia	17-22 Aug. 2015	IGU Regional Conference	50

\*estimated

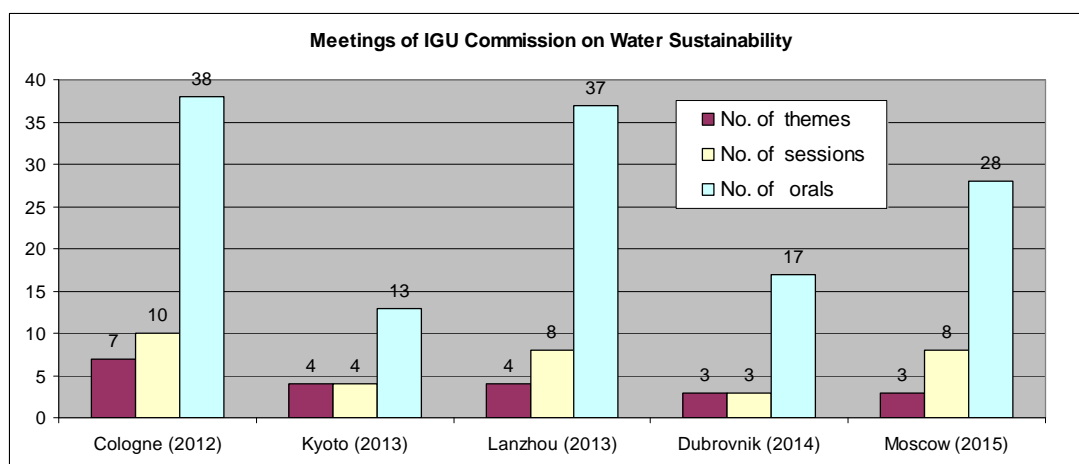
### B. Brief summary

The themes, no. of sessions and papers as well as highlights and new ideas/ theories are summarised in Tab. 3.

**Tab. 3:** Statistics on meetings of the Commission held from 2012 to 2016

Meeting (City, year)	No. of sessions	Themes, chairs, no of papers/session	No. of papers/posters	Field trip
<b>Cologne 2012</b>	10	1. GIS in water research (Hydro GIS) 2. Hydrological Process and Watershed Management in Arid Regions 3. Water and mining (Water pollution) 4. Water in urban environments 1+2 5. Climate change impacts on large scale areas 6. Climate change impacts on mesoscale regions 7. Water resources and management hydrological budget and hydraulic emergencies 1-3	38 oral papers accepted + x posters	none
<b>Kyoto 2013</b>	4	1. Water resources and climate change [Joint session with the Commission on Climatology] 2. Water pollution and water in urban environments 3. Groundwater management 4. Hydrological processes and watershed management	13 oral papers	Lake Biwa
<b>Lanzhou 2013</b>	8	1. Climate change and hydrological cycle 1-3 2. Landscape processes and patterns 1+2 3. Water resources management 4. Water and Ecosystem Services	37 (41) oral papers + 15 posters	Lake Qinghai, Hexi Corridor
<b>Dubrovnik 2014</b>	3	1. Human impacts on the hydrological cycle - threats to the sustainability 2. Climate change and water availability 3. GIS and cartography in hydrological research	17 oral papers	Ombra karst spring (planned underground HPP), Neretva Delta, city of Ston
<b>Moscow 2015</b>	8	1. Hydrological processes and management of stressed water resources 1-4, 2. Modelling, VGE and GIS applications in hydrological research 1+2 3. Water quality, health and human impacts 1+2,	28 oral papers, 5 posters	Central Moscow

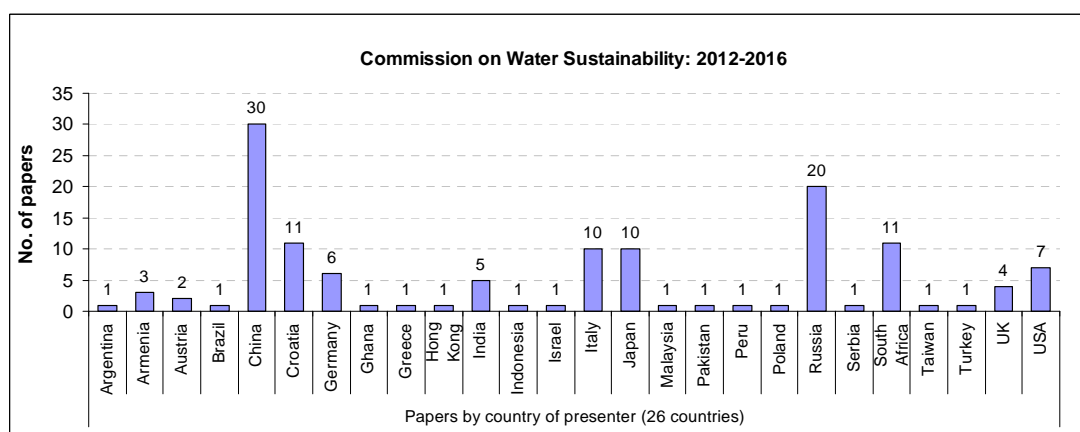
An overview on the statistics for the held meetings is provided in Fig. 2.



**Fig. 2:** No. of themes, sessions and oral papers presented at Commission meetings (2012-2015)

The number of themes covered ranged from a minimum of three (Dubrovnik and Moscow) to a maximum of seven in Cologne. While the 3 themes in Moscow may appear comparably little for a Regional IGU Conference it needs to be noted that a total of 8 sessions were allocated during which more an average of over 9 papers were presented on each theme. Cologne so far drew the highest number of papers, which was also due to the fact that no limit was imposed on the number of papers per person as was in Moscow (maximum 2 papers per presenter).

The geographical origin of speakers (i.e. not the study area covered in the paper) is depicted in Fig. 3.



**Fig. 3:** Total no. of oral papers per country of presenter given at the 5 meetings of the Commission during 2012 to 2015

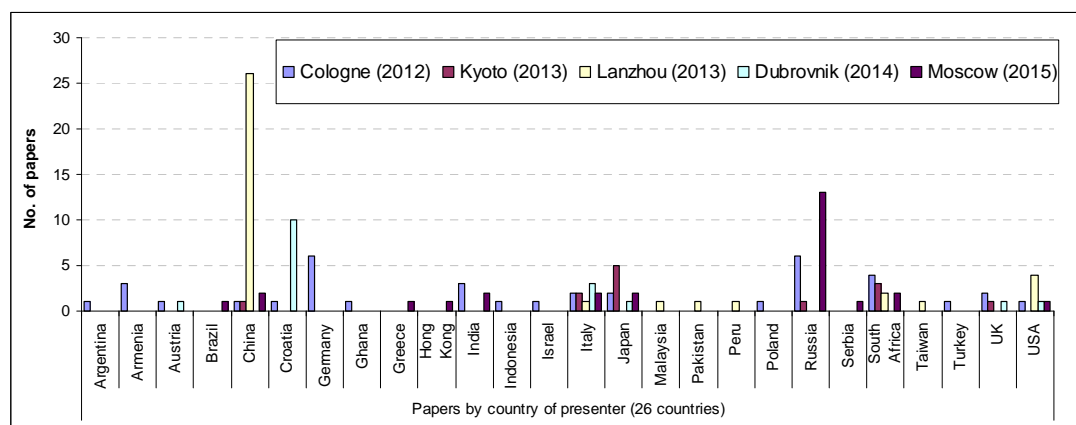
With a total of 26 countries the papers presented during the reporting period account for 81% of all countries represented on the Commission’s mailing list.

There are however significant differences between the number of papers per country ranging from one for a total of 14 countries to 30 for Chinese authors. The latter is followed by Russia (20 papers). Croatia (11) and South Africa (11).

The high numbers of paper from China, Russia and Croatia are mostly due to the fact that three of the Commission meetings were held in these countries (Lanzhou 2013, Dubrovnik 2014 and Moscow 2015 respectively) drawing a large contingent of local scientists.

In contrast, the elevated number of papers from SA, Italy and Japan are mainly due to the frequent attendance of longstanding members form these countries (Winde,

Cassardo, Mori and Oyagi. The fact that the majority of attendees comes from the host country is also illustrated in Fig. 4.



**Fig. 4:** No. of oral papers per country of presenter for each of the 5 meetings 2012 to 2015

The above diagram indicates the highest number of German presenters (6) for the Cologne Congress, the highest number of Chinese authors (27) for the Lanzhou meeting, the highest number presenters from Croatia (10) for Dubrovnik and the largest number of papers from Russian scientists for Moscow (14). Over the past 5 meetings, local participants accounted for an average of 46% of all papers ranging from 16% in Cologne to 70% in Lanzhou (Kyoto: 38%, Dubrovnik: 59% and Moscow: 46%). Acknowledging this fact the Commission now made a deliberate attempt when drafting the themes for Beijing 2016 to specifically accommodate water issues that are of local relevance to the host country. The relative dominance of local scientists at Commission meetings over the past five conferences also confirms long-term experiences of the Commission and appears to be largely related to affordability of access with costs for international travel posing significant challenges for many members from developing countries. In order to lower the obstacles for members to attend Commission meetings overseas we proposed to the LOC of the IGC in Beijing to explore the use of Skype or a similar technology for members to present from their home countries at a somewhat reduced conference fee.

Regarding the *geographical representativity of study areas* it appears that presenters from developing countries primarily focus on local problems in their respective nations while scientists from developed countries such as Germany, Japan, USA and Israel tend to report on water issues in developing nations (e.g. Pakistan, Namibia...) rather than on domestic topics.

Tab. 4 summarises the number of oral presentation per theme presented at the various meetings.

**Tab. 4:** No. of papers relating to general themes presented at the Commission meetings 2012-15

Theme	Conference					total	%
	Cologne 2012	Kyoto 2013	Lanzhou 2013	Dubrovnik 2014	Moscow 2015		
Water Management	4	4	4		15	27	23%
Water pollution: urban, mining, health	13	4		8	1	26	22%
Climate change impacts	7		9	4		20	17%
Water cycle + landscape processes			8	7		15	13%
Hydro GIS	3			3	6	12	10%
Hydraulic emergencies	12					12	10%
Groundwater		4			1	5	4%
Water Ecosystem Services			4			4	3%
<b>total</b>						<b>121</b>	

Owing to differing degree of generality between the individual themes (which are generated for the purpose of the report aiming to summarise somewhat differently phrased topics) the associated no. of papers are not directly comparable. There is, of course, also a degree of overlap between the categories. Keeping these uncertainties in mind it appears that *Water Management* in its broadest sense is a major focus followed by *Water Quality* issues (pollution, water issues in urban and mining areas) together accounting for nearly half of all papers (45%). A third focal point is on *Impacts of Climate Change* on water resources and *General Hydrological Processes* together accounting for 30%. Given the rather narrowly defined fields of *GIS* and *Hydraulic Emergencies* both are well represented with 10% each. Of lesser importance during the past 4 years were papers on *Groundwater* issues and *Ecoservices* of water. In order to broaden the spectrum and accommodate emerging themes we included the topic of Water and Energy in our proposed session for Beijing.

#### Highlights (+), shortcomings (-), trends, new ideas

##### ***Cologne (2012)***

+ For the first time in the Commissions history a dedicated session on Hydro-GIS and Water and Mining was introduced which both were instant successes. A presentation in the latter theme relating to Acid Mine Drainage in and around Johannesburg was extensively covered by a German online news media (<http://www.schattenblick.de/infopool/umwelt/report/umri0032.html> - in German).

+ The session on Hydrological extreme events – as the original theme of the Study Group was very well attended.

+ Efforts were made by Winde to also expose young scientists to international events by making personal research funds available for two of his students to attend the conference.

- As no member of the Commission was part of the LOC there was no dedicated field trip organised which often is a highlight of the meetings. However, there have been spontaneous social gatherings of Commission members including prof. Robinson (UK), a founding member who attended some of the sessions.

- Unfortunately there was no publications following from the meeting but a discussion was held with a representative from Springer on pros and cons of open access journals and the best way to publish conference proceedings

##### ***Kyoto (2013)***

+ Organised by founding member prof. K. Mori the members went on a field trip to Lake Biwa one of oldest lakes on earth with the associated Canal Museum and attended a memorable dinner at the banks of the Kamo River.

- Due to a shortage of suitable submissions the planned joint session with the Commission on Climatology did not play out as intended with only two papers presented from our Commission falling outside the original theme.

- It was also noticed that no abstract volume was available at the conference making it difficult to choose papers for attendance.

- With a relatively low attendance for an IGU event there was no subsequent publication of papers.



### ***Lanzhou (2013)***

+ The conference was jointly organised by the Commission and several institutes of Lanzhou University under the leadership of prof. Chansheng He who also managed to get the support of prominent members of the Chinese Academy of Science, among them the former President of the International Water Resource Association (IWRA), Prof. Jun Xia.

+ A field trip to Lake Qinghai as largest inland lake in China complemented the meeting. Located at an elevation of over 3.2 km on the Tibetan Plateau in the arid NW of the country the lake fluctuates in size and grew significantly since 2004, now covering some 4500 km<sup>2</sup> making it a true hydrological highlight.

+ Another field trip explored the geological landforms and oasis and desert ecosystems of the Hexi Corridor, Northwest China, including visits to the Mogao Grottoes in Dunhuang, a UNESCO World Heritage Site.

- Plans to publish conference papers in a supplement volume of an international journal had to be abandoned due to a shortage of suitable submissions in English

### ***Dubrovnik (2013)***

+ Organised just after the IGU Conference in Krakov (Poland), where the Commission has no member who could organise an associated event, the Commission met in Croatia a few days after the Conference in Poland.

+ The event was excellently organised by Dr. Ivan Canjevac with the support of the Department of Geography of the University of Zagreb and the Croatian Geographical Society.

+ Soliciting submissions from Commission members the organizers planned to compile a special issue of the Croatia Geographical Bulletin (Hrvatski Geografski Glasnik), a scopus-listed peer-reviewed journal, consisting of papers presented at Dubrovnik as well as other meetings of the Commission.

### ***Moscow (2015)***

+ Due to technical email problems of prof. Cassardo and resulting delays in communication with the LOC submission of session proposals from the Commission was rather late, yet still successful. As email problems of the Chair persisted the selection of submitted abstract was left entirely to the Vize Chair (prof. Winde) who had to review in excess of 50 abstracts. However, the allocation of papers went smoothly and sessions were generally well attended, with only one no show.

+ In addition to the sessions held by the Commission Prof. Frolova managed to organise a couple of related water themes on Lake Aral, Lake Baikal and Water Resources in Eurasia in the 21<sup>st</sup> century, which were well attended and facilitated networking with members of the Commission and a number of Russian water research institutes.

+ Soon after the meeting a call was sent out by Prof. Frolova to Commission members to submit papers for a Special Issue of Springer's *Advances in Geographical and Environmental Sciences* entitled: "Water and Environment in Eurasia in XXI century" jointly edited by Prof. RB Sing (Vize President IGU, India), Dr. D Karthe (Germany) and Prof. S Chalov (Russia).

### C. Planned meetings for 2016

The Commission proposed four sessions for the upcoming IGU Congress in Beijing (21-25 August 2016), which all have been approved by the LOC (Tab. 4).

**Tab. 4:** Themes, sub-themes, topics and responsible SC members of sessions proposed by the Commission for Beijing 2016

<b>Session</b>	<b><i>Sub-themes</i></b>	<b>Responsible SC member</b>
1. Water pollution and health impacts	<i>Pollution</i>	F Winde
	<i>Health impacts</i>	
2. Water availability between floods and droughts	<i>Hydrological extreme events</i>	N Frolova
	<i>Water scarcity</i>	C He
3. Water and Energy	<i>Water for Energy</i>	F Winde
	<i>Energy for Water</i>	
4. Water resources in Eurasia in the 21 <sup>st</sup> century		N Frolova/ C He

(i) As past experience suggests that the majority of submissions comes from local scientists we tried to design themes that correspond with reported water challenges in the host country China (e.g. water pollution and associated health effects; water scarcity, competing water uses etc.). At the same time we are keeping with the tradition to cover hydrological extreme events and continue the focus on Eurasia that drew very good attendance in Moscow 2015 and also relates to the host country.

(ii) While the theme on water and health was introduced earlier (Kyoto 2013), the Water – Energy nexus is a new theme for the Commission only covered from a policy angle before (Santiago 2011). Somewhat lacking a historic track record in this field it is uncertain how many submission this theme will draw. Yet, we believe that the interdependency between water and energy is of increasing importance for managing both increasingly stressed resources sustainably. In order to help build a reputation for the Commission in these new areas we encouraged members to approach identified leaders in the field with personal invitations to speak at the meeting. This approach differs somewhat from meetings in the past where sessions largely, and sometimes exclusively, reflected the research areas of those commission members that regularly attended meetings. We will have to wait and see whether the targeted invitations and host country-specific topics will indeed yield the expected results of attracting new and influential people that help raising the status and profile of the Commission.

(iii) Lastly, we proposed to the LOC of Beijing 2016 to consider allowing a certain percentage of papers to be presented via Skype or any other suitable technical means at a somewhat reduced registration fee. In that way members who cannot afford travel costs, often coming from countries where water challenges are most severe, would be able to attend meetings.

(iv) At this stage there are no other meetings planned for 2016.

## **3. Networking and communication**

### A. Collaboration within IGU

(i) Following an initiative of prof. Cassardo a joint session with the Commission on Climatology was held in Kyoto 2014 entitled: Water resources and climate change. Unfortunately, this initiative received little support as indicated earlier.

(ii) For the future it is planned to explore with which of the other Commissions we may have considerable overlap that would warrant a joint session to exploit synergies. Possible candidates may include:

- C12 (Geographical Information Systems),
- C19 (Environment and Health),
- C23 (Karst)
- C26 (Land use and land cover change)
- C 31: Modelling Geographical Systems: Modelling fluvial and hydrological processes
- C 41: Geomorphology and Society

## B. Collaboration outside IGU

### *(i) WMO Commission for Hydrology (2013)*

Facilitated by Dr Charlie Pilling, Chief Hydrometeorologist at the UK Met Office, and member of the Commission, in 2013, the Commission has established a link with the WMO Commission for Hydrology focusing on a) guidelines for selecting flood forecasting models for different purposes and under different boundary conditions; and b) benefits of numerical weather prediction for operational forecasting.

Following the retirement of prof. Cassardo from the Commission end of 2015 we will have to ensure that this link is retained. Given the rather narrow focus of the envisaged collaboration on numerical modeling and forecasting one should perhaps try to somewhat broaden the field of collaboration.

### *(ii) UNESCO – IHP (2013/14)*

End of 2013, the founding chair of the Commission prof. JAA Jones has been appointed Chief Assessor for Phase VII of UNESCO's International Hydrological Programme (IHP; 2008-2013). Together with SC Member of the Commission, prof. F Winde, the team compiled an assessment report for the Internal Oversight Office of UNESCO on the status of IHP based on an extensive review of documents (over 10000 pages were supplied to the both assessors), on-site interviews at the Paris Headquarters, electronic questionnaires and numerous skype meetings with IHP staff, collaborators and competitors worldwide. The report was successfully presented by prof. Jones to the General Assembly of UNESCO in June 2014 and, together with a complementing report from the World Bank on future funding (<http://unesdoc.unesco.org/images/0022/002280/228059E.pdf>).

### *(iii) WHO/IARC*

Since 2013 there is a collaborative research project between the Mine Water Research Group of prof. Winde (South Africa), then Vize Chair of the Commission, and the International Agency for Research on Cancer (IARC) of the World Health Organisation (WHO) to quantify the health burden possibly associated with the exposure to uranium polluted water and other media in gold mining areas of South Africa. While no direct link to the Commission is yet established the design of the study and preliminary results were reported at the Commission meetings.

### *(iv) Expo Milano 2015*

On initiative of prof. Cassardo efforts were made to link the Commission with the Expo 2015 on the topic 'Feeding the planet, energy for all' with a focus on agricultural water use. To facilitate this link the Prof. Cassardo proposed to nominate

prof. A. Leto (Italy) as member of the SC. While no decision of the SC is recorded on the official inclusion of prof. Leto he was later included in the list of the new SC published in the Newsletter No. 15 of January 2015. Ultimately, the Commission did not get involved in the scientific part of the Expo.

#### C. Cooperative efforts with ISSC/ ICSU programs

Generally there was little information provided forthcoming to Commission members about activities or programmes of ICSU.

Incidentally, prof. Winde was nominated in 2015 by Prof. U. Rugg (University of Geneva, Switzerland) Treasurer of the International Union of Basic and Clinical Pharmacology (IUPHAR), to serve at the Science Committee for Integrated Research on Disaster Risk (IRDR) of ICSU, ISSC and UNISDR. With a total of 97 nominations for only 5 positions the nomination was not successful.

#### D. Collaboration projects between Commission members

Supported by a competitive mobility grant by the University of Turin, Prof. Cassardo and Prof. Winde established an international student exchange project in the field of remote-sensing-based water modelling. The project was designed by Prof. Winde and conducted by Ms. Ines Cerenzia during a 3-months stay in South Africa. Preliminary results of the joint project were presented by Prof. Cassardo at the Kyoto and Moscow conferences.

#### **4. Publications**

##### A. Newsletters

Cassardo C, Winde F (2012): Commission Newsletter No. 14, December 2012, pp. 11

Cassardo C (2014): Commission Newsletter No. 15, November 2014, pp. 7

Cassardo C, Jones JAA, Winde F (2014): Commission Newsletter No. 16, January 2015, pp. 8

##### Annual Reports

Jones JAA (2012): Annual Report to IGU on Commission activities; Dec. 2012. pp. 8

Cassardo C, Winde F (2013): Annual Report to IGU on Commission activities, Dec. 2013. pp. 4

##### B. Special journal issues

Following the Dubrovnik meeting a special issues was envisaged to be published in the Croatia Geographical Bulletin (HRVATSKI GEOGRAFSKI GLASNIK) also accommodating papers presented at earlier meetings of the Commission. Due to a lack of suitable submission and delays a full special issues could not be compiled. Up until now two papers have passed the international peer review and been published with four more submissions still being processed.

Lawler DM, Wilkes, MA (2016): Towards Improved Fluvial Sediment Impact Assessment (FSIA) approaches within Environmental Impact Assessments, HRVATSKI GEOGRAFSKI GLASNIK 77/2, 7-31

Winde F (2016): Uranium pollution in South Africa: past research and future needs HRVATSKI GEOGRAFSKI GLASNIK 77/2, 33–53

Selected paper presented in Moscow 2015 will be published in a special issue of Springer's Advances in Geographical and Environmental Sciences titled Water and Environment in Eurasia in XXI century. The call for papers was circulated in November 2015.

##### C. Books

none

#### **5. Archival contributions**

I am not sure to what extent our newsletters have been submitted to IGU for archiving. If required copies in digital format are available on the website of the Commission.

#### **6. Continuation**

##### A. Name of Commission.

Commission for Water Sustainability

##### B. Mission of Commission

The Commission strives to provide a recognised platform for international scientific exchange of physical and human Geographers as well as scientists from other disciplinary backgrounds sharing insights, knowledge and data on water-

sustainability in its broadest sense. This includes natural and human impacts on the availability and quality of water and their implications for sustainable water use at local, regional and global scale. The Commission specifically encourages the dialogue between physical and human water sciences including economic, cultural, legal and medical aspects to arrive at a comprehensive understanding of natural and man-made factors governing water sustainability. A particular focus is on water-stressed areas worldwide encouraging a mutually beneficial collaboration between scientists from developing and developed nations.

### C. List of individuals for SC 2016-2020

*The below list is **preliminary** and has to be approved at the next meeting in Beijing (2016)*

#### **Chair:**

Prof. Frank Winde, South Africa (Chair: appointed 12/2015, SC since 2012)  
North-West University, Vaal Triangle Campus, Geography and Environmental Studies, PO Box 1174, Vanderbiljpark, 1900;  
[frank.winde@nwu.ac.za](mailto:frank.winde@nwu.ac.za), [frank.winde@gmail.com](mailto:frank.winde@gmail.com), Tel. +27 724059561, +49 17696001533, Skype: frank.winde

#### **Vize Chair:**

Prof. Natalia Frolova, Russia (SC since 2012)  
Lomonosov State University, Moscow, Department of Hydrology, Faculty of Geography, GSP-1, 119991, Leninskie Gory, MSU. Phone: +7 (495) 939-15-33 E-mail: [frolova\\_nl@mail.ru](mailto:frolova_nl@mail.ru), **Skype name**

#### **Members (in alphabetical order):**

Dr. Ivan Canjevac, Croatia (SC: 2013-, Website manager: 2012-)  
University of Zagreb, Faculty of Science, Department of Geography, Marulicev trg 19/II, 10000 Zagreb, Croatia,  
[canjevac@geog.pmf.hr](mailto:canjevac@geog.pmf.hr), Tel. 0038514895424, Fax 0038514895440, Skype name: naumovac

Prof. Chansheng He, USA (SC member since 2011),  
Western Michigan University. Wood Hall, Department of Geography, 3234 Wood Hall, Kalamazoo, MI 49008-5424. Phone: (269) 387-3425 Fax: (269) 387-3442 E-mail: [he@wmich.edu](mailto:he@wmich.edu), **Skype name**

Prof. Hideo Oyagi, Japan (SC: 2014-)  
Nihon University, Tokyo, Department of Geosystem Sciences, College of Humanities and Sciences, 25-40 Sakura-josui 3-chome, Setagaya, Tokyo 156-8550, [oyagi.hideo@nihon-u.ac.jp](mailto:oyagi.hideo@nihon-u.ac.jp), **Tel., Fax, Skype name**

Dr. Charlie Pilling, UK, (IC<sup>1</sup>)  
UK Meteorological Office

#### *Honorary members*

Prof. emer. JAA (Tony) Jones, Wales/ UK (founder, commission chair: 2002-2011)  
Institute of Geography and Earth Sciences, University of Wales, Aberystwyth. SY23 3DB, UK. Phone: +44(0)1970 622633 (sec)/622595 (direct) Fax: 44(0)1970 622659 E-mail: [tonyandjenjones@btinternet.com](mailto:tonyandjenjones@btinternet.com)

Prof. Olga E. Scarpati, Argentina (Secretary, SC since 2004)  
La Plata National University and Technical Research Council, Buenos Aires, Department of Geography, Serrano 669 (1414), Phone: +54-114-855-7199 Fax: +54-114-856-2751 E-mail: [olgascarpati@yahoo.com.ar](mailto:olgascarpati@yahoo.com.ar)

### D. Summary work plan 2016-2020

2016:

August: 33<sup>rd</sup> IGC in Beijing, hold sessions and business meeting ratifying changes in

---

<sup>1</sup> IC – added suggestion by Dr. Ivan Canjevac (IC)

SC, discuss aims, objectives and strategy for 2016-2020

December: Newsletter on activities in 2016 and plans for 2017, Annual Report to IGU 2017-2020:

Will be determined in strategy plan to be discussed in Beijing 2016

Matters of attention to be discussed in Beijing include:

**(I) Administrative issues:**

- Ratification of changes to SC
- Statutory regulations regarding SC membership
- Voting rights, decision making process within SC (*IC*)
- Criteria for appointment of SC members (*IC*)
- Revisit purpose, objectives and *modus operandi* of Commission
- Check web site visits over past period, suggest improvements
- Forwarding policy of IGU information

**(II) Allocation of tasks/ areas of responsibilities to SC members regarding:**

***A. Membership/ recruitment***

- target/ invite leading experts
- young scientists, UNESCO water chairs...
- colleagues from region and working in own field of expertise (*IC*)
- annual updating of mailing list (*IC*)
- monitoring of SC members activities

***B. Meetings***

- proposal of annual meetings, sessions, organising field trips,
- skype presentations as means to increase participation
- alternatives to costly physical meetings?
- documenting (notes, photos) and evaluating meetings
- identify new fields, invite leading scientists for keynotes
- liaise with local members to ensure high local attendance of sessions
- identify water topics of local relevance/ expertise

***C. Publications***

- regular newsletters, water research topics
- compilation of annual Commission reports,
- publication of conference proceedings

***D. Website/ public visibility***

- watch list for emerging water themes,
- pool of free publication downloads of member papers,
- links to trusted water websites (you tube) and national water monitoring programmes
- short profile of water research of each SC member
- facebook/ whats up accounts?
- use Commission logo

***D. Collaboration***

- *Within the Commission:*
  - joint projects,

- database on projects (incl. GE maps)
- sharing of funding opportunities/ project calls
- data sharing
- student exchange, co-supervision of students
- scientific visits, guest professorships...

→ *Outside of the Commission*

- establish/ maintain close links with international water bodies:
  - o ICSU, WMO, IWRA, IMWA, UNESCO-IHP, ICOLD...
- crowd sourcing of hydrological data



Frank Winde

Potchefstroom (South Africa), 26.2.2016