

2012-2016 IGU Cold Region Environment Commission Report

1. Membership of the Commission 'Cold Region Environments' for 2012-2016

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Introduction:

The Cold Region Environment Commission was created as a successor, in part, to the former Periglacial Commission.

Since its inception, it has grown in numbers and in interconnectedness, both within and beyond IGU.

2. Meetings:

a) Organization of International Workshops by Steering Committee Members:

International Workshop on 'Climate Change Impacts and Adaptation in Himalaya: Science and Policy Interface', on 2-3 November 2015 at Kumaun University, Nainital, Uttarakhand, India, supported by Indian Himalaya Climate Adaptation Programme of Swiss Agency for Development and Cooperation (SDC) (Synthesis and Recommendations Attached). Tiwari, P.

International Workshop on 'Climate Change Adaptation in Middle Himalaya' on 4 November 2015, at Kumaun University, Nainital, Uttarakhand, India, supported by Asia Pacific Network for Global Change research (APN). Tiwari, P.

International Studies Association (ISA). Conference Panel Proposal for meeting in Atlanta, GA. 2016. Submitted May 25, 2015. Accepted. Co-chairs: Nancy Doubleday and Dustin Garrick, Co-convenors. Title: Bridging Water Security, Peace Building and the Geopolitics of Transboundary Water Governance.

b) Organization of IGU Collaborations:

In every year from 2012 to 2016, the IGU CRE has held sessions at IGU regional Meetings and at IGU congresses. Our recent efforts include:

International Geographical Union (IGU) 2015. Moscow, Russia.

Title: "Cold Regions: Monitoring, Observing, Understanding "

Co-Chairs: Tatiana Vlasova - tatiana.vlsv@gmail.com (Russian Federation), Nancy Doubleday - doublen@mcmaster.ca (Canada), Marie-Jeanne Sarah Royer- mar71@aber.ac.uk (UK). We organized and hosted 30 oral presentations in 6 timeslots over 3 days of the conference. It was the largest

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session held by the Cold Region Environments Commission in the past 10 years. We thank sincerely the IGU LOC, the Russian Geographic Society and Tatiana Vlasova, IGU CRE Member and Co-chair.

International Geographical Union (IGU) Proposal in 2015 for meeting in 2016. Beijing, China. Accepted. Co-chairs: Nancy Doubleday (Canada), Tatiana Vlasova (Russia) Xiaoping Yang (China), Marie Jeanne Royer (UK)
Title: "The International Year of Global Understanding (IYGU) and the Cold Regions".

3. Networking and Communication:

During the 2015 year, the CRE Commission widened its cooperation with other organizations and IGU Commissions.

3.1. With IGU Commissions:

3.1.1. Cooperation with IGU Karst Commission (C12.23) Vlasova, T.

IGU Commission of Cold Region Environments (C12.06) came out as the expert of nomination "Lena Pillars Nature Park: minor modifications to the boundaries of World Heritage property". Nomination was inscribed at the List of World Natural Heritage (by the criteria VIII: "significant on-going processes", mainly, by the unique and outstanding value of cold karst) during the 39th UNESCO session in Bonn (26 June-10 July 2015).

3.1.2. Cooperation with IGU Hazards and Risk Commission. Joint session was organized during IGU Regional Conference Moscow 2015 17-21 August, Vlasova, T.

3.2. Implementation of International Multi-institutional Collaborative Projects with other organizations:

3.2.1. Cooperation of CRE with the International Arctic Science Committee (IASC)

Cold Region Environments Commission session at the IGU Regional Conference Moscow 2015 17-21 August sponsored by Social and Human Science Working Group of IASC.

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Support was provided for a special session on **“Resources, Quality of Life and Sustainable Development in the Arctic”** that was held in August 2015 at the International Geographical Union (IGU) Regional Conference in Moscow, Russia. The session featured papers that examined the connection between the use of natural resources and human wellbeing in the Arctic in the context of sustainable development in different regional and institutional contexts. Russia and the USA joint proposal: Andrey Petrov (USA) and Tatiana Vlasova (Russia)

3.2.2. International Conference on Permafrost (ICOP 2016) in Potsdam, Germany. Session: New frontiers in mountain permafrost research. 2016 (June). Trombotto, D.

3.2.3. Participation at the IPA Council Meeting. 2016 (June). Trombotto, D.

3.2.4. CliC Leadership Online Meeting on Permafrost May 24, 2016. Talk: Data and permafrost frontiers in South America. Trombotto, D.

3.2.5. 12th Meeting of the World Climate Research Programme (WCRP)'s Climate and Cryosphere (CliC) Project Scientific Steering Group hosted at the Center for Ice and Climate (CIC) of the University of Copenhagen, co-organized by the CliC International Project Office (IPO) and CIC, and co-sponsored by WCRP, CliC IPO, Norwegian Polar Institute (NPI), and CIC. Talk: South American Activities. 2016 (January-February). Trombotto, D.

3.2.6. Climate Adaptation Partnership Program Project Shimla (Indian Himalaya), India implemented by the Urban Climate Change Research Network (UCCRN) established by ICMA under City-Links, and Columbia University, USA. Tiwari, P.

3.2.7. India-UK Collaborative Project: Harnessing climate data and remote sensing products to promote community-led innovation in adaptive natural resource management for improved food security in the changing climate of the Kumaon Lesser Himalaya (KLH). India Lead Partner, Tiwari, P.

3.2.8. International Collaborative Project: Irrigation-hydropower Nexus in the Ganges Headwaters under International Research Programme on Water Land and Ecosystem (WLE) in Ganges Focal Region, of CGIAR (in collaboration with Arizona University, USA, International Centre for Integrated Mountain Development (ICIMOD), Nepal). Co Principal Investigator: Tiwari, P.

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Outreach and Educational Activities:

Lecture in Buenos Aires. First presentation about Geocryology, Ice and Rock Glaciers under the new law to protect glaciers and periglacial environment to the Argentine government through the Environment Ministry and Sustainable Development (Minister rabbi Sergio Bergman and his group). 2016 (January). Trombotto, D.

Knowledge transfer on cryospheric systems in the Andes to rural schools: "Mapu Mahuida", Bardas Blancas and Bernardo Houssay, Las Loicas. Talk: The Cryogenic Phenomena in the Science Fiction Literature. 2015 (August). Trombotto, D.

Permafrost Mentor in the PhD work of Víctor Hugo Soto Molina, Universidad Nacional Autónoma de México, UNAM. (Director of thesis: Dr. Hugo Delgado Granados). Trombotto, D.

Guest lecturer of the "excursion to the Andes of Mendoza for geographers of the University of Bonn, Germany under the direction of Prof. Lothar Schrott. 2015 (March). Trombotto, D.

Translating Large-Scale Climate Data into Stakeholder-relevant Information for Community-based Adaptation in the Kumaon Himalaya, International Workshop on 'Climate Change Impacts and Adaptation in Himalaya: Science and Policy Interface', Kumaun University, Nainital, 2-3 November 2015. Tiwari, P.

Climate Change and Food Security in Himalaya, International Workshop on 'Food and Nutrition Security in the Face of Changing Climate in the Himalaya' organized under 'Strategic Programme for International Research and Education' (SPIRE), Norway, Kathmandu, Nepal, 27-29 October 2015. Tiwari, P.

Integrating Disaster Risk Reduction and into Urban Climate Change Adaptation Governance in Developing World: Learning Experience from Ganges Flood Plains of India, Future Perfect: Cities at the Forefront of Change and Development, Centre for Local and Regional Governance, University of Philippines; Quezon City, Philippines, 7-9 October 2015. Tiwari, P.

Urban Growth under Climate Change in High Mountains: Assessment of Impact on Urban Water Security and Institutionalization of Community-led Adaptive Innovations for Policy Transformation in Himalaya, Future Perfect: Cities at the Forefront of Change and Development, Centre for Local and

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Regional Governance, University of Philippines; Quezon City, Philippines, 7-9 October 2015. Tiwari, P.

Integrated Trans-boundary Headwater Governance in Hindu Kush Himalaya Under Climate Change: A Coordinated Adaptation Framework for Water, Food and Energy Security in South Asia, UNESCO International Conference on 'Our Common Future under Climate Change' (CFCC), UNESCO, Paris, France, 7-10 July 2015. Tiwari, P.

Increasing Gender Inequalities while Attaining Millennium Development Goals (MDGs) in Marginalized Mountain Environment: Empirical Observations Underline Policy Transformation under Climate Change in Indian Himalaya, IPOPs (Individuals, Populations and Societies) International Conference, on 'Population Inequalities', Université Paris Ouest Nanterre la Défense, Paris, France, 2 - 3 July 2015. Tiwari, P.

Mainstreaming Climate Change Adaptation in Himalaya, Addressing the Fate of Himalayan Sourced Rivers in the Context of Climate Change, Australian National University(ANU), Canberra, Australia, 2-4 June 2015. Tiwari, P.

Climate Change Services for Adaptation to Climate Change in Himalaya, International Workshop on Identifying Climate Change Information Needs, jointly organized by School of Environmental Sciences, Jawaharlal Nehru University, New Delhi and Climate Service Centre, Hamburg, Germany at JNU on 8 - 10 April, 2015. Tiwari, P.

Women's Adaptive Innovations in Land and Water Management under Climate Change in Himalaya: An Illustration of Reducing Gender Gap in Subsistence Agricultural Economy in Marginalized Environment, GIGAR-CCAFS International Conference on 'Closing the Gender Gap in Farming' Paris, 19th March 2015

Climate Change and its Impacts on Food and Security in Himalaya: Responses and Adaptation, International Conference on Climate Change Innovation and Resilience for Sustainable Livelihood, 12-14 January 2015, Kathmandu, Nepal. Tiwari, P.

"Interdisciplinarity as Agency: its role in Nurturing Social Justice, Health, Peace and Sustainability." Keynote Address: Symposium Day, School of Environmental Sustainability (SES), Global Institute for Water Security, University of Saskatchewan, Saskatoon, Saskatchewan. March 27, 2015. Nancy C. Doubleday.

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Northwest Passage Cruise, operated by World Wide Quest, One Ocean and McMaster Alumni. Lectures included the changing Arctic, Arctic Peoples and history, landclaims and Arctic sustainability in the context of climate change. August 24 to September 5, 2015. Doubleday, N.

4. Publications:

Yudina, O., & Grimwood, B. S. R. (2015). Situating the wildlife spectacle: Ecofeminism, representation, and polar bear tourism. *Journal of Sustainable Tourism*. DOI: 10.1080/09669582.2015.1083996

Holmes, A., Grimwood, B. S. R., King, L., & the Lutsel K'e Dene First Nation. (resubmitted). An indigenized visitor code of ethics: A story of Denesoline self-determination for sustainable tourism. *Journal of Sustainable Tourism*.

Grimwood, B. S. R., King, L., Holmes, A., & the Lutsel K'e Dene First Nation. (in press). Decolonizing tourism mobilities?: Planning research within a First Nations community in northern Canada. In J. Rickly, M. Mostafanezhad, & K. Hannam (Eds.), *Tourism and leisure mobilities: Politics, work and play*. New York: Routledge.

Rapinski Michel, Payette Fanny, Sonnentag Oliver, Herrmann Thora M., Royer Marie-Jeanne S., Cuerrier Alain, Siegwart-Collier Laura, Hermanutz Luise, Guanish George (in preparation) Listening to Inuit and Naskapi peoples in the eastern Canadian Subarctic: combining local observations with gridded climate data. Submitted to: *Regional Environmental Change*

Royer Marie-Jeanne S., Herrmann Thora M., Sonnentag Oliver, Delusca Kénel, Fortier Daniel, Cuciurean Rick (2013) Linking Cree Hunters' and scientific observations of changing inland ice and meteorological conditions in the subarctic Eastern James Bay region, Canada. *Climatic Change* 119(3): 719-732, DOI: 10.1007/s10584-013-0773-9

Royer Marie-Jeanne S., Herrmann Thora M. (2013) Cree hunters' observations on resources in the landscape in the context of socio-environmental change in the Eastern James Bay. *Landscape Research* 38(4): 443-460, DOI: 10.1080/01426397.2012.722612

Herrmann Thora M., Royer Marie-Jeanne S., Cuciurean Rick (2012) Understanding subarctic wildlife in Eastern James Bay under changing climatic and socio-environmental conditions: bringing together Cree hunters' ecological knowledge and scientific observations. *Polar Geography* 35(3-4): 245-270, DOI: 10.1080/1088937x.2011.654356

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Royer Marie-Jeanne S. (2016) Climate, Environment and Cree observations: James Bay Territory, Canada, SpringerBriefs in Climate Studies, Springer International Publishing, Switzerland

Schlüchter, C. & J. Nietlispach, Guest Editors (2012): XVIII INQUA Congress, 21st – 27th July, 2011, Bern, Switzerland, Official Comptes Rendus and Volume of Abstracts. – Quaternary International, Vols. 279 – 280, 565 p. (Elsevier).

Akçar, N., Deline, P., Ivy-Ochs, S., Alfimov, V., Hajdas, I., Kunik, P.W., Christl, M. & C. Schlüchter (2012): The 1717 AD rock avalanche deposits in the Upper Ferret Valley (Italy): A dating approach with cosmogenic ^{10}Be . – Journal of Quaternary Science, vol. 27(4): 383-392.

Akçar, N., Ivy-Ochs, S., Claude, A., Tikhomirov, D., Kubik, P.W., Vockenhuber, Chr. & C. Schlüchter (2012): Dating Swiss Deckenschotter using cosmogenic ^{10}Be and ^{26}Al . – ENSI Erfahrungs- und Forschungsbericht 2012: 57-62, Brugg.

Akçar, N., Tikhomirov, D., Özkaymak, C., Alfimov, D., Ivy-Ochs, S., Sözbilir, H., Uzel, B. & C. Schlüchter (2012): ^{36}Cl Exposure Dating of Paleoearthquakes in the Eastern Mediterranean: First Results from Western Anatolian Extensional Province, Turkey. – Geol. Soc. America Bulletin, Nov. 2012, vol.124, no. 11-12, p. 1724-1735.

Di Nicola, L., Baroni, C., Strasky, S., Salvatore, M.C., Schlüchter, C., Akçar, N., Kubik, P.W. & R. Wieler (2012): Multiple cosmogenic nuclides document the stability of the East Antarctic ice Sheet in northern Victoria Land since the Late Miocene (5 – 7 Ma). – Quaternary Science Reviews 57(2012): 85-94.

Gnägi, Chr. & C. Schlüchter (2012): High-altitude erratics in the Bernese Alps (Switzerland). – Swiss Journal of Geosciences, vol. 105, No. 3: 401-415.

Lozza, H., Haller, R., Schmid, Chr., Keller, F. & C. Schlüchter (2012): Blockgletscher - Gigantische Tatzelwürmer. Schwerpunkt. – Cratschla, H.1 (2012): 4-11.

Lukas, S., Graf, A., Coray, S. & C. Schlüchter (2012): Genesis, stability and preservation potential of large lateral moraines of Alpine valley glaciers -

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towards a unifying theory based on Findelengletscher, Switzerland. - Quaternary Science Reviews 38(2012): 27-48.

Nicolussi, K. & C. Schlüchter (2012): The 8.2 ka event - Calendar-dated glacier response in the Alps. - Geology, September 2012, vol.40: 819-822.

Schimmelpfennig, I., Schaefer, J.M., Akçar, N., Ivy-Ochs, S., Finkel, R.C. & C. Schlüchter (2012): Holocene glacier culminations in the Western Alps and their hemispheric relevance. - Geology, October 2012, vol. 40: 891-894.

Schindelwig, I., Akçar, N., Kubik, P.W. & C. Schlüchter (2012): Lateglacial and early Holocene dynamics of adjacent valley glaciers in the Western Swiss Alps. - Journal of Quaternary Science (2012) vol. 27(1): 114-124.

Zahno, C., Gasser, M., Drescher-Schneider, R., Gasser, J. & C. Schlüchter (2012): Holzreste von spätglazialen Kiefern aus der tiefgründigen und tonreichen Permanenttrutschung „Spiegelberg“, Kanton Schwyz (Schweiz). - EuG - Quaternary Science Journal, vol. 61. No.1: 64-68.

Schlüchter, C., M. Clausen, F. Stadelmann & E. Kissling (2013): Tektonik. Das bewegte und gestapelte Gebirge. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 18-1.

Schlüchter, C., M. Clausen, Chr. Haemmig, A. Margreth, E. Pointner, B. Steiner, St. Strasky & H. Vetter (2013): Quellen. Natürliche Wasseraustritte im Gelände. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 30-31.

Schlüchter, C., D. Florineth, H. Vetter, M. Clausen, L. Inderbitzin, E. Pointner & M. Kocher (2013): Die letzte Vergletscherung. Das Ofenpassgebiet unter Eis. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 46-47.

Schlüchter, C., B.U. Müller, M. Rolli, V. Burki, D. Locher, R. Trachsel, L. Inderbitzin, & H. Vetter (2013): Der Lai da l'Ova Spin. Die höchsten bekannten Sedimentationsraten. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 180-181.

Schlüchter, C., D. Locher, L. Inderbitzin, B.U. Müller, M. Rolli, V. Burki, St. Müller & R. Trachsel (2013): Quecksilber. Alle spuren führen in die Val

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Brüna. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 206-207.

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Filli, F. & C. Schlüchter (2013): Die Ofenpässstrasse. 100-jähriger Konflikt zwischen Nutzung und Naturschutz. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 170-171.

Furrer, H., C. Schlüchter, L. Inderbitzin, E. Pointner, A. Margreth, D. Gaar und J. Frei (2013): Geologie und Erdgeschichte. Lithologisches und zeitliches Fundament des SNP. In: H. Haller, A. Eisenhut & R. Haller (Hrsg.): Atlas des Schweizerischen Nationalparks. Die ersten 100 Jahre. Nat.park-Forsch. Schweiz 99/1. Bern: Haupt-Verlag: 16-17.

Hippe, K., Kober, F., Wacker, L., Fahrni, S.M., Ivy-Ochs, S., Akçar, N., Schlüchter, C. & R. Wieler (2013): An update on cosmogenic in situ ^{14}C analysis at ETH Zürich. – Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms, vol. 294(2013): 81-86.

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- SSAF-Eigenverlag, (Zürich).

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Zimmermann, St., Furrer, H., Stoffel, M. & C. Schlüchter (2014): Das Gesicht der Erde.
- In: Baur, B. & Th. Scheurer (Red.) (2014): Wissen schaffen. 100 Jahre Forschung im Schweizerischen Nationalpark. Nationalpark-Forschung in der Schweiz 100/1: 115-14.
- Haupt Verlag Bern.

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6. Continuation:

Members of the CRE Steering Committee have taken very seriously the need for renewal and continuation of the Commission, and devoted much of the Business Meeting to this topic during IGC 2015 in Moscow. Members have since been canvassed 3 times (August 2015, May 2016, and August 2015).

The consensus is for continuation.

Active proposals for changes to CRE include:

1) a proposal to add alternate steering committee members;

2) a proposal to change the name of the Cold Region Environment Commission to "Cold and High Altitude Region Systems" (CHARS), or alternatively, "Cold Geographical Systems" (CGS);

and

3) a proposed revision of the mandate of a renewed commission, to the effect that:

The new Commission will contribute to the realization of the goals of the International Geographical Union by:

- 1) enhancing, supporting and encouraging inter- and trans-disciplinarity in the study of cold social-ecological systems through geographical research in polar, mountain and ocean regions;
- 2) producing and disseminating new knowledge, and developing new frameworks for analysis, synthesis and innovation at cross-cutting scales from local to global; and
- 3) contributing to international cooperation, governance and adaptation for greater sustainability by developing more effective and creative scenarios for the future, in response to emerging threats such as climate change affecting sustainability.

We propose a final decision on these three proposals be taken at IGC 2016 in Beijing, in consultation with the IGU Executive, and included in the proposal to the IGU General Assembly in Beijing, for continuation of the

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work of this Commission, with the participation of all eligible committee members.

Current CRE Steering Committee Members who have served less than 12 years include: Gunther Ghysels, Marie-Jeanne Royer; Prakash Tiwari; Wieslaw Ziaja; and Christian Schluchter.

All other CRE Steering Committee Members have served since 2004.

It is proposed that a new Steering Committee be struck, to include: Marie-Jeanne Royer; Prakash Tiwari; Wieslaw Ziaja; and Christian Schluchter.

It is further proposed that all eligible and willing current Steering Committee Members continue as Members of CRE, under the leadership of Tatiana Vlasova, as Chair.

Thank you for this consideration of our report.