The Permafrost Young Researchers Network (PYRN) is getting older – the past, present, and future of our evolving community

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Abstract

A lasting legacy of the International Polar Year (IPY) 2007-2008 was the formation of the Permafrost Young Researchers Network (PYRN), initially an IPY outreach and education activity by the International Permafrost Association (IPA). With the momentum of IPY, PYRN developed into a thriving network that still connects young permafrost scientists, engineers, and researchers from other disciplines. This research note summarizes (i) PYRN's development since 2005 and the IPY's role, (ii) the first 2015 PYRN census and survey results, and (iii) PYRN's future plans to improve international and interdisciplinary exchange between young researchers. The review concludes that PYRN is an established network within the polar research community that has continually developed since 2005. PYRN's successful activities were largely fostered by IPY. With >200 of the 1,200 registered members active and engaged, PYRN is capitalizing on the availability of social media tools and rising to meet environmental challenges as it maintains it role as a successful network honoring the legacy of IPY.

1. Introduction

The International Polar Year (IPY) prompted the need for visible representation of the young permafrost research community (Krupnik et al., 2011). From the onset, IPY emphasized the development of the next generation of polar scientists. This translated into a record involvement of young scientists in IPY projects. A rough estimation by IPY organizers showed that the entire IPY endeavor involved a greater number of younger than senior researchers (Baeseman, Xavier, Lantuit, & Taylor, 2011). In anticipation of IPY, the Permafrost Young Researchers Network (PYRN) was established in November 2005 at the 2nd International Conference on Arctic Research Planning (ICARP) as an IPY education and outreach activity of the International Permafrost Association (IPA) and to represent young permafrost researchers within the IPY Youth Steering Committee. At the time, the Youth Steering Committee was the overarching program for youth and early-career activities within the IPY framework. PYRN was focused on young permafrost researchers (i.e., scientists and engineers), but was integrated into the overall IPY early-career networking effort from the beginning.

Since PYRN's initiation in 2005, its membership, visibility, and activities have steadily increased to 1,200 members at its 10th anniversary in 2015. PYRN reports regularly to the polar research community through a news bulletin, website, and social media. PYRN represents permafrost science and engineering within broader international and regional young researcher assemblies, such as the Association of Polar Early Career Scientists (APECS).

PYRN's strength is its interdisciplinarity and presence in virtually all regions of the world. PYRN members are interested in the frozen ground regions of the Earth, including alpine, submarine, and polar latitudes. In the Northern Hemisphere alone, 23 million km^2 of the landmass is characterized by permafrost (Romanovsky, Smith, & Christiansen, 2010; Zhang et al., 2008); this vast region

with an area almost twice the size of Antarctica is impacted by climate change, which fundamentally affects environmental and socio-economic systems (Hope & Schaefer, 2016; Intergovernmental Panel on Climate Change (IPCC), 2013). With its global presence, PYRN can mobilize members across borders and disciplines to tackle these issues in a progressive and innovative manner.

This research note aims to illustrate that IPY momentum has promoted and sustained this network for a decade, in turn facilitating intercultural and interdisciplinary exchange, reflecting the original charge of IPY. The objectives are (i) to review PYRN development since IPY, (ii) to present the first membership survey conducted since IPY, and (iii) to set a vision for PYRN as a crucial part of the modern polar research community.

2. The development of PYRN

PYRN has continuously evolved since its establishment at the 2nd ICARP 2005 and IPY 2007-2008. In 2006, it already had 250 members from 20 countries (Lantuit, 2006). During IPY, registrations rapidly increased, with 620 members by the end of IPY in 2008 (Lantuit, 2007). PYRN largely benefited from IPY momentum; its membership expanded to 1,200 by 2015 (Tanski, Lenz, Radosavljevic, Strauss, 2015). Since 2005 there have been seven executive committees; each coordinated the network. PYRN's evolution and its main milestones are synthesized in Table 1. All major activities and events since 2005 are listed in Supporting Material (SM) Table S1 and include the PYRN young researcher assemblies, workshops, and awards during the international and regional conferences on permafrost, which were a focus task of each governing period. More detailed information on individual time periods and young researcher activities during permafrost conferences is accessible in IPA's news bulletin *Frozen Ground* (https://ipa.arcticportal.org/publications/frozen-ground) and on PYRN's website (https://pyrn.arcticportal.org/).

The initial years (2005-2010) of PYRN focused on network development with an internal structure consisting of an executive committee and national representatives, an online presence, a monthly newsletter, and a thesis bibliography. PYRN's official kick-off meeting was held 2007 in Sweden (Fig. S1). PYRN meetings during IPY set the stage for numerous 'IPA-IPY-PYRN' activities (Lantuit, 2007; Baeseman et al., 2011), with one of the major initiative included the PYRN Thermal State of Permafrost project (Christiansen, Prick, & Lantuit, 2007; Christiansen et al., 2010).

In the next period (2010-2012) PYRN's mission and objectives were refocused and internal organization restructured, following the initial successful IPY years. PYRN was adapted to create sustainability and to proceed from the "one-off" momentum provided by IPY. A memorandum of understanding between PYRN, IPA and APECS, was establishing PYRN as the primary organization for coordinating young permafrost researchers. Emphasis was placed on creating a more inclusive, team-orientated approach to governing the PYRN network.

In the following period (2012-2014) PYRN's activities intensified fostered by new motivation gained from the 10th International Conference on Permafrost in Russia 2012 and the memorandum of understanding with APECS. A major outcome of this period was a strategy paper about future avenues for permafrost science from the perspective of early-career researchers (Fritz et al., 2015), which was formulated collaboratively with IPA as a contribution to the 3rd ICARP in 2015.

The next period (2014-2016) was characterized by network professionalization. A four-year agenda and long-term strategy were developed to enhance network visibility, transparency, and cooperation with IPA. Various strategic initiatives were achieved, including a major member list update. This membership overhaul revealed that East Asian colleagues were strongly underrepresented within PYRN. Outreach activities were therefore specifically designed to better engage permafrost researchers in Korea, Japan, and China. PYRN improved its overall online outreach by better utilizing its website and social networks, in particular increasing its Facebook following, which rose from almost zero in June 2014 to >600 in June 2016. The period culminated in the largest gathering of PYRN members so far at the 11th International Conference on Permafrost in Germany 2016 (see SM Fig. S2).

Recent activities (2016-2018) have focused on strengthening national PYRN representation and establishing an improved social media presence. The Facebook following increased to >800 people. A major outreach effort was devised; the 'Frozen-Ground Cartoons' project (see Bouchard et al., under review); an international, interdisciplinary scientific outreach initiative aims at making permafrost science accessible and fun for the public (Nääs et al., 2017).

Table 1. PYRN milestones since its establishment in 2005.

Milestone	**Year**
Establishment of PYRN at the 2nd ICARP in Copenhagen, Denmark	2005
First anniversary with 250 registered members	**2006**
PYRN officially represents the IPA at the IPY opening in Paris, France	2007
Kick-off meeting in Abisko, Sweden and first PYRN mandate	2007
Fifth anniversary with > 600 registered members	**2010**
Memorandum of Understanding between PYRN, APECS, and the IPA	2012
Permafrost Research Priorities from a young-researcher's perspective report	2015
Long-term strategy submission and independent IPA budget	2015
Tenth anniversary with 1,200 registered members	**2015**
First PYRN census and membership survey	2015
Liaison with the Global Terrestrial Network for Permafrost	2016
Update and relaunch of website	2016
Latest PYRN assembly at the 5th European Conference on Permafrost in Chamonix, France	2018

3. PYRN's international structure and regional branches

Since its founding, PYRN has changed its executive structure to adapt to evolving member needs. The first executive committees (2005-2012) consisted of two-three members, each with multiple tasks. The executive committees since 2012 have consisted of 12 members with more specified tasks. Currently PYRN is led by an executive committee, supported by a Council and several national representatives (Fig. 1). The executive committee directs PYRN's activities. The Council is an advisory panel and provides PYRN member feedback to the executive committee. National representatives are regular PYRN members representing a specific country and are part of the Council. PYRN implemented a Constitution and Bylaws in 2012, which were first drafted in 2007.

PYRN hosts independently operating national branches; the most active are PYRN Russia, PYRN D-A-CH (Germany, Austria, and Switzerland), and PYRN NA (North America; USA and Canada). PYRN Russia (http://vk.com/pyrn_russia) is the oldest branch. Its goal is to improve the qualifications of young permafrost researchers in Russia, secure funding, and provide solutions to language-barrier problems (Kraev et al., 2013). PYRN D-A-CH's main aim is to bring polar and alpine permafrost communities in German-speaking countries closer together. It has gathered annually since 2009. PYRN NA was launched simultaneously in Canada and the USA in 2017. Its main objective is to improve networking of young permafrost researchers based in Canada and the USA.

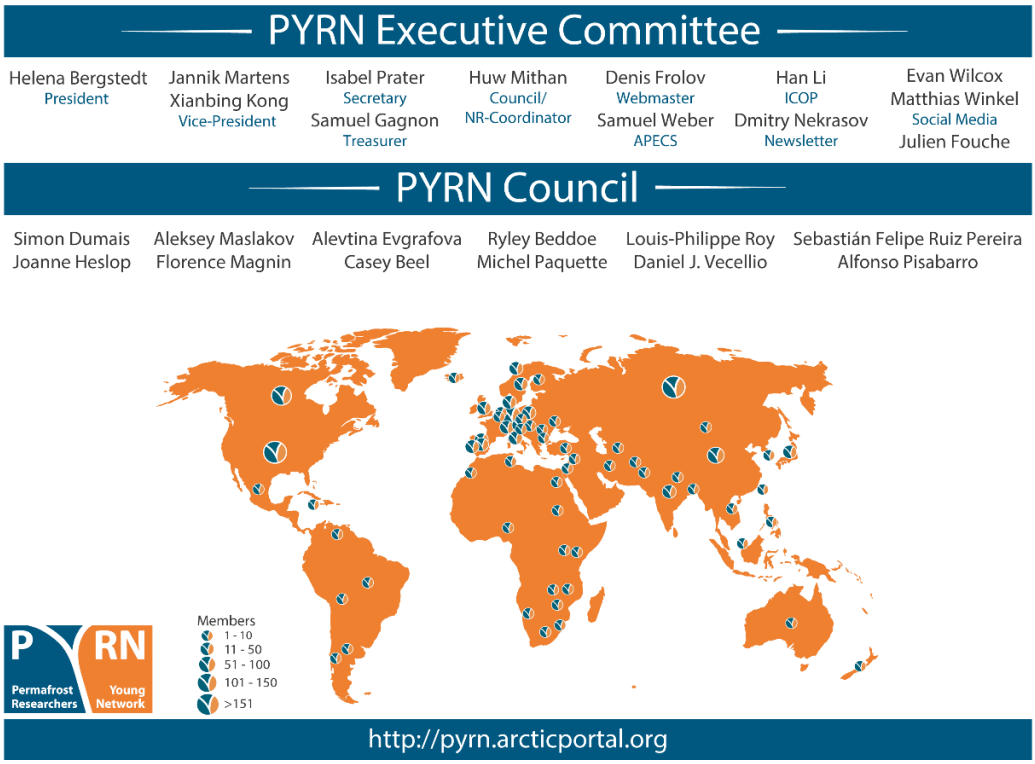

Figure 1. Organogram displaying the latest organizational structure of PYRN (2018-2020).

4. PYRN's first 2015 census and member survey

The 2015 census reviewed the PYRN membership according to PYRN's definition of a young researcher (https://pyrn.arcticportal.org/about-us/constitution-bylaws) to improve performance and networking capabilities. The objectives were to learn how many PYRN members were active (i.e., receiving information and responding), their locations, and their research topics. The census was sent to registered members and to various media channels (e.g., Cryolist and Facebook). The survey was conducted with support from the United States Permafrost Association, APECS and IPA.

In total, 200 members completed the survey (via Google Forms online) in 2015; 79 women and 121 men represented 26 countries (see SM Figs. S3, S4, and S5). Most participants were young (mean = 30 years; Fig. S3). Most were from academia with a master's degree, followed by PhDs and undergraduates (Fig. S3). Of the 1,200 officially registered members, many may not meet the requirement of 'young researcher' anymore, and others are inactive. However, the survey gives a sample of the active PYRN members on which the network relies, and this number roughly matches the ~280 young researchers that gathered at the 11th International Conference on Permafrost (see SM Fig. S2). The survey revealed that to PYRN members, information on funding, workshops, and meetings is most important. Less important are social media, literature access, pictures and videos, or education and outreach. A summary of questions can be found in SM Table S2.

5. Future plans and visions: The IPY legacy

PYRN has improved its impact by constantly engaging with members and partners. Social media and Facebook use improved network visibility with >800 followers in 2018. The PYRN survey helped to consolidate members and improve network communication efforts as part of a long-term strategy supported by the IPA. Survey outcomes guided PYRN's plans. In response to survey results, PYRN will enhance (or enhanced already) its online media presence through outlets (e.g., YouTube, Instagram, and Facebook) that have been under development since 2014. Although PYRN members indicated that social media is not a development priority and that information on funding and positions should be the network focus, social media is nonetheless an effective mechanism to disseminate information, and offers opportunities to reach out beyond PYRN membership and to attract popular interest in permafrost.

In the future PYRN plans to establish branches (PYRN Europe or PYRN Northern Europe), to facilitate efforts and promote regional gatherings; following a survey recommendation. Improved interactions with Asian members are a priority; PYRN seeks to capitalize on the upcoming 12th International Conference on Permafrost in China to establish a PYRN Asia or East Asia branch.

PYRN has created a strong, networked community committed to permafrost research who remain connected to PYRN after their departure from the organization. Former mentor members take part in PYRN workshops, informally comment on and are involved in PYRN social media activities, and become involved in large research projects. This community has articulated a strong vision for permafrost research (Fritz et al., 2015) and has proposed future collaborative avenues for early career and senior scientists. Ultimately, a PYRN Alumni Network is envisioned to give a forum to PYRN members from all generations, many of whom connected as young researchers during IPY 2007-2009. However, this project remains in its infancy.

Conclusions

PYRN has evolved since its 2005 establishment, and is a strong, effective network within the polar research community today. This development was catalyzed by the original IPY project, which helped PYRN membership grow and promoted exchange with other polar research networks. An important IPY 2007-2009 legacy is the successful incorporation of a young, emerging international community of researchers into PYRN, to promote young permafrost researchers in their early-career stages. PYRN today (data from 2015) is a self-governing body supported by the IPA, relying on ~200 active members who are mostly responsible for the network's success. Many first-generation PYRN members that became senior researchers remain affiliated with PYRN and pass on the IPY legacy to the new generation. In the future, PYRN will strive to maintain its role. Regional PYRN branches will foster stronger independent support of young researchers in specific regions. New technological developments and media tools will help PYRN improve outreach and education projects, emphasizing the importance of permafrost in the Earth system and for society.

Acknowledgements

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Conflict of interest

None.

References

Baeseman, J., Xavier, J., Lantuit, H., & Taylor, A. (2011). Early career researchers activities during IPY. In I. Krupnik, I. Allison, R. Bell, P. Cutler, D. Hik, D., J. López-Martínez, …, & C. Summerhayes, (Eds.), *Understanding Earth's Polar Challenges: International Polar Year 2007-2008. Summary by the IPY Joint Committee.* Rovaniemi: University of the Arctic and ICSU/WMO Joint Committee for International Polar Year 2007-2008.

Bouchard, F., Sansoulet, J., Fritz, M., Malenfant-Lepage, J., Nieuwendam, A., Paquette, M., … & Harbor, J. (under review). "Frozen-Ground Cartoons": Permafrost comics as a powerful tool for polar outreach, education, and engagement. *Polar Record*.

Christiansen, H.H., Etzelmüller, B., Isaksen, K., Juliussen, H., Farbrot, H., Humlum, O., … & Ødegård, R. (2010). The thermal state of permafrost in the nordic area during the international polar year 2007–2009. *Permafrost and Periglacial Processes*, 21, 156-181. doi: 10.1002/ppp.687.

Christiansen, H.H., Prick, A., & Lantuit, H. (2007). Report from the International Permafrost Association: Education and outreach for the International Polar Year. *Permafrost and Periglacial Processes*, 18, 209-213. doi: 10.1002/ppp.590.

Fritz, M., Deshpande, B., Bouchard, F., Högström, E., Lepage, J., Morgenstern, A., … & Weege, S. (2015). Brief Communication: Future avenues for permafrost science from the perspective of early career researchers. *The Cryosphere*, 9, 1715-1720. doi: 10.5194/tc-9-1715-2015.

Hope, C., & Schaefer, K. (2016). Economic impacts of carbon dioxide and methane released from thawing permafrost. *Nature Climate Change*, 6, 56-59. doi: 10.1038/nclimate2807.

IPCC (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge (UK) and New York (USA): Cambridge University Press.

Kraev, G.N., Stanilovskaya, Y.V., Belova, N.G., Lupachev, A.V., Shmelev, D.G., Maslakov, A.A., ... & Frolov, D.M. (2013). Permafrost Young Researchers Network of Russia. *Earth's Cryosphere*, 17(3), 108-112. https://sciencernr.wordpress.com/2017/04/19/ (in Russian).

Krupnik, I., Allison, I., Bell, R., Cutler, P., Hik, D., López-Martínez, J., … & Summerhayes, C. (Eds.) (2011). *Understanding Earth's Polar Challenges: International Polar Year 2007-2008. Summary by the IPY Joint Committee.* Rovaniemi: University of the Arctic and ICSU/WMO Joint Committee for International Polar Year 2007-2008.

Lantuit, H. (2006). The Permafrost Young Researchers Network (PYRN). In: *Frozen Ground - The news bulletin of the International Permafrost Association (IPA)*, 30, 60 https://ipa.arcticportal.org/publications/frozen-ground.

Lantuit, H. (2007). PYRN news. In: *Frozen Ground – The news bulletin of the International Permafrost Association (IPA)*, 31, 52. https://ipa.arcticportal.org/publications/frozen-ground.

Nääs, H., Ross, N., Bouchard, F., Deshpande, B., Fritz, M., Malenfant-Lepage, J., … & Habeck, J. O. (2017). Frozen-Ground Cartoons: An international collaboration between artists and permafrost scientists. Potsdam: Bibliothek Wissenschaftspark Albert Einstein, 27 p. doi: 10.2312/GFZ.LIS.2017.001.

Romanovsky, V.E., Smith, S.L., & Christiansen, H.H. (2010). Permafrost thermal state in the polar Northern Hemisphere during the international polar year 2007-2009: a synthesis. *Permafrost and Periglacial Processes*, 21, 106-116. doi: 10.1002/ppp.689.

Tanski, G., Lenz, J., Radosavljevic, B., & Strauss, J. (2015). PYRN Report. In: *Frozen Ground – The news bulletin of the International Permafrost Association (IPA)*, 39, 12 https://ipa.arcticportal.org/publications/frozen-ground.

Zhang, T., Barry, R.G., Knowles, K., Heginbottom, J.A., & Brown, J. (2008). Statistics and characteristics of permafrost and ground-ice distribution in the Northern Hemisphere. *Polar Geography*, 31, 47-68. doi: 10.1080/10889370802175895.

Supporting material

Figure S1. The National Representatives that participated at the Permafrost Young Researchers Network Kick-off meeting in Abisko, Sweden from 22-24 February 2007. From left to right: Tim Haltigin (Canada), Hugues Lantuit (Germany), Håvard Juliussen (Norway), Andrew Balser (USA), Margareta Johansson (Sweden), Etienne Cossart (France), Cecile Menard (UK), Michael Avian (Austria), Raquel Melo (Portugal), Pablo Wainstein (Canada), and Tetsuo Sueyoshi (Japan).

Figure S2. Larges recent PYRN gathering with approximately 280 people at the 11th International Conference on Permafrost (ICOP 2016) in Potsdam, Germany from 22-24 June 2016 (photo credit: Jan Pauls).

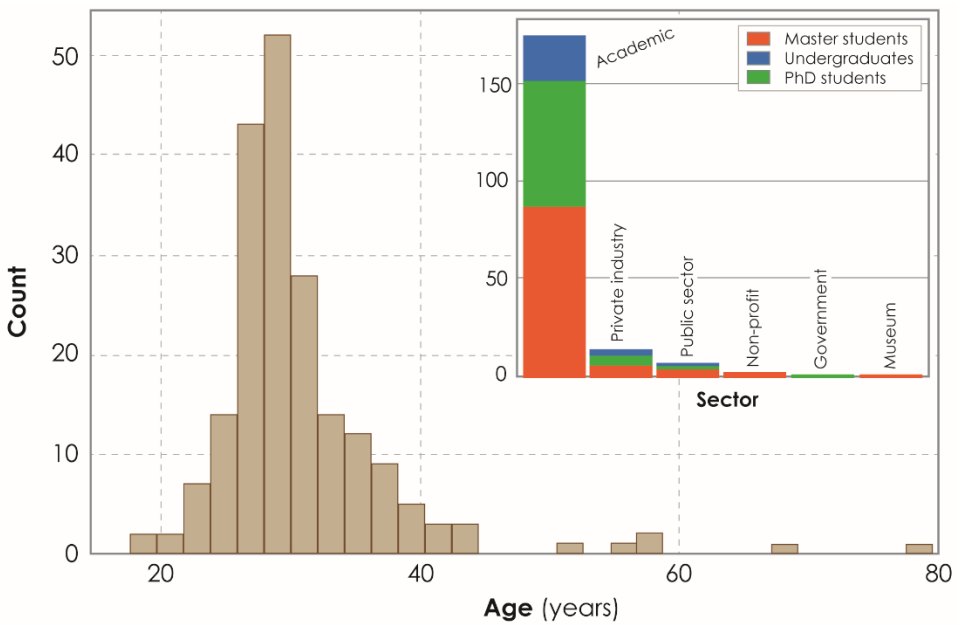

Figure S3. Bar-chart showing the distribution of PYRN members by age, and stacked bar-chart showing the distribution of PYRN members by work sector and highest degree completed (n = 200). The charts only show PYRN members that participated in the online survey.

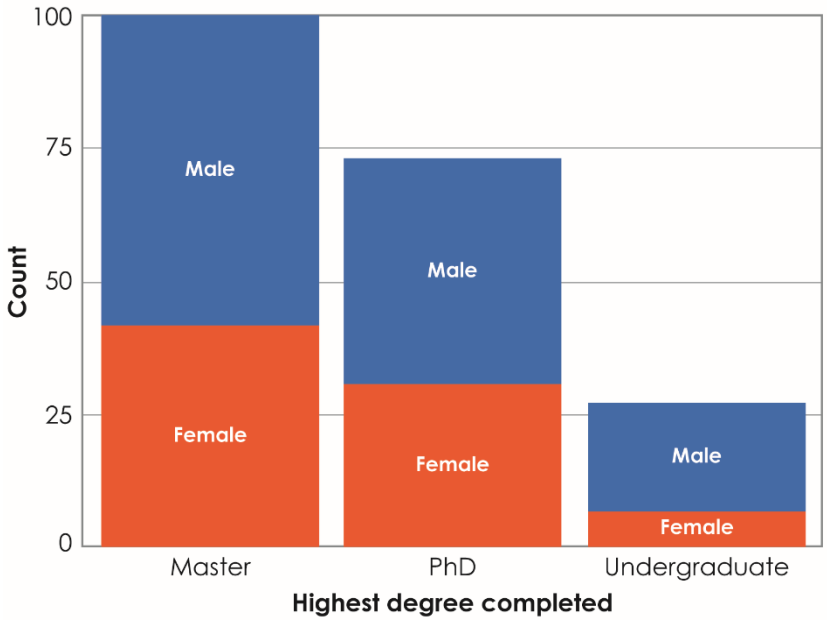

Figure S4. Stacked bar-chart showing the distribution of PYRN members by gender and highest degree completed (n = 200). The chart only shows PYRN members that participated in the online survey.

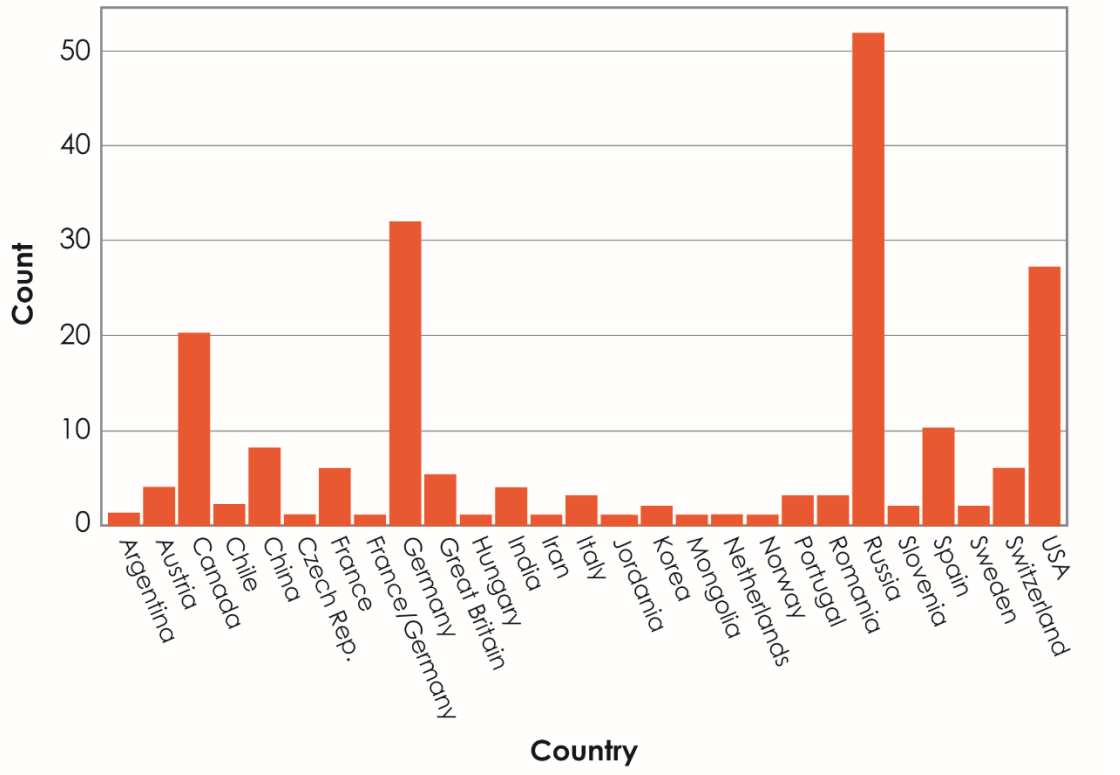

Figure S5. Bar-chart showing the distribution of PYRN members by country (n = 200). The chart only shows PYRN members that participated in the online survey.

Table S1. Summary of the major activities and events that PYRN co-organized since 2005; see note below the table for list of co-organizing or supporting partners and Table S3 for the definition of acronyms.

Activity / Event	Date and Year
Establishment of PYRN at ICARP II in Copenhagen, Denmark	10-12 November 2005
First PYRN awards at the 1st ACOP in Lanzhou, China	7-16 August 2006
PYRN Kick-off meeting in Abisko, Sweden	22-24 February 2007
OSL-APECS-PYRN workshop in St. Petersburg, Russia	29 November - 2 December 2007
Launch of PYRN-TSP project	2007 and following years
PYRN awards and side events at NICOP 2008 in Fairbanks, Alaska	28 June-3 July 2008
USPA-PYRN awards at AGU 2008 in San Francisco, USA	15-19 December 2008
PYRN social event at EGU 2009 in Vienna, Austria	19-24 April 2009
USPA-PYRN awards and forum at AGU 2009 in San Francisco, USA	14-18 December 2009
APECS-PYRN Workshop at AGU 2010 in San Franscisco, USA	13-17 December 2010
PYRN workshop and awards at TICOP in Salekhard, Russia	25-29 June 2012
IPA-PYRN TICOP summer school, Polar Ural Mountains, Russia	June / July 2012
PYRN awards at the IV Iberian conference of IPA in Vall de Núria, Spain	25-27 July 2013
Third forum for young permafrost scientists in Yakutsk, Russia	24-27 June 2013
PYRN-APECS workshops at EGU 2014 in Vienna, Austria	27 April - 2 May 2014
PYRN workshop, awards, and side events at EUCOP4 in Évora, Portugal	18-21 June 2014
PYRN-APECS-ASA social events at Arctic Change in Ottawa, Canada	8-12 December 2014
PYRN workshop / course at EGU 2015 in Vienna, Austria	12-17 April 2015
APECS-PYRN panel discussion at the IGU 2015 in Moscow, Russia	17-21 August 2015
PYRN awards at GeoQuébec 2015 in Québec City, Canada	20-23 September 2015
ASA-PYRN events at ArcticNet 2015 in Vancouver, Canada	7-11 December 2015
USPA-PYRN social event at AGU 2015 in San Francisco, USA	14-18 December 2015

Note. Events and meetings were co-organized or supported by the following partners: IPA, ASA, USPA, PEI, CliC, IASC, GTN-P, Russian Academy of Sciences, Permafrost working group of the *Deutsche Gesellschaft für Polarforschung*, the Bolin Centre for Climate Research, and various large research projects such as the Horizon 2020 project Nunataryuk.

Table S1 (continued).

Activity / Event	Date and Year
PYRN workshop and awards at ICOP 2016 in Potsdam, Germany	20-24 June 2016
PYRN Russia workshop on Yamal Crater studies in Moscow, Russia	16 December 2016
PYRN D-A-CH at the 9th Permafrost meeting in Einsiedeln, Switzerland	9-11 February 2017
PYRN workshop / course and social event at EGU 2017 in Vienna, Austria	8-13 April 2017
Students in Polar and Alpine Research Conference 2017 in Brno, Czech Rep.	20-22 April 2017
PYRN event at Earth's Cryosphere Conference in Pushchino, Russia	4-8 June 2017
PYRN workshop at VI *Congreso Ibérico de la International* in Mieres, Spain	21-23 June 2017
PYRN awards and social events at ACOP 2017 in Sapporo, Japan	2-6 July 2017
PYRN Discussion Panel at AGU 2017 in New Orleans, USA	11-15 December 2017
PYRN Discussion Panel at OCSNRS 2018 in Sherbrooke, Canada	15 February 2018
PYRN Discussion Panel at CEN Colloque 2018 in Sherbrooke, Canada	15-16 February 2018
PYRN workshop, awards and side events at EUCOP5 in Chamonix, France	23 June - 1 July 2018

Table S2. Summary of answers from the PYRN membership survey in 2015. Answers (n = 200) refer to mean index values ranging from 1 to 5 with 1 being more and 5 being less important.

Question (How important is/are…?)	**Answer**
Information about conferences and meetings	2.4
Offering workshops	2.6
Information about funding	2.7
Job postings	2.7
Point out funding opportunities	2.7
Advertising conferences and meetings	2.8
News about permafrost-related issues	2.8
Exchange with young researchers	2.9
Offering social events	3.0
More information and news	3.1
More education and outreach	3.2
Access to literature, pictures, and videos	3.3
Activities in social media YouTube Twitter	3.6

Table S3. List of acronyms and definition.

Acronym	Defintion
ACOP	Asian Conference on Permafrost
AGU	American Geophysical Union
APECS	Association of Polar Early Career Scientists
ASA	ArcticNet Student Association
CliC	Climate and Cryosphere
CNS	Centre d'excellence en neurosciences de l'Université de Sherbrooke
EGU	European Geosciences Union
EUCOP4	4th European Conference on Permafrost
EUCOP5	5th European Conference on Permafrost
GTN-P	Global Terrestrial Network on Permafrost
IASC	International Arctic Science Committee
ICARP	International Conference on Arctic Research Planning
ICOP	International Conference on Permafrost
IPA	International Permafrost Association
IPY	International Polar Year
NICOP	Ninth International Conference on Permafrost
OCSNRS	Ottawa-Carleton Student Northern Research Symposium
OSL	Otto Schmidt Laboratory for Polar and Marine Research
PEI	Polar Educators International
PYRN	Permafrost Young Researchers Network
TICOP	Tenth International Conference on Permafrost
TSP	Thermal State of Permafrost
USPA	United States Permafrost Association