

Research Note

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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 promotion 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 summarises (1) PYRN's development since 2005 and the IPY's role, (2) the first 2015 PYRN census and survey results, and (3) 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 1200 registered members active and engaged, PYRN is capitalising on the availability of social media tools and rising to meet environmental challenges while maintaining its role as a successful network honouring the legacy of IPY.

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 emphasised 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 organisers showed that the entire IPY endeavour involved a greater number of young 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 programme 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 steadily increased to ~1200 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 permafrost areas on Earth, including alpine, submarine, and polar regions, as well as permafrost on other planets. In the Northern Hemisphere of the Earth alone, 23 million km² of the landmass is characterised by permafrost (Romanovsky, Smith, & Christiansen, 2010; Zhang, Barry, Knowles, Heginbottom, & Brown, 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 mobilise 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 (1) to review PYRN development since IPY, (2) to present the first membership survey conducted since IPY, and (3) to set a vision for PYRN as a crucial part of the modern polar research community.

The development of PYRN

PYRN has continuously evolved since its establishment at the 2nd ICARP 2005 and IPY 2007–2008. By 2006 it already had 250 members from 20 countries (Lantuit, 2006). During IPY, registrations increased rapidly, with 620 members by the end of IPY in 2008 (Lantuit, 2007). PYRN largely benefited from IPY momentum; its membership expanded to ~1200 by 2015 (Tanski, Lenz, Radosavljevic, & Strauss, 2015). Since 2005 there have been seven executive committees, each coordinating the network successfully. PYRN's evolution and its main milestones are synthesised in Table 1. All major activities and events since 2005 are listed in Supplementary 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

Table 1. PYRN milestones since its establishment in 2005. All major PYRN events and highlights since 2005 are listed in Table S1.

| 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 ~1200 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 |

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* (ipa.arcticportal.org/publications/frozen-ground) and on PYRN's website (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 2007 official kick-off meeting was held in Sweden (Fig. S1). PYRN meetings during IPY set the stage for numerous IPA–IPY–PYRN activities (Baeseman et al., 2011; Lantuit, 2007); a 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 organisation restructured, following the initial successful IPY years, creating sustainability and proceeding from the momentum provided by IPY. A memorandum of understanding between PYRN, IPA and APECS established PYRN as the primary organisation for coordinating young permafrost researchers. Emphasis was placed on creating a more inclusive, team-oriented 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 in 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 characterised by network professionalisation. 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

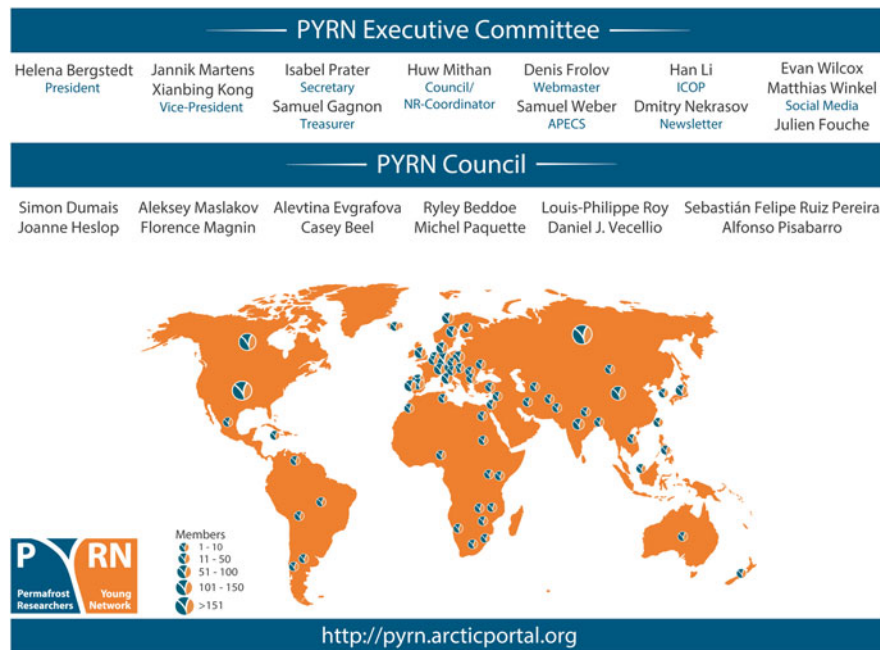


Fig. 1. Organogram displaying the latest organisational structure of PYRN (2018–2020).

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 utilising its website and social networks, in particular increasing its Facebook following, which rose from almost zero in June 2014 to >600 in June 2016. This period culminated in the largest gathering of PYRN members so far, at the 11th International Conference on Permafrost, in Germany in 2016 (Fig. S2).

Recent activities (2016–2018) have focused on strengthening national PYRN representation and establishing an improved social network presence. The Facebook following further increased to >800 people. The PYRN mailing list and newsletter remained the key tools to communicate with members and the polar research community. A major outreach effort was devised; the ‘Frozen-Ground Cartoons’ project (see Bouchard et al., 2019), an international, interdisciplinary scientific outreach initiative, aims at making permafrost science accessible and fun for the public (Nääs et al., 2017).

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 to three members, each with multiple tasks. The executive committees since 2012 have consisted of 12 members with more specified tasks (Fig. 1). Currently PYRN is led by an executive committee, supported by a Council and several national representatives. 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 (polarforschung.de/arbeitskreise/ak-permafrost/). 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.

PYRN’s first 2015 census and member survey

The 2015 census (in English) reviewed the PYRN membership according to PYRN’s definition of a young researcher (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, their career stage, and their research topics. The census was sent to registered members and to various media channels. 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 (Figs S4 & S5). Most participants were young (mean age = 30 years) and had an academic background. The majority had a master’s degree, followed by PhDs and undergraduates (Fig. S3). Of the 1200 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 2016 in Germany (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 Table S2.

Future plans and visions: the IPY legacy

PYRN has improved its impact by constantly engaging with members and partners. Social media use improved network visibility, with >800 followers on Facebook 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 has already enhanced) 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, following a survey recommendation, PYRN plans to establish branches (PYRN Europe or PYRN Northern Europe) to facilitate efforts and promote regional gatherings. Improved interactions with Asian members are a priority; PYRN seeks to capitalise 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; members remain connected to PYRN after their departure from the organisation. Former members, now mentors, 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 permafrost research vision (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.

Conclusions

PYRN has evolved since its establishment in 2005, and is now a strong, effective network within the polar research community. This development was catalysed by the original IPY project, which helped PYRN membership grow and promoted exchange with other polar research networks. PYRN today (data from 2015) is a self-governing body supported by the IPA, relying on ~200 active members and numerous supporters who are responsible for the network's success. Many first-generation PYRN members that became senior researchers remain affiliated with PYRN and pass on their knowledge to the new generation. Website presence, social network, education, and outreach activity as well as workshop organisation at regional and international conferences are PYRN's main instruments of sustainable networking. New technological developments and media tools will help PYRN improve outreach and education projects, emphasising the importance of permafrost in the environmental system and for society.

Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/S0032247418000645>.

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