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EXECUTIVE SUMMARY

The main objective of the APPLICATE project is to develop enhanced predictive capacity for weather and climate in the Arctic and beyond, and to determine the influence of Arctic climate change on the Northern Hemisphere. To produce usable and trustworthy predictive information for decision making, APPLICATE will actively engage with users, including policy makers, businesses and society within and outside the EU. Only by effectively exchanging information with stakeholders and co-developing knowledge, can we assure the stakeholder-relevance of the project results, which can then enhance their capacity to adapt to long-term climate change.

The proactive dialogue with users will be performed using modern and interactive user engagement mechanisms that will be developed and maintained throughout the project. This plan presents the user engagement approach that will be applied. It provides a detailed description of the three main user categories defined by the project: key, primary and secondary users. It builds around three main mechanisms of user engagement to be applied in the project: i) User Group involvement ii) Participation in meetings and organization of workshops and iii) User blog, surveys and interviews.

In addition, different communication channels that are also being developed as a part of the project will enhance information exchange and knowledge transfer, reaching a broad and diverse group of users.

1. INTRODUCTION

1.1. Background and motivation

One of the aims of the APPLICATE project is to increase the awareness about the impact of Arctic changes on the weather and climate of the Northern Hemisphere and to adequately convey project results to stakeholders, including any user of climate and weather services. To achieve this, the project will develop relevant and effective forms of communication, cooperation and engagement with projects and stakeholders within and outside the EU. In addition, in order to provide at the same time scientifically robust and user relevant and usable knowledge about the climate and weather in the Arctic, the project needs to maximise exposure of the science produced to different users and collect and consider feedback from them. In order to assure knowledge sharing and exchange with stakeholders, in this plan we propose different user engagement mechanisms that will be developed and maintained throughout the project.

The terms user and stakeholder are used interchangeably in this plan. Stakeholders or users include all those that can be interested in and/or can benefit from better knowledge of the weather and climate in the Arctic and Northern Hemisphere. By pro-active user-engagement, the latest advances in forecasting system development can be effectively communicated to and benefit those economic sectors and social aspects that rely on improved forecasting capacity.

To develop and conduct targeted user engagement activities, knowledge transfer and exchange, we divide users in three categories:

- 1) Key users – scientific community and intergovernmental organisations
- 2) Primary users – private sector and public sector stakeholders
- 3) Secondary users – general public, society, local communities.

By continuously taking into account user needs and feedback to the APPLICATE results via the User Group, workshops, meetings, interviews with key stakeholders and virtual consultations, the APPLICATE community will increase the stakeholder-relevance of its research and hence directly improve stakeholders' capacity to adapt to climate change.

1.2. Organisation of the plan

The user-engagement plan is structured around the main proposed mechanisms for user engagement. This includes i) User Group involvement, ii) workshops, meetings, conferences and iii) user blog, surveys and interviews with stakeholders. In addition, user engagement is closely merged with the other two components of WP7 - communication and dissemination of the project results and training. Some of the communication channels, such as the project website and social media, are also very effective tools for user engagement. These communication channels will thus be shortly presented in this plan, and elaborated more in depth in the APPLICATE Communication and Dissemination Plan.

2. APPLICATE USER-ENGAGEMENT PLAN

User engagement is an essential part of APPLICATE since the project needs to establish an effective dialogue with a network of key stakeholders in order to obtain feedback to help and improve weather and climate modelling and forecasting. The user engagement plan has been divided in short-, mid- and long-term activities.

2.1. Short-term activities (9 months to 1 year)

In Table 1 activities within the first year of the project are outlined. All short-term activities will continue throughout the project and are hence relevant also for mid-term and long-term activities.

2.2. Mid-term activities (2 years)

In Table 2 activities to be completed within the project's half time are outlined. All short-term activities will continue throughout the project and are hence relevant also for mid-term activities.

2.3. Long-term activities (4 years)

In Table 3 activities to be completed by the end of the project are outlined. All short-term and mid-term activities will continue throughout the project and are hence relevant also for long-term activities.

Table 1: Short-term activities (9 months to 1 year).

Activity	Leader	Procedure	Expected outcome
Project website	AP	The project website has been developed and published. It will continue to be updated throughout the project.	<ul style="list-style-type: none"> ▪ The website is the primary channel for communication about the project, providing users with the opportunity to learn about the project and how they can get involved. ▪ It presents general information on the project, goals and objectives of the various work packages, news and events, dissemination material and project documents. ▪ Users learn how they can take part in the project and what they can get from it. ▪ The website is also a place to promote all other user engagement activities.
Social media campaign	AP	APPLICATE Twitter account and Facebook page are developed.	<ul style="list-style-type: none"> ▪ This modern and interactive communication channels have been used since the very beginning of the project to promote project activities. ▪ Social media can engage various stakeholders in a two-way communication. ▪ They allow for comments and replies to posts by users. ▪ The information from our social media channels will be moderated and revised regularly to learn about the user feedback and inform further project developments.
User Group	AP, BSC (Dragana Bojovic, Marta Terrado)	10 representatives of key stakeholders for the preliminary User Group have been contacted and the list will be enlarged. The group includes representatives from different sectors. Users will take part in virtual consultations that	<ul style="list-style-type: none"> ▪ The User Group will provide: i) an external user-specific perspective and feedback on the relevance and presentation of project outcomes and ii) an external perspective on user needs. ▪ APPLICATE will present project outcomes, developments and ongoing discussions to the User Group.

Activity	Leader	Procedure	Expected outcome
		<p>WP7 coordinators will organise on a regular basis every three months starting from end of August 2017 and, if and when appropriate, more frequently. The first face-to-face meeting is anticipated at the next project general assembly. WP7 (AP and BSC) will chair the group and organize its meetings.</p>	<ul style="list-style-type: none"> ▪ The regular meetings of this group will assure timely response and feedback to the project outputs. ▪ AP and BSC will regularly, after each meeting, analyse feedback from the User Group. This feedback will be i) shared with participants to maintain discussion, ii) shared with the project partners to help shape project outputs into user relevant products.
<p>Workshops and meetings at professional events</p>	<p>AP, BSC (Dragana Bojovic and Marta Terrado)</p>	<p>APPLICATE partners will participate in relevant external events or initiatives organized by the target sectors, as well as in scientific conferences. These activities will be jointly organized with other relevant projects, such as YOPP, EU PolarNet, Blue Action, INTAROS, or other H2020 projects and C3S tenders.</p> <p>The list of the events will be scheduled in the project calendar on the project website (http://applicate.eu/events/eventsbyyear/2017/-). Partners have already attended a few events, presented the project and disseminated the project brochure.</p>	<ul style="list-style-type: none"> ▪ Promotion of the project and dissemination of the project results in international fora of relevant events will strengthen the role of the project as a base of cutting edge research. ▪ Presentations in workshops and meetings will serve to promote and explain the project and collaborate with users on different relevant topics. This will take place during internationally relevant events, both in and outside the EU. ▪ These events will allow to receive feedback from a user perspective by actors not necessarily linked to the weather and climate research communities to broaden and reinforce our understanding of user needs. ▪ Users' feedback will be regularly analysed after each event and i) shared with the project partners, ii) when relevant, shared with other users via User Group and/or Blog.
<p>Blog – Polar Prediction Matters</p>	<p>AP, BSC (Dragana Bojovic and Marta Terrado)</p>	<p>The project blog will be hosted at the Helmholtz Blog website and jointly developed and maintained with YOPP. The content of the blog will build around articles that will be regularly published on a monthly basis in the</p>	<ul style="list-style-type: none"> ▪ The blog will publish monthly articles written in simple language adequate for and accessible by the broader public. Specific topics will be selected that can trigger interest of different actors and open discussion. ▪ New perspectives on user needs and understanding are expected

Activity	Leader	Procedure	Expected outcome
		<p>period mid-2017 – mid-2019. These articles will present, from different perspectives, climate change in the Arctic, use of climate and weather data and similar topics and will have the aim to encourage a discussion with users or other interested parties on the proposed topics. Different stakeholders, in collaboration with APPLICATE, YOPP and the project Blue Action, will write the articles. Although priority will be given to actual users, complementary contributions from people working at operational services, academic natural and social scientists, science managers and researchers will be also welcome. The discussions will be moderated by the APPLICATE and YOPP’s user engagement teams, and supported by the projects’ scientists.</p>	<p>from these discussions.</p> <ul style="list-style-type: none"> ▪ Discussions and inputs in the blog will be regularly analysed and will inform the project partners on any relevant information about user requirements and needs.

Table 2: Mid-term activities (up to 2 years).

Activity	Leader	Procedure	Expected outcome
<p>Survey and interviews with users from different groups</p>	<p>AP, BSC (Dragana Bojovic, Marta Terrado)</p>	<p>We will conduct interviews with representatives of different stakeholder categories and economic sectors of interest. This will take place during the events that we will attend or in separate meetings with users. Alternatively, interviews can also be conducted over the phone/Skype.</p> <p>In the case a need for understanding a particular user requirement appears or is required by specific WPs, we will conduct an online user survey. Depending on the aim of the survey, it will be either broadly distributed or targeted at a particular stakeholder category or economic sector. Different communication channels, such as emails, newsletters or social media, will be used to disseminate the survey and collect a large number of responses.</p>	<ul style="list-style-type: none"> ▪ Interviews are a powerful mean to improve users' awareness and understanding of the changes in the Arctic and the role of climate forecasts – to transfer the knowledge developed within the project. ▪ Interviews with users from different groups will help better understand user needs and requirements. ▪ Interviews will be conducted starting from the second project year, i.e. once we have concrete outputs to discuss about with the users. ▪ We will conduct interviews with representatives of main industry sectors of interest in the Arctic, as well as representatives from mid-latitudes. The concrete list of interviewees will depend on the findings from the other user engagement activities – we will in particular target those communities that are underrepresented in the other user engagement activities, as well as those that express particular interest in the forecast in the Arctic. ▪ Findings from the interviews will be analysed and shared with the project partners. The findings will be used to shape project outputs and direct further project developments to be in line with user requirements. ▪ In order to avoid user fatigue, surveys will only be conducted if a particular need and a clear research

Activity	Leader	Procedure	Expected outcome
			<p>questions emerge. In such a case, a targeted survey will enable to collect answers on a well defined set of questions from a large number of participants. We will however aim to obtain this information – such as user relevant metrics – from the existing findings in the other projects and tailor them in the User Group discussions, as well as in the meetings and workshops.</p>
Webinar series	UiT / APECS, AP	<p>The webinars will be prepared by scientists, in form of presentations, but comprehensible for a broader audience. The webinars will be recorded and provided as an open resource on the websites of the APPLICATE project and APECS.</p>	<ul style="list-style-type: none"> ▪ We will organise a series of 3 webinars on Arctic climate and its influence on mid-latitudes. ▪ The webinars will introduce the APPLICATE project to early career scientists, climate and weather information users and general public. ▪ This will increase awareness about the impact of Arctic changes on the weather and climate of the Northern Hemisphere.
Summer school	UiT / APECS	<p>The summer school is aimed at PhD students and postdoctoral researchers among others from APPLICATE partner organisations. It will be organised jointly with YOPP, APECS, Blue Action and other partners and provide a unique, high-level, summer school program for 30 PhD students and postdoctoral researchers, covering the theories and methods used within the research project. The summer school will take place in spring 2018.</p>	<ul style="list-style-type: none"> ▪ Organise a 10 day summer school for early career researchers, current and future stakeholders and users of weather and climate data. ▪ Improve participants' knowledge on the topics, theories and methods applied during the project. ▪ Build a network of well-informed future stakeholders in the Arctic.

Table 3: Long-term activities (by the end of the project).

Activity	Leader	Procedure	Expected outcome
Online course	UiT / APECS	An online three-month course on “Advancing predictive capacity of Northern Hemisphere weather and climate” will be organized with weekly interactive online sessions. Materials will be provided as an open resource on the websites of the APPLICATE project and APECS.	<ul style="list-style-type: none"> ▪ Provide an online course composed of weekly interactive sessions aimed at early career scientists, but open to anyone interested. ▪ Provide learning material composed of training presentations and recommend readings (scientific and grey literature). ▪ Full course material will be made publicly available on the project website to increase knowledge and visibility, and to improve stakeholders’ capacity to use climate and weather data and advance the predictive capacity in the Northern Hemisphere.

3. RISKS AND INTERDEPENDENCIES

Risks and interdependencies are outlined in Table 4.

Table 4. Risks and interdependencies of the user-engagement plan.

Risk	Probability	Response	Responsibility
Low interest of users	Low/Medium	<p>This risk will be mitigated by using different user engagement mechanisms, such as virtual meetings and consultation. The project will reduce time and travel investments from users and promote their participation.</p> <p>In addition, project partners involved in relevant EU projects, international committees and steering groups can serve as ambassadors for APPLICATE and help disseminate project information and involve stakeholders.</p>	AP and BSC, with support from all project partners
User fatigue	Low	<p>This risk will be addressed by avoiding more “aggressive” user engagement approaches, such as surveys, and encouraging modern, attractive and interactive user engagement mechanisms and communication approaches instead, such as the blog, the User Group, social media, participation and organisation of workshops or discussion tables in relevant events. Coordinating joint user engagement activities with other projects with similar research objectives will in addition lessen the pressure on users.</p>	AP, BSC
Low project visibility	Low	<p>The partners will take part in relevant events presenting the project and getting in touch with different users. These efforts will be organised in strong coordination with other initiatives and projects, such as YOPP, Blue Action, EU PolarNet, European Polar Board, IASC and SAON, increasing the projects’ visibility, while lowering the risk of user fatigue or confusion with too much information from different projects.</p>	AP, BSC, all partners, partners from other projects

Cultural & background differences	Low	The project partners have a long-term and well-established collaboration with different actors within the Arctic. The project will additionally improve this collaboration and through interchange with different stakeholder categories (e.g. secondary user group) better understand cultural differences, while integrating local knowledge in the project development.	AP, BSC, all partners
Low interest in writing the user blog posts	Low	APPLICATE, YOPP and Blue Action have contacts with numerous stakeholders that might be interested in contributing to blog posts. We will rely on these connections and on contacting participants well in advance, to assure that regular posting on the blog is maintained.	AP, BSC, YOPP, Blue Action
Too low interest of the targeted audience in the user blog	Medium	Developing and maintaining this activity jointly with other projects, such as YOPP and Blue Action, improves the visibility of the blog and interest and participation of different users, decreasing the risk of lack of participation.	AP, BSC, YOPP, Blue Action
Too high interest in the user blog	Low	To maintain a fruitful discussion that can tackle different topics, including scientific ones, we will assure active collaboration of the project scientists on facilitating the blog discussions.	AP, BSC, YOPP, Blue Action, all project partners
Lack of participation of mid-latitude and non-European users	Medium	Building on partners' existing networks and through participation in relevant European and international events, the project will be shared and discussed with stakeholders that are not traditionally interested in the Arctic issues. In this way, we will increase participation of mid-latitude and non-European users.	AP, BSC, all partners

4. IMPLEMENTATION OF THE PLAN

4.1 APPLICATE users

APPLICATE will apply modern user engagement tools for online facilitation and the most efficient channels for information exchange with users. The implementation of the User

Engagement plan will build around three main users groups: Key users, primary users and secondary users.

1. **Key users**

WHO: Key users include the **scientific community and intergovernmental organisations**.

Both benefit from advancements in model development, predictive capacity and understanding of the impact of Arctic changes on the weather and climate of the Northern Hemisphere as well as from educational activities. There is a wide range of beneficiaries, from individual scientists working on related topics to networks of scientists working collaboratively together in networks and projects (e.g. US Sea Ice Prediction Network, US CLIVAR Arctic-Midlatitude Working Group, IPCC). Furthermore, research departments in operational weather and climate prediction centres with an interest in Polar Regions will directly benefit from the project outputs. Enabling development of improved weather and environmental prediction services for the Polar Regions, on different time scales, will for example directly benefit the World Meteorological Organization's Polar Prediction Project within the World Weather Research Programme. APPLICATE project results will also be relevant to scientific community umbrella institutions and projects such as the European Climate Research Alliance and International Arctic Science Committee, as well as to the working groups of the Arctic Council and experts of international organisations like the International Maritime Organisation.

HOW: APPLICATE partners have strong links to these organizations and communities, with many consortium members being directly involved within their activities. Therefore, key users can be approached via e-mail and or in jointly attended meetings and events.

WHY: Key stakeholders are expected to be advanced users of data. They may often be interested in direct project outputs, models and techniques used to produce data. The main effort is to make this community aware of the project and its results, i.e. to transfer the scientific knowledge produced in the project to them. In this sense, their engagement in APPLICATE will fill the gap in knowledge transfer. In addition, a close collaboration with key users can help the APPLICATE scientists focus on the aspects that are the most needed by this community. In other words, they can indicate the research needs regarding climate change in the Arctic and, at the same time, act as a peer group, providing feedback on the scientific progress of APPLICATE.

2. **Primary users**

WHO: Primary users include stakeholders in the **private and public sectors**. This category comprises different user profiles, including both high-skilled users (e.g. modellers in the energy sector) and non-experts that might demand tailored products and services (e.g. decision-makers that should decide whether to apply or not a particular action). The private sector includes different businesses depending on weather and climate, such as insurance, shipping, tourism, mining or fisheries, whereas the public sector is constituted by national and regional authorities. Primary users will not be only from the Arctic but also from mid-latitudes.

HOW: The APPLICATE members have strong relations with these stakeholders within Europe, Asia and North America. Primary user representatives, will get involved via interviews, workshops and the User Group and can become effective co-designers of the APPLICATE outputs. Through this collaboration and feedback, the project will aim to incorporate the needs of the public and private sector in the forecasting systems and in the eventual products generated as a result of the project.

WHY: The **private sector stakeholders** benefit from enhanced operational predictive capacity across time scales. The forecast improvements at hourly-to-decadal timescales developed by APPLICATE will lead directly to improved services for the economic sectors that rely on forecasts. Insurance, shipping, tourism, mining and fishery industries are increasingly in need of weather and climate information at these timescales and effective transfer of new knowledge is a crucial component. Active engagement in APPLICATE will help the public sector to use the knowledge produced in the project to shape the necessary actions and instruments to address future challenges. Direct engagement with primary users will build trust and understanding and incorporate user requests and suggestions in APPLICATE activities, which will eventually provide public and private sector stakeholders with the information they actually need to make well-informed decisions.

3. Secondary users

WHO: The secondary user group refers to **the society at large**, including **the general public and local communities**.

HOW: Different communication channels, applied in APPLICATE, will be used to animate and involve this group. This includes information exchange through the website, social media – the APPLICATE Facebook page and the Twitter account, and the user blog. In particular, with the user blog we will aim to involve this group in an online discussion on different topics related to climate change in the Arctic. More direct engagement with this group will be achieved through meetings and workshops, particularly with local and indigenous communities.

WHY: Weather and climate change can have large impacts on the environment and the human society. Climate change and weather extremes are therefore areas of great interest to the global community. Specific communities, however, are more likely to be engaged with specific issues, e.g. indigenous peoples in the Arctic are directly affected by the impacts of regional Arctic climate change. The main outcomes of APPLICATE, that is an improved ability to simulate and predict changes in the Arctic and their impacts on weather and climate of the Northern Hemisphere, will be of great interest to the general public and to certain local communities. This new knowledge, however, needs to be shaped so to be useful and usable for this group. Integrating local knowledge with the scientific findings can bring more holistic and well accepted results, while this knowledge exchange will benefit both scientific and the local and endogenous communities.

4.2. Implementation of the key user engagement mechanisms

Besides the various communication channels that will enable information sharing with users and receiving their feedback (e.g. through social media), the most important user engagement activities applied in this project are the User Group, workshops and meetings, and blog, surveys and interviews.

User Group

The User Group will be a group of 7-10 representatives from the public and private sector (Primary stakeholders). The group will meet (virtually or in person) every three months, to discuss the development of the project outputs, with the aim to make them both user relevant and usable. The group will support the project with an external user-specific perspective by providing continuous feedback on the relevance of the results obtained and the way they are presented. Regular feedback from this group will assure that the products generated in the

project are tailored to user needs, maximising their relevance and usability. The User Group will serve the project as an additional advisory mechanism. The group will be coordinated and monitored by AP and BSC. The original User Group includes important stakeholders from around the Arctic and beyond, including an international airline based in an Arctic country, an icebreaker company, regional cooperation organisation, indigenous herders, legal, policy and investment organisations and companies as well as key international institutions such as the Korean Maritime Institute and the Chinese Polar Research Institute. We will officially contact the pre-selected users, all of whom wrote a support letter accompanying the Applicate funding application, in June and July 2017. After communicating and consulting with the original stakeholder group members and reaffirming their interest and availability to participate in the User Group, we will consider gaps in representation and develop new contacts preparing the complete list of participants of the User Group by summer 2017. The first on-line User Group meeting will take place in early fall 2017. The composition of the group will be flexible to changes and enlarging; if we realize that some sectors or user groups are underrepresented in the project, while their feedback might be valuable, we will invite new members to the User Group. Selected members of the User Group will be invited to the projects general assembly in January 2018 to directly consult with the projects primary investigators.

AP and BSC will regularly collect and analyse feedback from the User Group and discuss it with the project scientists. These findings will be reported in D7.11. Feedback and comments of the User Group members will be provided by WP7 to support Project Coordination and Management. In addition, the User Group might be contacted to take part in co-designing some of the forecasting related research activities.

Workshops and meetings

Organizing and performing workshops and meetings, and participating in relevant events¹ will serve to present the project results to various audiences, including both Arctic stakeholders and stakeholders from mid-latitudes. The project partners will participate in relevant external events and will carry out workshops and meetings during these events to get direct feedback from a user perspective. These events will also include scientific conferences, where we will have the chance to meet, discuss with and get feedback from our key stakeholder group. Besides, through participation in the initiatives organized by the target sectors, we will have an opportunity to exchange information and collect feedback from the primary stakeholder group. Finally, taking part in various relevant events, we will also have the opportunity to meet with the secondary stakeholder group and with the actors not usually linked to the weather and climate research communities.

AP and BSC, together with other project partners, will take part in these events. Parallel sessions at these events, in forms of workshop or round tables, will be jointly organized with other projects such as YOPP, EU PolarNet, Blue Action, INTAROS, or in collaboration with other interested H2020 projects or C3S tenders. This approach will ensure that we get in touch with various audiences and different stakeholders, while preventing user fatigue, through a coordinated action of different projects with the focus on climate change in the Arctic.

The project partners will be encouraged to report on their participation in APPLICATE relevant events and on how they presented the project (e.g. in a scientific session, poster presentation, workshop, informal meeting, or distribution of project material). AP and BSC, with support from other project partners, will collect more concrete feedback from the users

¹ The preliminary list of events is available on the APPLICATE website:
<http://applicate.eu/events/eventsbyyear/2017/>

encountered in these events. These inputs will be regularly, further discussed with the User Group and shared with the project scientists.

Blog, surveys and interviews with stakeholders

The blog Polar Prediction Matters will be set up in collaboration with YOPP and Blue Action and hosted by the Helmholtz Association. The blog will serve as an online tool for harnessing user feedback and consulting with a broader stakeholder group and should foster the dialogue between those that research, develop, and provide polar environmental forecasts and those that use (or could use) polar environmental forecasts to guide their decisions. The joint effort with YOPP and Blue Action will help attract high profile contributors – stakeholders that will write the blog posts, and also broad interest of the audience. The blog will build upon the articles that will be posted once in a month. These articles will provide individual views on how polar climate forecasts (and other environmental information) are actually used, what additional needs exist, and what factors might yet limit the effective use of forecasts. The blog aims to launch a lively discussion with a broad audience. Regular posting on the blog and facilitation of the blog discussion will be performed by the YOPP partners, AP and BSC. The APPLICATE scientists will be invited to take part in the discussion as well. User information collected from the blog will be analysed and reported to the project WPs. The frequency of this analysis will depend on the activities of the blog and the relevance of the topics discussed. If this interactive platform gets momentum, it will both provide an effective channel for the project popularisation and for collecting user feedback. Targeted interviews with representatives from main stakeholder categories will help collect additional in-depth knowledge on user needs, their understanding and perceptions. This intensive one-to-one approach will also help confirm or further clarify knowledge that we will receive through the described user engagement mechanisms. Face-to-face interviews will be performed at the relevant events attended both by APPLICATE and by stakeholders. Alternatively, interviews will be separately scheduled and conducted either face-to-face or over the phone/Skype, depending on the location and the interviewee's profile. The interviews will be conducted starting from the second project year, i.e. once we have concrete outputs to discuss about with users. We will conduct interviews with representatives of main industry sectors of interest in the Arctic, as well as representatives from the mid-latitudes. The concrete list of interviewees will depend on the findings from the other user engagement activities – we will in particular target those communities that are underrepresented in the other user engagement activities, as well as those that express particular interest in the forecast in the Arctic. Findings from the interviews will be analysed and shared with the project partners. The findings will be used to shape project outputs and direct further project developments to be in line with user requirements.

Should a need for understanding a particular user requirement appear, that cannot be obtained from other user engagement activities and sources, we will conduct an online survey. The survey will have well defined questions and will aim to get information on particular aspects (e.g. type of impact indicator, data resolution). Similarly, if a certain user category is underrepresented in the project (e.g. actors from mid-latitudes) and it cannot be engaged through other user engagement activities, will conduct a survey targeting this particular group. In this case, AP and BSC will develop, conduct and analyse results from the survey. The survey will be distributed using all available communication channels, professional contacts, emailing lists, newsletters, social media, and websites. The chosen dissemination plan will however depend on the targeted user group. In recent years, understanding the relevance and usability of climate information has become a key research topic, increasing the number of activities exploring this subject directly with users, including many surveys being conducted at the moment. To avoid user fatigue, the survey will be conducted only if the concrete need arises.

Both expert interviews and surveys will follow the confidentiality principles and guidelines and participants will sign a pre-prepared consent form for personal data protection and data storage. The confidentiality principles are based on rules regarding data protection and the European Commission’s Horizon 2020 guidelines.

The First and Second Summary Report of the Stakeholder Interaction Activities (D7.11 and D7.12) will analyse and present results obtained from all three main user engagement mechanisms.

The user engagement plan will be updated every 18 months.

4. ACRONYMS

AP	Arctic Portal
APECS	Association of Polar early career scientists
APPLICATE	Advanced Prediction in Polar regions and beyond: Modelling, observing system design and Linkages associated with a Changing Arctic climate
BSC	Barcelona Supercomputing Center
C3S	Copernicus climate change services
EU	European Union
H2020	Horizon 2020 (EU Research and Innovation programme)
IPCC	Intergovernmental Panel on Climate Change
YOPP	Year of Polar Prediction project