SCAR Expert Group / IPA Working Group

Antarctic Permafrost, Soils and Periglacial Environments – ANTPAS

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Name (and email):	**Other team members**	**Institution**	**Country**	**Main Antarctic region conducting research**
Gonçalo Vieira (vieira@campus.ul.pt)	Carla Mora, Marc Oliva, Pedro Pina, Lourenço Bandeira, Alice Ferreira, Alexandre Nieuwendam, João Branco, António Correia, Gabriel Goyanes, Javier Jímenez, Miguel Ramos.	Universidade de Lisboa	Portugal	Western Antarctic Peninsula
Andrey Abramov forestpro@gmail.com	Nikita Demidov, Alexey Lupachev, Vasily Mironov, Liza Rivkina (lab), Elena Spirina (lab), Oksana Zanina (lab), Katia Karaevskaya (lab)	Institute of physico-chemical and biological problems in soil science	Russia	Russian coastal stations, Dry Valleys with the Antarctica NZ.
Megan Balks m.balks@waikato.ac.nz	Various NZ researchers…	University of Waikato	New Zealand	Ross Sea Region
Dan Morgan dan.morgan@vanderbilt.edu	Jaakko Putkonen (jaakko.putkonen@engr.und.edu); Greg Balco (balcs@bgc.org)	Vanderbilt University	USA	Central Transantarctic Mountains, McMurdo Dry Valleys
João Canário (joao.canario@tecnico.ulisboa.pt)	I'm working with several colleagues that don't work exclusively in this subject but that provide the know how necessary to achieve our goals. The team involve approximately 11 people	Centro de Química Estrutural – Instituto Superior Técnico. University of Lisbon	Portugal	South Shetland Islands
Jorge Carrasco (jorge.carrasco@umag.cl)	Pedro Cid (pedro.cid@umag.cl), Sebastian Ruiz (sruizpp@gmail.com), James Bockheim (bockheim@wisc.edu), Stephan Gruber (stephan.gruber@carleton.ca)	Universidad de Magallanes	Chile	*63°19'15''S 57°53'55''W*; Islote Isabel Riquelme (Chilean Army's O'Higgins Base) at Cape Legoupil (NW Antarctic Peninsula) *63°32'15"S 57°24'15"W*; Area surrounding View

				Point (Boonen Rivera refuge managed by Chilean Army) at Düse Bay (NE Antarctic Peninsula).
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Marc Oliva, oliva_marc@yahoo.com		Universidade de Lisboa	Portugal	Antarctic Peninsula
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Contributor	Synthesis of research	Research Plans for 2016-2019
Gonçalo Vieira (Universidade de Lisboa)	Interdisciplinary research on the effects of climate change on the dynamics of the ice-free areas of the Western Antarctic Peninsula, mainly in what concerns to geomorphological processes, snow cover and vegetation. Research is based on: a. data collected from GTN-P observatories maintained along the WAP: Dundee Isl., Barton Pen., Hurd Pen, Deception Island, Cierva Cove, Amsler Island; b. remote sensing imagery analysis (satellite, aerial photography – aircraft and UAVs); c. DGPS monitoring; d. GIS based spatial modelling and mapping.	- Improve sustainability of PERMANTAR GTN-P observatories in the Western Antarctic Peninsula; - High resolution mapping and modelling of sensitivity of Antarctic infrastructure to changes in permafrost; - New permafrost borehole in Barton Peninsula (planned 2016-17); - Remote sensing of snow cover; - Role of wind on snow cover distribution (Hurd Peninsula, Barton Peninsula); - Rockglacier deformation; - High resolution geomorphological mapping using UAVs (Hurd, Deception, Fildes, Barton, Marambio, Dundee, Cierva Cove, Doumer isl.); - Mapping permafrost characteristicas in the WAP ice free areas.
Andrey Abramov forestpro@gmail.com	Starting from 2008 we are combining permafrost and soil research as a part of Russian Antarctic expedition. We have boreholes with ground temperature loggers at King George island, Schirmaher hills, Thala hills, Larsemann hills, Banger hills, Hobs coast and CALM grids at Thala, Shirmaher, Larsemann and KGI. At Dry Valleys we have drilled three boreholes in December 2014 and now waiting for the exposure dates and other laboratory results.	Drilling new deeper boreholes at Schirmaher, installing the temperature logger at new 12 m deep borehole at KGI. In case of successful funding we plan drilling activity at Dry Valleys.
Megan Balks m.balks@waikato.ac.nz	Network of 9 soil-climate stations measuring temperatures into permafrost – some records go back to 1999. 2x boreholes 30 m deep. Collaboration with Italian prog. and USDA. Work on soil characterisation and distribution and impacts of human activities on soils.	Currently in a “low” - Just keeping the soil-climate monitoring going at the moment.
Dan Morgan dan.morgan@vanderbilt.edu	Glacial history of dry valleys. Dating of glacial tills with cosmogenic nuclides. Provenance of glacial tills with zircon geochemistry.	We have a funded project to go to Ong Valley in the Miller Range of the Central Transantarctic Mountains to core into buried glacial ice that is covered by less than 1 meter of sublimation till. Preliminary results suggest this buried ice is older than 1.1 Ma. We plan to core

		into the ice to a depth of ~20 meters and date the quartz minerals contained within the ice with cosmogenic nuclides.
João Canário (joao.canario@tecnico.ulisboa.pt)	Concerning the goals of ANTPAS my research has been focuses on the chemistry of permafrost particularly the chemistry related to its degradation and the consequent mobilization of trace elements to the environment. I've been also involved in studies related with soil chemistry (not specific permafrost soils), and to the human impact in Antarctic soils in what concern pollution issues. Finally, I've been also doing research related to long range and local transport of trace elements and their biogeochemical process in the Antarctic environment.	My plans for 2016-2019 are related to access the human impact in Antarctic soil, not necessarily in the South Shetland islands and also start to work in Antarctic permafrost chemistry.
Jorge Carrasco (jorge.carrasco@umag.cl)	The aim of the study was to set a control baseline in both Cape Legoupil and View Point for surface air and ground temperatures monitoring, allowing further studies regarding the thermal evolution of recently deglacierized areas. Simultaneous air and ground temperature (0.5m, with DS1922L i-Buttons) monitoring were set during September-2015 in both rocky-outcrops at Islote Isabel Riquelme (Base O'Higgins, Chilean Army), Cape Legoupil and View Point (Düse Bay). Several sedimentary rock sequences mainly being clastic sediments. Trinity Peninsula Series comprises lithological monotony of mudstones/shales successions alternated with beds of siltstones/sandstones. View Point stands with sandstone/shale alternations. The monitoring locations are both at an equivalent latitude and correspond to sedimentary rock sequences, mainly clastic sediments. Lithological monotony comprises sucessions of mudstones/shales alternating with beds of siltstones/sandstones. View Point stands with sandstone/shale alternations. This observations are coherent with early data from Halpern (1962) and Scientific Reports made by B.A.S. (1965), concluding that sites may be considered equivalent and should behave	The monitoring devices placed both in O'Higgins-Base and View Point are to be replaced by Chilean Army Personal in August-September 2016. The project 'Active-Layer Dynamics at Düse Bay, Antarctic Peninsula'(P.I., J. Carrasco) was presented to the Chilean Antarctic Institute , INACH, and awaits approval during 2016. The project accounts only with winter access to Düse Bay from O'Higgins Base. Three campaigns are proposed for this research each one during the last week of August and first week of September, when the military party crosses the Peninsula from O'Higgins Base to the Boonen-Rivera refuge (View Point). The aim of the project is to start a proper record of active-layer depth in both coasts as well as analyzing air and ground temperature trends in terms of; inter-annual oceanic oscillations and their consequences on the antarctic dipole and antarctic circumpolar wave. This latter by the use of reanalysis data, corrected by obtained field records. The project objectives for 2017-2019 are; to continue air and ground temperature monitoring at View Point and O'Higgins Base by extending current shallow boreholes down to 2 m depth (thermistor chains of DS1922L i-Buttons). Density of solid particles, granulometry and moisture content of rock samples will be determined.

	similarly upon heat transfers. Since the 1970's both coasts have shown a sustained air-temperature difference around the 5-7ºC, especially in winter. This latter evidence was confirmed with 400 air-temperature measurements during September-2015 for a period of 3 days, at 10m a.s.l. and 50m a.s.l. both in Legoupil and View Point. Supervised classification made from vertical cartography (Project FID26, B.A.S., 1956) and Landsat imagery allows to establish that the View Point area was mostly ice-covered in the late fifties and surrounded by Glacier Tongue nº30 (WGMS id #4029). The western ice front at Düse Bay, represented mostly by nº30, has suffered a negative surface area change (-32km^2) over the past half century. Nevertheless, from the year 2014 on it shows an apparent stability and minor area increase (+2km^2) at terminus. It is of our interest to control the current and eventual feedback between the rate of ice-retreat and ground surface availability in regard to their thermal evolution. Changes in these trends may be controlled with a continuous ground and surface temperature monitoring as left after September-2015 in Legoupil and View Point, especially because in this case air-temperatures retrieved from R1/R2/ERA-INTERIM for the area, do not show a consistent rise between the period 1979-2015 regardless of the evident geographical changes therein. Monitoring set-up is expected to be retrieved by Chilean Army personnel during winter-2016 in order to analyze data for a first period.	Secondly, to establish snow pack monitoring with time-lapse cameras at Boonen-Rivera and Base O'Higgins. Finally, to analyze the meteorological environment in the northern tip of the AP in the context of our study, including time series analyses by using data from the SCAR Reader Project. For the case of Base O'Higgins, data will be obtained directly from the Dirección Meteorológica de Chile and/or from the Chilean Army. Reanalysis data (R2/ERA-INTERIM) will be studied against the Antarctic Mesoscale Prediction System (AMPS). First campaign will take place in 2017 where three stations will be installed nearby View Point, where shallow boreholes will be done. Three other stations will be installed nearby Base O'Higgins. Each station will measure ground temperatures at 0, 15 cm, 40 cm, 60 cm, 80 cm, 100 cm, 120 cm, 140 cm, 180 cm and 200 cm. Additional air temperature measurements will be carried out at 50, 100 and 150 cm above ground level. Thermistors are set in triplicate. During the second campaign in 2018, thermistors will be replaced. In this campaign, two time-lapse cameras will be installed for observing snowpack behavior. The third campaign considers new thermistor replacement. However, it is to be decided whether or not the stations will be disassembled or will continue monitoring. Support from Chilean Army to enter the area and recover monitoring stations is essential for the continuity of this endeavor into the next decade.
Joseph Levy (joe.levy@utexas.edu)	My lab's research focuses on determining how sediment thermal, hydrological, and ecological properties control heat transfer to the subsurface, and on predicting the geomorphic response of Antarctic buried ice deposits to climate change. The past year has focused on ground-based and aerial LiDAR measurements of permafrost topography in the MDV region and on analysis of overlying thermal properties resulting from a January-February MDV field season. Major results include 1) the first regional assessment of	Funding-dependent—of course!

	thermokarst subsidence in the MDV region using LiDAR observations from 2001 and 2014 (SCAR presentation), and 2) a new inventory of how mineral soil properties change in response to wetting in the MDV. The key result from the latter study is that wetting of soils from melting of ground ice may initiate a positive feedback in which wetted soils conduct more heat to depth, melting more buried ice, which ultimately further increases soil moisture content. Finally, the group has been working to use OSL dating to determine the age of paleolake deposits in the MDV (SCAR presentation) in order to better understand the boundary conditions under which buried ice has been preserved. Some lakes that have been thought to be Pleistocene in age based on algal mat dating may in fact have persisted through the recent Holocene. This means that buried ice preserved under the lakes has persisted through an extensive period of potentially high heat transfer. The key result is that different soils respond differently to wetting. Many mineral soils rapidly increase their thermal conductivity, resulting in rapid thaw. In contrast, inflated aeolian silts are good insulators over a wide range of wetting conditions. This suggests that local sediment properties (and, as a result, geological history) will play a strong role in determining which buried ice deposits are most threatened by Antarctic warming. Levy, J.S., and Schmidt, L.S., 2016, Thermal Properties of Antarctic Soils: Wetting Controls Subsurface Thermal State: Antarctic Science, p. Accepted.	
Marc Oliva, oliva_marc@yahoo.com	Over the last five years we have been conducting research on geomorphological, paleoenvironments topics across the South Shetland Islands. Among the main findings we should remark: 1) Permafrost distribution and active layer dynamics controls geomorphodynamics in the rapidly changing periglacial landscapes of the Maritime Antarctica (Ruiz-Fernández & Oliva, *2016;* Oliva & Ruiz-Fernández, *2015, 2016;* Correia et al., *reviewed;* Oliva et al*; reviewed*).	We will continue with our research in the South Shetland Islands with the purpose of expanding the study area to the eastern AP region, in James Ross Island (JRI), searching for climate gradients and teleconnections in Antarctica. Previous results have opened new and exciting scientific questions that will be assessed in future projects. We will submit new projects at national and international calls with the purpose of understanding of landscape evolution in the northern AP region following Holocene environmental change in the SSI and JRI.

	2) Paleoenvironmental records are made up of diverse lithological facies, some conditioned by topography and others by climate. Lake sediments reveal the environmental/climatic story of the last eight millennia. Using lake records and geomorphological evidences we have inferred the deglaciation sequence in Byers (Oliva et al., *2016*) and Barton peninsulas (Oliva et al., *submitted*). 3) Lake records show a succession of tephra layers. Deception Island has been unveiled as their source, with changes in the eruptive style along the last millennia (Liu et al., *2016*). Tephra layers are isochrones that allow correlating lake sequences from different lakes and even with marine/ice records. This allows assessing differences among catchments in the remobilization of old carbon from the permafrost (Antoniades et al., *in prep*). Ongoing geochemical/biological analysis of these cores will complement these findings with robust data on past climate/environmental changes. Working data is showing evidences of large abrupt events detected widespread across the AP region with large implications for terrestrial ecosystems (Antoniades et al, *submitted*), and dramatic shifts on biologic communities (Pla-Rabes et al, *in prep*).	The main interest in the SSI will be related to the deglaciation process. We have submitted a project to the Spanish national call in order to reconstruct the calendar of the deglaciation both in Livingston and King George islands, together with the spatial modelling of these glacial oscillations. The project will be focused on the use of surface exposure datings complemented with OSL and ^{14}C datings. We will be also interested in the relationship between deglaciation and permafrost formation, as well as in the intensity/impact of physical weathering processes following deglaciation. Another research line will be the reconstruction of permafrost degradation during the Late Holocene in Potter peninsula, by examining lake sediments and present-day mass-wasting processes. Regarding JRI, a special focus will be catchments and sedimentary infill existing in lakes in Ulu Peninsula, northern fringe of JRI. A paleoenvironmental approach for reconstructing past landscape and climate changes will be conducted, together with the monitoring of present mass wasting processes and permafrost thermal state/distribution. We will identify climatic and geographical controls on present-day processes, so that they can be used as geoindicators of past climate conditions through the analysis of the sedimentary record. Chronological, geochemical, physical, and biological studies will be carried out on cores collected from lakes. Chronological studies from rocks/sediments distributed across the landscape will be also used to reconstruct the environmental sequence in JRI. This approach will bridge the gap between the past sedimentological record and present-day processes. A better comprehension of the Holocene evolution in this permafrost environment will allow providing guidelines to assess on the future impact of climate change on landscape dynamics. Furthermore, this multi-proxy characterization will enable to accurately reconstruct the climate variability that have forced landscape changes in JRI. Past climate conditions from the SSI and JRI will be modelled to reconstruct the SAM-ENSO relationship during the Holocene in the northern AP region.

Ron Sletten, sletten@uw.edu	Ground ice stability, Mars analog for thermal modeling and ground ice stability, formation mechanisms of salt accumulation, using ice-rich permafrost cores as paleoarchive as well as understanding periglacial geomorphology, dating glacial events. (Hagedorn et al., 2007; Hagedorn et al., 2010; Hallet et al., 2011; Toner and Sletten, 2013; Toner et al., 2013; Liu et al., 2015) Hagedorn, B., R. S. Sletten and B. Hallet (2007). Sublimation and ice condensation in hyperarid soils: Modeling results using field data from Victoria Valley, Antarctica. Journal of Geophysical Research-Earth Surface 112(F3): 11 PP. Hagedorn, B., R. S. Sletten, B. Hallet, D. F. McTigue and E. J. Steig (2010). Ground ice recharge via brine transport in frozen soils of Victoria Valley, Antarctica: Insights from modeling δ18O and δD profiles. Geochimica et Cosmochimica Acta 74(2): 435-448. Hallet, B., R. Sletten and K. Whilden (2011). Micro-relief development in polygonal patterned ground in the Dry Valleys of Antarctica. Quaternary Research 75(2): 347-355. Liu, L., R. S. Sletten, B. Hagedorn, B. Hallet, C. P. McKay and J. O. Stone (2015). An enhanced model of the contemporary and long-term (200 ka) sublimation of the massive subsurface ice in Beacon Valley, Antarctica. Journal of Geophysical Research: Earth Surface 120(8): 1596-1610. Toner, J. D. and R. S. Sletten (2013). The formation of Ca-Cl-rich groundwaters in the Dry Valleys of Antarctica: Field measurements and modeling of reactive transport. Geochimica et Cosmochimica Acta 110(0): 84-105. Toner, J. D., R. S. Sletten and M. L. Prentice (2013). Soluble salt accumulations in Taylor Valley, Antarctica: Implications for paleolakes and Ross Sea Ice Sheet dynamics. Journal of Geophysical Research: Earth Surface.	Pending proposal for Dry Valley research on soil processes and salt accumulation. Working on permafrost core samples to date glacial events in the Dry Valleys. Continue working on Mars Science Laboratory (i.e. Curiosity Rover) using Antarctica as analog.
Jerónimo López-Martínez	Our group is interested in Quaternary geology, geomorphology and recent evolution of the relief. Studies of periglacial geomorphology, hydrogeology, soils and permafrost related processes are among our topics of main interest. Among other methods, we use remote sensing	To continue analyzing the samples and field data obtained previously, for advancing in the characterization of surface features and soils in the ice-free areas of the northern Antarctic Peninsula region. Progressing in

	techniques. We have published geomorphological and geological maps of several islands or areas of the northern Antarctic Peninsula region. We are working in Antarctica since 1990's, mainly in the northern Antarctic Peninsula region, although sporadically in other areas. We co-operate with other Spanish groups and scientists from different countries (New Zealand, Portugal, Italy, Argentina, Brazil, United Kingdom, Germany and USA).	the characterization and mapping of periglacial features and processes using remote sensing data. We have approved a new project covering up to 2018, which will permit to continue our research in the lines indicated before. This project includes two field campaigns in the northern Antarctic Peninsula region, in early 2017 and early 2018. We expect to develop the ongoing co-operation with other groups working in issues connected with our topics.
Filip Hrbáček; hrbacekfilip@gmail.com	Currently, soil/periglacial research is focused mainly on ground thermal monitoring. Measurements take place at several sites in shallow profiles (max. depth 75–200 cm), with the deepest sensor usually placed in the uppermost part of permafrost. At several sites, measurement of shallow heat flux (5 and 20 cm) and soil moisture (5, 20 and 50 cm) are also conducted. Aside of these monitoring sites, automatic weather stations (including temperature, global, reflected and UV radiation, wind speed and direction, snow thickness) allow to study the energy fluxes in air/soil interface, which has been established at two sites. Moreover, since 2014 annual measurements on CALM-S site (70x80 m) are in progress. The site has smaller area, which allows the CALM-S protocol, due to generally very hard conditions for probing on James Ross Island.	In following years we plan to focus more on lithological properties on particular study sites, which will concern: - Extend of soil heat flux measurements to deeper levels of the active layer to better understand soil physical properties. - Establish a second CALM-S site in interior low-lying part of Ulu Peninsula, James Ross Island.- Establish a new automatic weather stations for monitoring snow thickness variability in interior low-lying part of Ulu Peninsula - Shallow geophysical survey in different areas/transects. - Finishing the drilling and starting of physical properties measurement in an intermediate borehole (~10 m deep)
Mauro Guglielmin mauro.guglielmin @uninsubria.it	Our research historically is onpermafrost, active layer monitoring both in Antarctic Peninsula and in Victoria Land where also through international cooperation with BAS and Waikato University and Landcare Research ltd. We established a network of 5 deep boreholes (30m) and 2 calm grid. Moreover in the same area the research was also on the relationships between permafrost and vegetation and climate Change. Not secondly we are working on periglacial processes like rock glaciers and patterned ground, their dyamic and relationships with vegetation. We worked in the past also on the analyses of ground ice and more	- Mantaing the network of active layer, permafrost and vegetation monitoring. - Improvement of the work on the relationships between active layer, climate change and vegetation through new geophysical and remote sensing techniques both in Antarctic pensinula and in Victoria Land, - New borehole to study the hypersaline brines in Victoria Land and related PLF.

	recently we are working on hypersaline brines, their ecosystems and the geomorphological implication. Another topic that historically covered is the weathering of the rocks in cryotic environment and the related features and ecosystems	- New jointed researches on the monitoring of talik and of some landforms like debris flows or thermkarst in Victoria Land.
Carlos Schaefer; carlos.schaefer@ufv.br	Since 2002, we have been collecting, classifying, analyzing and mapping different soil types across South Shetlands and some sites in Peninsular Antarctica, regarding their importance and occurrence due specific soil forming processes (such as phosphatization). In addition, 21 permafrost and non-affected permafrost sites have already been monitored by their thermal and hydric regime in Maritime Antarctica. Maps of soil classes and vegetation distribution are obtained for the most important sites in Maritime Antarctica by using conventional and digital mapping in high-resolution images. Recently, studies have evaluated the current dynamic of carbon dioxide emissions in the main terrestrial ecosystems, considering the current and expected increase in air temperatures and precipitation. Also, applying Lidar and geophysical survey in ice-free areas in order to elaborate a detailed 3-D map of landscape and its properties. Soil samples are described by its micromorphological and microchemical characteristics, being indicators of pedogenesis. More than 40 original research manuscripts were published in the last 5 years, contributing to the scientific improvement of the international community and many students.	- Continued monitoring of active layer and permafrost on shallow boreholes network (23 sites) - Establish a CALM-S site in Keller Peninsula, digital elevation models with 20 cm of spatial resolution for Keller and Coppermine Peninsula, as well as new boundary for Keller. - Digital maps of soil attributes and heavy metals - Setting-up of carbon dioxide emissions/sinks and sources sites on James Ross and Seymour - 3D representation of terrain's surface by using Lidar and geophysical survey in new areas (James Ross, Vega, Seymour, Ellsworth),

Contributor	Main difficulties for your team's research activity?	What can you offer for partners?
Gonçalo Vieira (Universidade de Lisboa)	- Funding is currently a major concern, especially for the maintenance of the PERMANTAR GTN-P observatories across the WAP. - lack of research grant for PhD students and post-docs is seriously limiting research capacity in Portugal.	- Drilling equipment, especially for bedrock, down to 15 m. Also shallow borehole portable drills. - UAV equipment, flying and modelling expertise (ebee, phantoms). - DGPS systems, Total station, ERT Lipmann. - GEOMODLAB - Remote sensing and spatial modelling laboratory at CEG/IGOT (capacity to host researchers).
Andrey Abramov forestpro@gmail.com	We have no special funding for the Antarctic research, only logistical support from the Russian Expedition. We need support from the Antarctica NZ to organize research in Dry Valleys, Russian expedition have no permit to do any operation here.	We have one set of drilling equipment in NZ and one at Novolazarevskaya (more powerful and heavy) at the moment. The drilling team is based in Puschchino. We can do microbiology and soil analysis, measure methane concentration and other gases by chromatography, interpret metagenomic data.
Megan Balks m.balks@waikato.ac.nz	funding, time for lead researchers.	Expertise and advice on Ant Soils and permafrost. access to soil climate data.
Dan Morgan dan.morgan@vanderbilt.edu	Funding, access to sites. Remote sites require multiple projects to get funded in a similar area so that we can share resources for getting to sites.	Sharing of samples. There are opportunities for interdisciplinary work with biologists and petrologists who are interested in the same samples we collect, but ask very different questions.
João Canário (joao.canario@tecnico.ulisboa.pt)	Mainly funding and access to sites.	Expertise in biogeochemistry, experience in fieldwork and laboratory facilities in PT. My research center has a large number of analytical facilities as well as equipment that can provide structural knowledge of the inorganic and organic composition of several types of samples (e.g. NMR, ICP-MS, etc)
Jorge Carrasco (jorge.carrasco@umag.cl)	Mainly, the access to sites and budget for additional temperature measuring devices in order to establish monitoring grids. Funding approval for the aforementioned project to be known during the last quarter of 2016. It is mandatory to account the possibility of not accessing the sites, at least on Düse Bay, because it is a 39km snowmobile traverse across the *Antartandes* eastward, finally travelling over Glacier Tongue nº30, at Düse. Also, forming part of the exploration party of the Chilean	The support from Chilean Army accounts for the possibility of installing monitoring devices or measuring atmospheric/oceanographic parameters during the campaign at Cape Legoupil and Düse Bay, extending or integrating further research objectives. As well, the scope of our proposal does not yet consider studying intermediate sites present along the transect between coasts, to which task we welcome ideas on how to improve the resolution of the whole area studied

	army requires that anyone going has sufficient experience on ice progression maneuvers such as crevasse rescuing and such. Worth mentioning, 3 chilean army personnel died on this route on 2005. Extreme safety measurements are therefore considered by the Army. Chilean army's rescue party does this winter crossing of the Peninsula in order to perform ice-rescue exercises with their argentine counterpart from Esperanza Base.	
Joseph Levy (joe.levy@utexas.edu)	USAP selection rates are at a (nearly) all time low. Collaboration through different institutions, rather than across national programs, might be a way to work around that and increase access to different field sites.	My lab maintains a large stock of data loggers and sensors (weather stations, temperature, soil moisture, conductivity), time lapse imaging tools, and UAVs for photogrammetry and hyperspectal imaging (600-100 nm). We also have tools for sediment thermal and hydrological properties analysis. I'm happy to collaborate with anyone who needs field instrumentation—gear is ready to deploy!
Marc Oliva, oliva_marc@yahoo.com	Our main difficulties are related to the financial resources since now all research projects have finished.	Equipment: drilling systems for both terrestrial and lacustrine archives. Data: active layer, snow depth, air temperatures (since January'14 from Byers Peninsula) Samples: soil samples, lake sediment cores, samples for surface exposure datings (from Byers, Fildes, Barton and Potter peninsulas).
Ron Sletten, sletten@uw.edu	Funding and timing are always issues.	Laboratory facilities, stable isotopes, general chemistry, monitoring climate and periglacial dynamics, experience working on cores.
Jerónimo López-Martínez	Access to some areas not covered by our country logistics.	Mineralogical, geochemistry and stable isotopes laboratories.
Filip Hrbáček; hrbacekfilip@gmail.com	- logistic, which is dependent on Argentinean/Chilean Air Force/Navy - cargo transportation mainly from the study site (bigger volumes of samples is very hard to transport) - field work planning (really hard to say whether the season will take 30 or 50 days). - limited funding for PhDs and missing funding for Postdoc positions - for now, lack of laboratory equipment both in Czechia and	- facility and basic soil laboratory at the Johann Gregor Mendel Station including ATV/zodiac boat for transportation on James Ross Island; field camps equipment (tents, sleeping bags etc.) - Equipment/analysis: drilling equipment, IR camera, UAV, XRF analyser Soil laboratory and field equipment depends on the result of current project proposal. Several instruments are planned in the proposal: laser granulometer, soil/rock thermal properties analyzer, multi-function magnetic susceptibility Kappa bridge meter, geomagnetic

	Antarctica. Necessary to use external laboratories even for basic analysis.	survey, flow tracker - Precise topographical and geological map and 3D of James Ross Island (scale 1:25,000; 5 m contours; model resolution <2 m) - Detailed terrain model of some areas based on Structure-from-motion technique. - More than 10 years of field work experience in geological, physical-geographical and ecological disciplines on James Ross Island, which could be helpful to our partners for planning their work.
Mauro Guglielmin mauro.guglielmin@uninsubria.it	Funding are generally not abundant and in delay respect to the campaign. Problems of coordination among different time table of the different national agencies.	We can have drilling equipments, different geophysical equipment, long experience in different parts of Antarctica and Arctic, Laboratory facilities to cut permafrost samples and so on.
Carlos Schaefer; carlos.schaefer@ufv.br	Funding: pending financing from the Brazilian Ministry of Science and Technology for the completion of the 3rd year project Logistics: Delay in access to James Ross and Vega Islands	Soil lab facilities; sharing of monitoring data; access to soil database (www.terrantar.ufv.br)

5. SWOT Analysis of ANTPAS - INTERNAL

Contributor	Positive – Strengths	Weaknesses - Negative
Gonçalo Vieira (Universidade de Lisboa)	- large group of experts - active cooperation between members - integration in networks (SCAR, IPA, GTN-P) - Strong presence in the field all over Antarctica with unique observatories - long-term goals of many groups - frequent sessions in major conferences - ability to publish thematic issues	- Lack of visibility as a group - Large gap between meetings - Antarctica is very large and ice-free environments very disconnected spatially - Small involvement of members - Lack of funding - Lack of clear integration with other groups and disciplines - No clear strategy since the IPY - May be too much focus on temperature monitoring.
Andrey Abramov forestpro@gmail.com	NA	NA
Megan Balks m.balks@waikato.ac.nz	- Getting to know others working on similar issues in Antarctica – network/mutual support	- no-one has much time/funds for work or meetings or other support activities.
Dan Morgan dan.morgan@vanderbilt.edu	NA	NA
João Canário (joao.canario@tecnico.ulisboa.pt)	NA	NA
Jorge Carrasco (jorge.carrasco@umag.cl)	NA	NA

Joseph Levy (joe.levy@utexas.edu)	International information sharing and coordination	NA
Marc Oliva, oliva_marc@yahoo.com	Small group, but very active	- Not enough visibility - Funding resources
Ron Sletten, sletten@uw.edu	experienced members	- limited membership - lack of contemporary goals
Jerónimo López-Martínez	- internationality and multidisciplinarity - motivated community open to co-operate - coordinated involvement in SCAR and IPA - topic of special interest in the context of climate change	-
Filip Hrbáček; hrbacekfilip@gmail.com	- main organization on soil research in Antarctica - connection of researchers working in different areas in Antarctica - main topic "Antarctica Soils" provides lot of possibilities for further work	- missing better publicity (or PR) in social network (e.g. Facebook, Twitter etc.) - missing clear rules of data sharing and availability - fulfilling of "specific objectives" state on webpage -> it seems it should be updated
Mauro Guglielmin mauro.guglielmin@uninsubria.it	- Good coordination and efficiency for OSC and IPA sessions	- No real coordination of the activity
Carlos Schaefer; carlos.schaefer@ufv.br		

Contributor	Opportunities - Positive	Threats - Negative
Gonçalo Vieira (Universidade de Lisboa)	- Scientific significance of the topic - Interdisciplinary nature of permafrost as key to many disciplines (e.g. terrestrial ecology, chemistry, etc.) - Fast changing nature of the Antarctic permafrost environments - Large monitoring and interdisciplinary programs (?) - Possibility for joining bi-polar projects.	- Being taken over by other larger groups; - Losing identity once permafrost becomes a topic for a whole breadth of disciplines
Andrey Abramov forestpro@gmail.com	NA	NA
Megan Balks m.balks@waikato.ac.nz	-We have a good network – opportunities to work together to undertake major projects – seek funding – eg. IPA project fund.	- Danger of poor management/communication/ lack of visible activity leaving ANTPAS to slowly lose momentum and support.
Dan Morgan dan.morgan@vanderbilt.edu	NA	NA
João Canário (joao.canario@tecnico.ulisboa.pt)	NA	NA
Jorge Carrasco (jorge.carrasco@umag.cl)	NA	NA

Joseph Levy (joe.levy@utexas.edu)	NA	NA
Marc Oliva, oliva_marc@yahoo.com	Changing environments. Easy idea to sell More interaction with other scientists (ie biologists)	Most of the research is focused on the idea of a warming AP, which is not true.
Ron Sletten, sletten@uw.edu	NA	NA
Jerónimo López-Martínez	- continue developing the involvement in SCAR and IPA in a coordinated manner - relevance of the topic in the context of climate change	- cuts for research, and in particular for Antarctic research, in some countries
Filip Hrbáček; hrbacekfilip@gmail.com	- data and equipment sharing between teams - use available resources (social network, newsletter etc.) for better publicity or for internal purposes (Skype meetings etc.) - young researcher exchanges (fellowships) between teams, - publications (comparative studies, overviews, books) or special issues	- missing methodology for soil/permafrost research – e.g. from point of view of thermal monitoring it would be excellent if there should be some protocol how and where to measure -> it could be problem for comparative studies based on actual measurements. - last webpage update several years old - low number of active members - funding problems in lot of teams
Mauro Guglielmin mauro.guglielmin@uninsubria.it	The Umbrella of ANTPAS can sometimes help to increase the percentage of success of application for funding.	-Absence of real jointed projects funded by external sources (like private fundations, EU, NSF etc)
Carlos Schaefer; carlos.schaefer@ufv.br		

6. Suggestions to improve the role of ANTPAS

Contributor	Suggestions to improve the role of ANTPAS
Gonçalo Vieira (Universidade de Lisboa)	- Increase visibility; - engage members willing to promote and participate in ANTPAS; - Identify key (hot) topics to target at (new topics); - Define a strategy and clear milestones; - Target at key programs for access to funding.
Andrey Abramov forestpro@gmail.com	- Participation in the expert panels, publishing colorful review and reports.
Megan Balks m.balks@waikato.ac.nz	- Communication role within SCAR and IPA is really useful and not to be underestimated! - Regular newsletter, active website, - major project that many can contribute to???
Dan Morgan dan.morgan@vanderbilt.edu	- I aim to get more involved with the international community of Antarctic researchers.
João Canário (joao.canario@tecnico.ulisboa.pt)	- NA
Jorge Carrasco (jorge.carrasco@umag.cl)	- Further involvement and support towards PYRN and APECS.
Joseph Levy (joe.levy@utexas.edu)	

Ron Sletten, sletten@uw.edu	- Special meetings focusing on topical topics.
Jerónimo López-Martínez	- Could be good to identify a joint project/publication, of broad interest, to be completed with contributions from the ANTPAS community
Filip Hrbáček; hrbacekfilip@gmail.com	- We can't say for now, since we are quite new in ANTPAS.
Mauro Guglielmin mauro.guglielmin@uninsubria.it	- Better involvement of persons especially in the website. - Organization of ANTPAS Workshop (true workshop of 1-2 days) every 2 years in the year when OSC there is not.
Carlos Schaefer; carlos.schaefer@ufv.br	-