



## NATIONAL ENDOWMENT FOR THE HUMANITIES

DIVISION OF RESEARCH PROGRAMS

### **Narrative Section of a Successful Application**

The attached document contains the grant narrative of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and applicants are urged to prepare a proposal that reflects their unique project and aspirations. Prospective applicants should consult the Research Programs application guidelines at <https://www.neh.gov/grants/research/collaborative-research-grants> for instructions.

The attachment only contains the application narrative, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

**The application format has been changed since this application was submitted.** You must follow the guidelines in the currently posted Notice of Funding Opportunity (see the Notice posted on the Collaborative Research program page linked above).

Project Title: Fedchenko: Eco-Biography of a Glacier

Institution: University of Rochester

Project Director: Tatyana Bakhmetyeva

Grant Program: Collaborative Research

## FEDCHENKO: ECO-BIOGRAPHY OF A GLACIER

### I. Significance and impact

Introduction. We are applying for the NEH Planning International Collaboration (PIC) grant to pilot an international interdisciplinary project on the natural and cultural history of the Fedchenko Glacier (Pamir, Tajikistan), one of the world's longest glaciers outside the polar regions. The project is conceived as an important contribution to both the environmental humanities and the emerging field of the "ice humanities." It consists of two goals: 1) to produce a transdisciplinary eco-biography of a uniquely significant glacier that will advance our understanding of how glaciers emerged as scientific objects and offer a cultural perspective on the role of glaciology in climate change studies--subjects hitherto neglected by humanists and humanistic social scientists, and 2) to develop an innovative transdisciplinary approach to studying glaciers as both physical and culturally imagined landscapes.

The project is based on existing connections between humanists, social scientists, and scientists from the United States, Germany, Switzerland, Tajikistan, and Uzbekistan, under the auspices of the [PAMIR Project](#), a flagship initiative of the Swiss Polar Institute in which several of us participate as unfunded collaborators. With the help of the PIC grant, we will turn these initial connections into a collaborative international space to generate innovative research. We seek funding to plan the initial stages of this project. If successful, we will use the funding to complete archival and field research, deepen our collaboration with scientists and regional scholars, conduct methodology development workshops and working group meetings to generate a book proposal including the book's concept and content (chapter outlines and contributors), identify and approach publishers, and pursue subsequent funding applications for the completion of the manuscript.

Significance. Glaciers are at the conspicuous center of climate change debates today, as well they should be. All over the world, mountain glaciers are quickly receding, causing both drought and flood and bringing us closer to living in what the geophysicist Henry Pollack has called "a world without ice" (2009). In this context, glaciers have emerged as one more "endangered species" (Bosson et al., 2019) and "key icons" of global warming (Carey 2007). As glaciers die, it becomes increasingly important to tell the story of their lives, both natural and cultural, and to challenge the notion that glaciers, as Pollack puts it, are "just ice" that "asks no questions, presents no arguments, reads no newspapers, [and] listens to no debates," but rather "just melts" (2009). Understandably, Pollack wants to stress the political impartiality of climate change and its objective inevitability. But in doing so he overlooks the fact that glaciers have not just a physical but a cultural dimension. They shape our social and cultural as well as physical landscapes, and the ways in which society has understood them has changed throughout recent history (Carey 2007). While natural scientists have extensively researched their physical properties, humanists and social scientists have only just begun to explore them as socio-historical formations. Scholars in the emerging field of the "ice humanities" (Dodds 2021, Dodds and Sörlin 2022) have turned their attention to the "cryo-histories" (Sörlin 2015) and the "cryo-politics" (Cowal and Radin 2017) of ice, and some focus on glaciers specifically (Cruikshank 2006, Jackson 2019, Knight 2019). Our project makes a notable contribution to this growing scholarship by putting a single glacier, the Fedchenko, at centerstage -- an approach that will allow us to explore the many aspects of its history.

Our choice of the Fedchenko Glacier is careful and deliberate. It is, in fact, difficult to overstate the importance of this particular glacier. Located at the heart of Eurasia in the Pamir mountains in the Republic of Tajikistan, it is part of the Earth's third-largest ice store (100,000 square kilometers in the Pamir-Karakoram-Hindukush-Himalaya) after the Arctic and Antarctic (Thompson et al. 2018). What is more, the Fedchenko is one of the largest glaciers on the planet with a total length of seventy kilometers (Lambrecht et al. 2014, Knoche et al. 2017). The glacier feeds the Amu Darya, Central Asia's biggest

river and main source of irrigation for an estimated five million hectares of agricultural land (ENVSEC 2011). But although the Fedchenko is an iconic glacier, it is also a “forgotten” one (Raylat 2022). Its obscurity follows from its extremely remote and often inaccessible location, from the very limited coverage of Central Asia in today’s global media, and from the geopolitical divisions and linguistic barriers that have shaped and continue to shape glacial science. Our project introduces this formidable glacier to the reading public as we explore its multidimensional history and trace how the knowledge of this glacier emerged and changed, what political forces shaped this knowledge, and how the colonial and gendered ethos of that knowledge informed (and continues to inform) our understanding of this icy giant. But perhaps more importantly, our project is also a response to a growing recognition that in order to address such pressing issues as climate change, we need authentic collaborations between scientists and humanists, with the latter bringing a much-needed cultural perspective on the conceptual framework that shapes human-nonhuman relationships. We also need international partnerships with regional scholars and community stakeholders who live with and near glaciers. As a team that 1) includes historians, geographers, a cartographer, and a gender studies scholar, 2) has close connections to scientists working in the field of glacial studies, and 3) has developed initial contacts with regional scholars and scientists, we are strongly positioned to make an important contribution to such transdisciplinary work and encourage further research along these lines in future.

## **II. Substance and context**

Project description (substance, questions, and contribution). The project primarily focuses on the historical time span of 150 years from the 1870s until the present. This period is, admittedly, a very short one in the long physical life of the Fedchenko Glacier, which, our scientific colleagues confirm, has lasted, at a minimum, for 120,000 years. Moreover, current estimates by leading glaciologists expect the Fedchenko to last for 200 to 300 more years – an estimate that is, of course, fraught with the uncertainties of rapid global warming. The short *durée* of 150 years that this project addresses represents the period of the glacier’s social and cultural life, the period during which it became an object of Russian, Soviet, and international scientific inquiry. First described by the Russian explorer V. F. Oshanin in 1878, the Fedchenko was, of course, known to those local communities that had lived alongside it for centuries. There are, however, few to no records of these pre-Russian socio-environmental relations. Oshanin’s “discovery,” therefore, marked the moment of a “second birth” of the Fedchenko Glacier as it became introduced into Russian, and later Soviet and international discourses. During the time span of 150 years, the glacier’s deep history, its physical existence, and human interactions with and interpretations of it have continually been reframed. Our proposed cultural history of the Fedchenko—written in the genre of *eco-biography*—will shed light on the “social life” of this glacier by exploring these historical shifts and looking at how and why this glacier became an object of expeditionary discovery, cartographic mapping, glacial science, and alpinist ambition.

Eco-biography views the history of an ecological entity – a glacier, in this case – biographically by exploring its “life story” (Cioc 2006). In our context, such a choice of genre aims to examine the glacier as a historically dynamic rather than static ecological entity, dynamic not only in its physical existence which has constantly undergone changes and continues to do so in relation to the prevalent climatic conditions, but also in its social existence as a feature of the environment to which humans relate. The project conceives of these two dimensions as closely intertwined and sets out to unravel the glacier’s biography at the interface of its social and environmental history. The notion that a glacier has a “life,” a “personality,” and therefore a biography, is not out of step with scientific and popular ideas, and thereby provides a productive entry point for communication with both academic and lay publics (Cioc 2006).

At the center of the Fedchenko’s life story is the 1928 German-Soviet expedition to the Alai-Pamir. While not forgotten, the expedition has never been seriously taken up by either historians of science or

exploration. Soon to mark its centennial, this scientific venture, organized by the *Notgemeinschaft der Deutschen Wissenschaft* in Berlin and the *Russian Academy of Sciences* in Leningrad, with the support of the German and Austrian Alpine Clubs, was a highly unusual collaboration and one of the first truly international large-scale glaciological expeditions. It included scientists, mountaineers, Red Army soldiers, and scores of local guides, porters, and translators. The expedition featured an elaborate research program that ranged over several scientific disciplines, from astronomy to zoology and all alphabetic points in between. Its signal achievement, however, was the first definitive exploration and survey of the Fedchenko. Using both traditional plane tables and the new photogrammetric methods recently developed in the Alps, Soviet and German cartographers created the first detailed maps of the Fedchenko and confirmed its existence as one of the world's greatest glaciers.

From this mid-life moment in the Fedchenko's eco-biography, we extend the reach of our proposed volume both backwards and forwards in time, starting with the first descriptions of the glacier by nineteenth-century Russian explorers in the 1870s and early 1900s (including V. Oshanin, I. Mushketov, N. Kosinenko, and N. Korzhenevskii) and ending with the glaciological research carried out there by the second German (GDR)-Soviet expedition during the International Geophysical Year (IGY) of 1958. Over time, and especially with the installation of a fixed hydrometeorological station in 1933, the Fedchenko witnessed an important paradigm shift from expeditionary research to constant observation and data collection. These moments in the Fedchenko's life laid the foundations for modern glacial climate change research in the area and allowed a later generation of Soviet scientists to make the first assessments of the effects of climate change on the Pamir glacial system.

Such moments as these are central to Fedchenko's "life": they suggest that the Fedchenko has unique importance as one of the first non-Alpine glaciers to enter the Western cultural imagination and as one of the earliest sites to call serious attention to the effects of the earth's warming on the global cryosphere and offer clues to climate-related changes in glacial ablation and accumulation. Furthermore, it was here, on the Fedchenko, that climate change firmly emerged as not just a *physical* but also a *cultural* reality, one expressed both through the recognized impact of glacial melting on local communities and through culturally specific ways of producing glaciological and climate-related knowledge. The exceptionally well-documented and rich history of discovery and study of the Fedchenko, thus offers a unique opportunity for historians and social scientists to gain insights into the politics and practices of early climate change science.

The story that the Fedchenko tells is, in fact, central to our understanding of the historical, cultural, and scientific significance of glaciers. Yet with the exception of a few scientists (Kotlyakov 2014, Lambrecht et al. 2014), scholars have largely ignored these formative moments in the history of glaciology and the role of the Fedchenko in shaping modern thinking about glaciers. Our project addresses this gap. And though we propose to focus on a single glacier and the glaciological science associated with it, the significance of our project transcends this particular case. We use the Fedchenko as a lens through which to examine some of the pressing questions about glaciers and glaciology more generally: how have glaciers been culturally understood and imagined? What nationalist, gendered, and colonial imperatives inform these imaginings? How did our historically specific imagining of glaciers (and especially its strong colonial and masculinist ethos) shape glaciological science, its research questions and methods? How did glacial science as a discipline evolve? What were some of the most important turning points in that evolution? How did our understanding of glaciers as central to climate change research emerge? Furthermore, how did our cultural imaginings of glaciers shape the modern climate change discourse on ice and glacial melting? And, perhaps most importantly, what were some of the alternative imaginings? How did the local communities see glaciers and understand their relationship with them historically?

Source Materials. One of the most important contributions of our work will be the introduction into scholarly circulation of a number of previously unused sources (published and unpublished) that pertain to the cultural history of glaciers/glacier studies more generally and of the Fedchenko and its glacial science more specifically. The 1928 expedition alone led to several dozen volumes of scientific results and numerous memoirs, diaries, and personal accounts. These published sources remain unanalyzed and obscure to environmental historians and historians of science alike. In addition to published sources, the archives of the Bavarian Academy of Sciences and Humanities in Munich house a large body of German expedition cartographer R. Finsterwalder's unpublished works, along with the original photogrammetric equipment and the photo glass plates that he used during his work at the Fedchenko. German expedition leader W. Rickmer Rickmers's personal materials as well as additional sources pertaining to Finsterwalder's work are at the German Alpine Club, also in Munich. Our team plans to work at these archives together during the period of grant performance. And while Russian archives remain inaccessible at the moment given the on-going war in Ukraine, two members of our team, Bichsel and Doose, have been productively working in the archives in Tashkent, the main repository of materials related to the Fedchenko's science and history. They have successfully accumulated sources on earlier expeditions led by V. Oshanin, N. Kosinenko, and N. Korzhenevskii, among other things, and have also begun collecting oral interviews from regional scientists involved in climate research on the Fedchenko. Furthermore, they have collected material on the 1958 Fedchenko expedition in the Archive of the Academy of Sciences of the GDR and the Brandenburg State Archive, as well as from the personal collection of former Soviet amateur historian and climber Igor Logachev.

Relevant Literature. We see our work entering an unfolding discussion - within the context of the "ice humanities" - about the place of glaciers in human imagination and culture. (For scholarship related to the "ice humanities," see above, section I). Through the lens of eco/feminist theory, we expose and analyze the gendered and colonial impulses that inform modern glacial science (see section III, below). By offering one of the first in-depth cultural histories of a glacier and the glacial science associated with it, our project contributes to a growing body of work (M. Carey, P. Knight, J. Cruikshank, M. Jackson) that reimagines the human relationship with glaciers. No less importantly, we address a largely overlooked area of interest, that of the history of glaciological knowledge and of climate studies. In that respect, we also make an important contribution to the persistent gap in the field of environmental history and history of science noted by Ron Doel (2009), namely, the lack of attention to the physical sciences, including ice and climate sciences. Resulting from a bias toward the biological and life sciences that reflected environmentalist concern with conservation and the preservation of nonhuman life, this lack of attention to physical science on the part of environmental historians has led to the exclusion of an important dimension of thought that deals directly with the modern understanding of climate change. (Note: We are grateful to Dr. Pei -Yi Chu for stressing this point to us during the 2022 ASEEEES conference). Our work not only adds to the still limited body of historical work on climate sciences (e.g., Jonathan Oldfield) but, importantly, places its emergence *before* the Second World War. Finally, we envision our project adding to the growing list of books in the genre of eco-biography (see section VII), the best examples of which--such as Cioc's *The Rhine: an Eco-biography, 1815 - 2000* (2002) and more recently, Chu's *Life of Permafrost* (2020)--combine rigorous and focused scholarship with engaging narratives that appeal to general readers. We model our book on these fine examples of environmental writing and also the recent *Krakow: an Eco-Biography* (Izdebski and Szmytka 2021)--a multi-authored work that offers a nuanced and comprehensive environmental portrait of this important Polish city.

### III. Methods and execution

Theory. In recent years, scholars have begun to stress the need to study glaciers as "contested and controversial objects of knowledge" that are historically and culturally imagined and whose health and survival now depends on finding alternative imaginings (Nüsser and Baghel 2014). M. Carey, for example, calls for a new approach to glaciology, one informed by feminist theory, that would both bring

in new perspectives (from female scientists and indigenous communities) and uncover “the under-examined history of glaciological knowledge and glacier-related sciences” (Carey 2016). Our project responds to this call for a feminist analysis of glaciers as complex cultural constructs and of glaciological science as a discipline shaped by gendered - and often colonial - impulses that need to be made visible and interrogated as we strive to create “more just and equitable science and human-ice interactions.” (Carey 2016).

Methods and project design. Historically, glacial science was undertaken by scientists from different disciplines, including geology, geomorphology, hydrology and mathematics. Recognizing that complexity, we stress that writing a history of glacial knowledge requires a similarly interdisciplinary approach, one in which scholars from different fields and areas of study work together with local stakeholders (academic and non-academic) to develop an authentic and integrated *transdisciplinary* conceptual framework. Developing a model for authentic transdisciplinary research and writing is, therefore, one of the major goals of this project. *We understand transdisciplinarity as a research strategy that not only brings many disciplinary voices together but integrates them to create a holistic, shared methodology that is further augmented by contributions from community stakeholders to offer a systemic approach to contribute to solving complex multi-disciplinary problems, such as glacial melting and climate change.*

Toward this end, we bring with us and use together methods and approaches that range from cartography to geography and gender studies. First, because several of us are trained as historians, the historical methodology of working with primary sources and the close reading of both published and unpublished (archival) materials are central to our research (on the accessibility of our archival sources see section II). All of our team historians also have extensive experience and training in oral history. Bakhmetyeva and Weaver were the recipients of the American Society for Environmental History Public Outreach Award (2021) for their innovative community-based oral history project on climate change adaptation in Ladakh, India. Furthermore, central to our approach also is attention to the materiality of glacial studies. In addition to textual sources, we will study scientific equipment, such as Finsterwalder’s photogrammetric instruments and products linked to them, including photographic glass plates and maps. Recognizing that “knowledge is produced .... in the interaction of humans, objects, and the spaces they are situated in,” (Schillings and Van Wickeren, 2015) we explore how scientific sites and instruments - both historical and modern - contribute to and shape the cultural imagining of glaciers as objects of study. We thus will be visiting the site of the glacier and work alongside scientists to observe and document their methods and work practices. This opportunity, unique for scholars studying cultural aspects of science, is made available to us through the collaborative framework of the PAMIR project. Beyond our team, we will rely on our existing partnership with scientists, both international and regional, from the [PAMIR Project](#) as well as our emerging contacts with stakeholders in Uzbekistan and Tajikistan, to bring important local and scientific perspectives and reading of sources.

Given these theoretical and methodological goals, our project calls for a number of workshops and training sessions designed to encourage collaborative work and to develop a transdisciplinary research methodology that will result in a book proposal by the end of this planning stage and, eventually, a transdisciplinary volume on the Fedchenko Glacier. Such meetings/workshops will allow us to have multiple sustained day-long conversations in order to 1) develop shared methodologies and theoretical approaches; 2) exchange discipline-specific insights and interpretations while looking at the same body of sources and develop a common conceptual framework; 3) receive joint training from the scientists of the PAMIR Project on the use of historical equipment and interpretation of historical photogrammetric data as well as a safety course on working on glaciers; 4) visit the Fedchenko site and conduct ethnographic observations of the scientists working on the glacier; 5) block out the manuscript contents and list of contributors, including international and regional scientists; 6) develop a book proposal; and 7) identity

likely publishers and strategies on approaching them. We plan to hold five workshops/working group meetings, at locations that include the applicants' home institutions as well as regional field sites. Each of these workshops will serve as a site to advance specific project goals. (For more details on each workshop, see the Work Plan.)

#### ***IV. History of the project and its productivity***

History. Our collaboration emerged from a panel organized by Katja Doose and Christine Bichsel for the 2022 meeting of the Association for Slavic, Eastern European, and Eurasian Studies. Responding to an invitation to submit a proposal for a panel on earth sciences that Doose posted on H-Russia, Tatyana Bakhmetyeva proposed a paper on masculinity and glacial studies in the context of the 1928 German-Soviet Alai-Pamir expedition – only to discover that Doose and Bichsel were also working on Pamir glaciers. Through subsequent correspondence, Bakhmetyeva and Bichsel discussed their shared interests and established that they covered different aspects of this vast but largely unexplored topic. They then took the lead in gathering together a team of scholars interested in working on the topic of glaciers and glacial science in Central Asia. In a series of Zoom meetings that followed this initial contact and preceded the conference, the group grew to include - besides Bichsel, Bakhmetyeva, and Doose - Stewart Weaver, a historian of exploration, alpinism, and science, and Sofia Gavrilova, a cartographer and geographer. During these meetings, the team members further confirmed their shared interests in the history and science of the Fedchenko Glacier, interests that are, however, shaped by different research questions. Bakhmetyeva, as a cultural and gender historian and a feminist theory scholar, is particularly invested in looking at how the gendered identities of German and Soviet explorers shaped their imagining of the Fedchenko. Bichsel, an environmental historian and a geographer, brings an interest in early encounters with the glacier to her ongoing research on and knowledge of the region's hydrology. Both Bakhmetyeva and Bichsel explore how the colonial ethos of Russian and Soviet expeditions influenced visions of the glacier and of the local communities. Weaver adds his interest in the science of photogrammetry and his expertise on alpinism and mountaineering as he analyzes how these activities intersected and overlapped with glacial scientific projects. Doose is particularly interested in climate studies on the Fedchenko during the Cold War, especially the 1958 Soviet-German expedition. Having published work on the history of climate science in the Soviet Union, her interests lie now in exploring the applied climate sciences. Gavrilova's research looks at international scientific collaborations while her training and previous work in Soviet geography and cartography adds an important dimension that will allow the collaborators to delve into the science of glacial mapping, both historical and modern. Through a series of initial Zoom meetings in which we discussed these complementary interests, we developed authentically collegial and mutually beneficial relationships that culminated, at the suggestion of Bichsel, in our becoming collaborators (unfunded) on the [PAMIR Project](#), in [the History of Glacial Science cluster](#), led by Bichsel. Partnership in this project offers us an important connection to the community of scientists working on the Pamir glaciers. The participants of the PAMIR Project, including members of our research cluster, hold regular meetings to discuss research developments in their clusters and to suggest new ways of collaborating. The combination of our interests, all focused on a similar topic but framed by different disciplinary and personal scholarly interests, plus the collaborative structure of the PAMIR Project, creates a unique opportunity, we believe, to produce work that will become a model for transdisciplinary research--an approach that not only welcomes multiple disciplinary views but strives to create a common conceptual (transdisciplinary) framework that is further shaped and informed by contributions from community stakeholders .

Productivity. With our final project – a book on the transdisciplinary history of the Fedchenko - still in the early stages of development, our productivity to date has centered in several related areas. First, we have been working on creating a shared research archive that includes both primary and secondary sources. Bichsel and Doose, in particular, have been instrumental in contributing to that repository: they have secured permissions to access archival and library materials in Tashkent, Uzbekistan and have made

several trips to Tashkent where they have not only collected published and unpublished sources pertaining to the history of the Fedchenko and Russian/Soviet glaciology but also made contacts with and interviewed local scientists and historians. Weaver and Bakhmetyeva have been working on translating published primary sources, including diaries, memoirs, and scientific reports of both German and Soviet participants. Second, the team members, both together and separately, have presented early research results of this project at several conferences. In October 2022, Bichsel, Doose, and Bakhmetyeva participated on a panel on Soviet earth sciences at the Association for Slavic, East European, and Eurasian Studies. Bakhmetyeva and Weaver presented a paper on the history of photogrammetry and glacial mapping at the History of Science Society conference in Chicago (November 2022). We have also applied for a number of other conferences where we expect to present further findings (e.g., European Society for Environmental History, Bern, 2023; Max Planck Institute's Symposium on the History of the Map, Berlin, 2023; and others). Several of us are working on turning our conference presentations into journal articles. In addition, Bichsel has recently contributed an important article, "White Spots on Rivers of Gold: Imperial Glaciers in Russian Central Asia," to *Ice Humanities: Living, Working, and Thinking in a Melting World* (Manchester: Manchester University Press, 2022).

Next step. We continue to meet online regularly to discuss the project, to develop and exchange ideas and sources, and to explore other venues for collaboration. But while we have had many productive Zoom meetings, we believe we have reached the limits of that approach. Time differences make it difficult to meet regularly and for sustained periods of time, while unstable internet connections complicate effective communication - and in the case of regional scholars, make it impossible. These limitations make it imperative for us to have a series of working group meetings/workshops in person, for research and planning purposes, as well as building team cohesion and connections with international scientists and local stakeholders in Uzbekistan and Tajikistan (see sections III and VI on the planned workshops).

#### V. Collaboration

Team. Our team came together somewhat serendipitously, but quickly evolved into a cohesive and complementary group. Members of our team bring unique perspectives from which to explore the complex cultural life of the Fedchenko. They also bring with them the support of their home institutions and important connections with scientific and local regional communities. Thus, while we do not include scientists among the applicants of this grant, we have nevertheless established close working relationships with several glaciologists and other scientists within the structural framework offered by the PAMIR Project. And we are confident that we will secure contributions from these scientists to the manuscript. Among such potential contributors (b) (4)

We plan to deepen and expand these contacts during the performance period of this grant and turn them into productive and meaningful collaborations, including chapter contributions. Finally, the geographical distribution of our team members will also help to carry this project to fruition. Several of us work at the same institutions (Bakhmetyeva and Weaver, University of Rochester, USA, and Bichsel and Doose, University of Fribourg, Switzerland). Such pocket concentration of team members will make it possible for them to work on elements of the projects (book chapters, revisions, papers, articles) together outside in-person meetings of the whole team.

#### Participants.

**Tatyana Bakhmetyeva, Project US Director**

Bakhmetyeva is an Associate Academic Director and Associate Professor at the Susan B. Anthony Institute for Gender, Sexuality, and Women's Studies and Associate Professor of History at the University of Rochester. In this capacity, she is well positioned to undertake the project. She has recently completed a book-length manuscript on Soviet masculinity, which made her familiar with the current literature on masculinity and introduced her to some of the current project's *dramatis personae* (such as N. Krylenko, a participant of the 1928 expedition) and themes, including some of the following: nature as a site for reproduction of masculinity and power; nature and ideology; masculinity and adventure; masculinity and the control of nature, among others. In addition, she has published works on nature and national identity, and methodological and theoretical pieces on oral history, community-based participatory research, and ecofeminism--a theoretical lens that the team uses in the analysis of sources for this project and that will inform the discussion of the gendered aspect of early glaciology. Finally, as a collaborator on a Carnegie-funded, ASEH award winning [oral environmental history project in Ladakh, India](#) and a contributor to the [PAMIR Project](#) that both focus on glaciers, she is closely familiar with the literature on glaciology and am well-versed in the scientific terminology and contemporary scientific discussions. She is fluent in Russian and proficient in German--two of the project's research languages. Bakhmetyeva's position and teaching commitments allow her to dedicate a significant amount of time to the project, part-time during the academic year and full-time during summer months.

#### **Christine Bichsel, Ph.D., Project International Co-Director**

Bichsel is a Professor in Human Geography at the Department of Geosciences at the University of Fribourg and a scholar of political geography and environmental history. She holds a PhD in Geography from the University of Bern. Her research explores how relations of power and violence shape knowledge, infrastructure and the environment. Her geographic areas of focus include Central Asia, Russia, and China. Her articles have appeared in *Environment and Planning*, *Water History*, and *Slavic Review* among other journals. Bichsel's research deals extensively with contemporary and past water issues in Central Asia. She is the author of *Conflict Transformation in Central Asia: Irrigation Disputes in the Ferghana Valley* (Routledge, 2009). Her next book *Heavy Water: The Hungry Steppe Campaign in Soviet Tajikistan, 1958-1979* is under contract with the Ohio University Press. Bichsel's current research explores the history of Russian and Soviet glaciology in Central Asia. Her focus is on how Imperial Russian and Soviet science identified glaciers as scientific objects and established a relationship between glacier changes and time. Bichsel's position and teaching commitments allow her to dedicate a significant amount of time to the project, part-time during the academic year and full-time during summer months.

#### **Stewart Weaver, Ph.D., Project US Co-Director**

Weaver is a Professor of History at the University of Rochester with a well-established record of publication for both scholarly and general audiences. After writing two books in the field of British social and political history, he turned to the history of alpinism and mountain exploration. His book *Fallen Giants: A History of Himalayan Mountaineering from the Age of Empire to the Age of Extremes* (Yale 2008), co-authored with Maurice Isserman, is now the definitive history on that subject. More recently, Weaver is the author of *Exploration: A Very Short Introduction* (Oxford 2016) and a book-length work-in-progress (completed manuscript under review) on the history of magnetic science and polar exploration. In 2019 he was awarded an Andrew Carnegie Senior Scholars Fellowship for his on-going work on the history and experience of [climate change in the Trans-Himalayan region of Ladakh, India](#). This current project on the Fedchenko Glacier and the emergence of glacial science arises out his combined and well-established interests in the history of alpinism and mountain exploration, environmental history, the history of science, and the history of climate change in mountain regions--all areas that he will cover in his contributions to the anticipated volume. With the benefit of a teaching release from his home institution, he will devote time to the project both during the spring semester of 2024 and during the following summer.

### **Katja Doose, Ph.D.**

Doose is a historian and currently works as a senior researcher in the Department of Geosciences at the University of Fribourg, Switzerland. She received her PhD from University of Tübingen and worked on the history of natural disasters in the Soviet Union, focusing on the 1988 Armenian Earthquake as a lens through which to explore Perestroika in the USSR. More recently, she has been researching environmental history and the history of science in Russia and the Soviet Union and has held positions at the University of Birmingham, the Advanced School of Social Sciences in Paris, and the Graduate Institute in Geneva. In particular, she has been working on the history of climate science from the late 19th throughout the 20th century. Her publications include articles on international collaboration in climate sciences during the Cold War, as well as on the history of Soviet climate models. In her second book project “Tracing the Anthropocene: The History of Russian climate sciences in the 20th century,” she looks at how climatic changes and climate in general have been understood and addressed by scholars, society, and state actors. She currently works on the 1958 Fedchenko expedition that was organized by the Soviet Academy of Sciences within the framework of the International Geophysical Year 1957. Doose’s position and teaching commitments will allow her to dedicate a significant amount of time to the proposed project, part-time during the academic year and full-time during summer months.

### **Sofia Gavrilova, Ph.D.**

Gavrilova is a human geographer and critical cartographer at the Leibniz Institute of Regional Geography, Leipzig, Germany. Her PhD (University of Oxford) focused on the system of Soviet and post-Soviet regional museums, and how they have produced and continue to reproduce certain specific cultural myths and silences traceable to the 1930s, when the network of museums was established following strict Soviet guidelines. Gavrilova’s work examines the history of the development of geographical thought, ethnography, and history in the USSR and reveals to what extent contemporary museums still follow long-established Soviet patterns. During her postdoctoral years, Gavrilova engaged with the project "GulagEcho" and is currently working on the topics of educational cartography and classroom geographical education in the former Soviet countries. Gavrilova’s position and teaching commitments allow her to dedicate a significant amount of time to the project, part-time during the academic year and full-time during summer months.

### **VI. Work plan**

Note that our work will, of course, continue outside of the in-person meetings listed below as we approach potential contributors, deepen connections with scientists and local communities, revise drafts, and write and present papers.

In person workshops and working group meetings include:

1. October 2023
  - the German Alpine Club (Munich, Germany) - archival research
  - the Bavarian Academy of Sciences and Humanities (Munich, Germany) - a workshop on using historical scientific instruments from the 1928 expeditions; work with the original 1928 glass images of the Fedchenko and the map produced from these images.

*Participants:* the team plus Dr. Christof Mayer, a glaciologist from the PAMIR project and a researcher at the Bavarian Academy of Sciences and Humanities.

2. February 2024
  - University of Fribourg (Fribourg, Switzerland) - preliminary research presentations to and methodological workshops with partner scientists on the PAMIR project; working group meeting to sketch out the book description and outline and identify potential contributors.

*Participants:* the team plus scientist collaborators from the PAMIR project.

3. Spring 2024

- University of Fribourg (Fribourg, Switzerland) - two training glacial safety sessions: session one with the GRIMM (<https://grimm-vs.ch/index.php/formation>); session two - on a nearby glacier. *These sessions will be offered and funded by the PAMIR project.*

*Participants:* the team plus scientist collaborators from the PAMIR project.

#### 4. Early Summer 2024

- the Geography and the History Departments of the National University of Uzbekistan (Tashkent, Uzbekistan)
  - the Uzbek Hydrometeorological Research Institute (NIGMI) (Tashkent, Uzbekistan)
  - the Fedchenko Glacier (Tajikistan)
- meetings with and presentations to the regional collaborators on the project; visits to the Fedchenko glacier, organized together with the PAMIR project team and carried out jointly with a Tajik-Swiss field campaign for glaciological observations on the Fedchenko Glacier.

*Participants:* the team plus scientist collaborators from the PAMIR project and regional partners.

#### 5. Late Summer - Early Fall 2024

- University of Rochester (Rochester, USA) - working group meetings to finalize the book proposal based on confirmed contributors and research results and to identify potential publishers; presentations to and feedback from the affiliates of the University of Rochester's Humanities Center (HC) and various sustainability, environmental studies, and climate justice working groups linked to the HC; planning of the next stage of the project.

Participants: the team plus colleagues at the University of Rochester.

NB: Fully aware of effects of international travel and in-person meeting on our collective carbon footprint, we have committed as a team to the purchase of carbon offsets to our travel.

### **VII. Final product and dissemination**

Our final product for this planning stage is a book proposal (with outlined chapters and identified and secured contributors from various disciplines) for a manuscript tentatively titled “Fedchenko: an Eco-Biography of a Glacier.” The choice of genre is intentional. As environmental historians increasingly become aware of the need to embrace critical theoretical approaches— such as eco/feminist theory, for example (see Carey 2016) – they are confronted with the task of centering not just alternative human narratives (those of indigenous groups, for example) but also non-human ones. Efforts to depart from the frequently human-centric scientific narratives about the environment are not altogether new. The field of environmental history has produced river histories (Worster 1985, Tvedt 2004, for an overview of this field see Schönach 2017), mountain histories (McNeill 1992, Silver 2003), and lake histories (Ashworth 1986, Niepytalska 2021). The genre of eco-biography offers a useful organizing and stylistic framework for such a re-centering by way of the story of a single natural system. Glaciers are thus far absent from this genre, a startling omission in view of their ever-accelerating disappearance and especially surprising when considering glaciers’ prominence in science and in popular perceptions of a warming planet. In the proposed multi-author book on the Fedchenko, we explore two parallel lives of this imposing ice giant: natural and cultural. A natural life of the Fedchenko will predictably focus on its geomorphological origins and explore its significance as the water supply for the lower valleys of Turkmenistan, Uzbekistan, and Afghanistan. A cultural life of the Fedchenko, on the other hand, will focus on both the discovery and study of its natural life and properties but also on how this glacier was imagined by its explorers, Russian, Soviet, and foreign – and how the glacier in turn contributed to and in part shaped these explorers’ cultural concepts of gender, science, nature, national identities, borders, dominant ideologies, and others. In particular, we hope to explore some of the following themes and chronological moments. (A complete list of themes - and contributing authors to address them - will be developed during the grant performance period):

- the natural history of the Fedchenko (geology, morphology, geography, hydrology)

- early sightings/imaginings of the Fedchenko and the Russian colonial imperative (nineteenth-century expeditions by V. Oshanin, N. Korzhenevskii, and others)
- the 1928 Alai-Pamir expedition and the subsequent 1930s Soviet expeditions (gender - alpinism, masculinity, and glaciology; Socialism and colonialism - glaciology as a tool of Soviet colonial expansion, encounters with and images of local communities; the science of the Fedchenko - international collaborations, new scientific paradigms, 1933 observatory on the Fedchenko - precursor to climate research, photogrammetry, topography, cartography as tools to shape glaciers into scientific objects; politics - purges of leading 1928 scientists and alpinists, National Socialism and German glaciology; glacial aesthetics - documentary films made during the expedition, images of the glacier, memoirs and personal narratives)
- 1950s scientific studies and the beginning of climate change research (the 1958 German-Soviet expedition).
- the Fedchenko Glacier today (mountaineering, science, climate change and local communities)

The aim of this stage of the project is to secure a book contract based on a solid book proposal with identified and secured contributors. Our plan is to write a volume based on rigorous scholarly research but accessible to the general public – a goal that is important to what we see as our mission to draw public attention to the complex cultural life of glaciers at the moment when their natural life is ending. Based on our online and conference presence, several of us have already been approached by publishers (including the University of Wisconsin Press, Central European University Press, Bloomsbury Publishing, University of Pittsburgh Press, University of Toronto Press, and others) who have signaled their interest in publishing the results of this project. In addition, we have standing relationships with Yale, Oxford, and Cornell University presses, relationships that we will pursue as we explore our publishing options. While we are working on securing a publisher and completing the manuscript, we plan to continue disseminating the results of our research in a variety of other preliminary ways: conferences (see section IV), presentations at the regular PAMIR Project meetings, public presentations for general audience and academic communities, articles preparations (Weaver and Bakhmetyeva are working on an article on the history of photogrammetry and the beginning of climate studies in glaciology; Doose and Bichsel are working on a special journal issue on Soviet earth sciences), blog contributions (such as that at The Jordan Center Blog, NYU), and others.

Feasibility, future plans, and funding. We have designed this project to be feasible within the parameters of the NEH funding category of “Planning International Collaboration.” As individuals we have the theoretical and methodological background, regional expertise, language skills, and research experience necessary to bring the work to full completion. Our skills and expertise are fully complementary and form a solid collaborative basis for theoretically informed, methodologically sound, and empirically rich research results. We have been at work on different elements of the project for some time and have gathered a wealth of research material relevant to it. Our work plan and budget are equally reasonable at this stage and based on a realistic assessment of our other commitments, we anticipate no difficulty in completing the work as projected in our timeline. After the completion of a book proposal and securing a publication contract, we plan to apply for additional funding to complete the proposed volume. Among our target funding opportunities are some of the following: the NEH Collaborative Research Grant (manuscript preparation); National Geographic Society grant; Wissenschaftskolleg zu Berlin - Institute for Advanced Study, focus group residence fellowship; and NSF (through the anticipated new NSF initiative with Swiss NSF). We will begin working towards manuscript completion in Spring and Summer 2025, with the goal of completing it by the summer 2027 and a publication in 2028, the centennial year of the German-Soviet Alai-Pamir Expedition.