

CODE OF PRACTICE

Promoting good practice for scientific work at

Center for Permafrost (CENPERM), University of Copenhagen



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Introduction

At the Center for Permafrost (CENPERM), different scientific disciplines meet as we investigate the biological, geographical and physical effects of permafrost thawing. We combine field experiments in Greenland, Svalbard, northern Sweden and Russia with experiments under controlled conditions in our laboratories at University of Copenhagen.

CENPERM is a center of excellence funded by the Danish National Research Foundation. It is expected that all research conducted at CENPERM is of the highest quality and credibility. One step in creating credible, high quality research is to meet the principles of good scientific and ethical practice. The *Code of Practice* has been designed to encourage good conduct in research and help prevent misconduct. It provides general principles and standards for good practice in research, applicable to both individual researchers and to CENPERM as a research center. Recognising that many forms of guidance already exist, the UK Research Integrity Office's (UKRIO) *Code of Practice for Research* and the *European Code of Conduct for Research Integrity* are used as benchmarks for articulating a code of practices for CENPERM.

The writing of a code of practice for CENPERM will be an on-going process. It is not the intention of the Code of Practice to provide guidelines which will stop further discussion. Instead we aim to produce a document, based on the screening of other guides, internal discussion and revisions of drafts, which can promote awareness on the use of good practice when conducting research at CENPERM.

The Code is organised in the following sections:

- a) *Principles*: contains broad Principles which define the responsibilities and values in the conduct of research by both researchers and CENPERM.
- b) *Standards*: contains the core standards to be followed.
- c) A one-page Recommended Checklist

Note that, for the purposes of this Code, “research” refers to the definition used by the Research Assessment Exercise (Research Assessment Exercise 2008, p. 34):

- ““Research”... is to be understood as original investigation undertaken in order to gain knowledge and understanding. It includes work of direct relevance to the needs of commerce, industry, and to the public and voluntary sectors; scholarship; the invention and generation of ideas, images, performances, artefacts including design, where these lead to new or substantially improved insights; and the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products and processes, including design and construction. It excludes routine testing and routine analysis of materials, components and processes such as for the maintenance of national standards, as distinct from the development of new analytical techniques. It also excludes the development of teaching materials that do not embody original research.”
- “Scholarship”... is defined as the creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases.”
- “Researchers” refers to any person who conducts research, including but not limited to: as an employee; an independent contractor or consultant; a research student; a visiting or emeritus member of staff; or a member of staff on a joint clinical or honorary contract.
- The code also applies to students if they are taking part in the research at CENPERM.

Principles

Researchers at CENPERM should adhere to the following principles, which set out the responsibilities and values relevant to research. The six principles identified below is a combination of the principles identified by the *UKRIO Code of Practice* and the *European Code of Conduct for Research Integrity*.

- **Excellence:** *CENPERM and associated researchers* should strive for excellence when conducting research and aim to produce and disseminate work of the highest quality.
- **Honesty and fairness:** *CENPERM and associated researchers* should work to create and maintain a culture of research that fosters and supports honesty in research. Researchers should be honest in relation to their own research and that of others. They should do their utmost to ensure the accuracy of data and results, acknowledge the contributions of others with an accurate and fair accreditation of the research of others, and neither engage in misconduct nor conceal it.
- **Integrity:** *CENPERM and associated researchers* should declare any potential or actual conflicts of interest relating to research and where necessary take steps to resolve them.
- **Co-operation and openness:** *CENPERM and associated researchers* should promote the open exchange of ideas, research methods, data and results and their discussion, scrutiny and debate, subject to any considerations of confidentiality within and outside CENPERM.
- **Critical:** Research must be conducted reliably, objectively, impartially and independently with the necessary testing and validation of results and methods.
- **Safety:** *CENPERM and associated researchers* should ensure the dignity, rights, safety and wellbeing of all involved in research and avoid unreasonable risk or harm to research subjects, participants, researchers and others. This point is especially important when conducting fieldwork in remote arctic locations.

Standards for CENPERM and associated researchers

CENPERM and associated researchers should comply with the following core *Standards*, which should be interpreted in the light of the *Principles* identified in the previous section.

CENPERM should:

- a) establish clear policies and procedures that cover the *Principles* of good practice in research and offer detailed guidance on the *Standards* set out in this Code;
- b) ensure that these policies and procedures complement and are in accordance with existing organisational policies at the University of Copenhagen, such as those for health and safety, raising concerns at work, management of finances or of intellectual property, and equality and diversity;
- c) provide training, resources and support to their researchers to ensure that they are aware of these policies and procedures and are able to comply with them;
- d) encourage their researchers to consider good practice in research as a routine part of their work; and
- e) monitor these measures for suitability and effectiveness and review them when necessary.

Researchers should:

- a) recognise their responsibility to conduct research of high ethical standards;
- b) be aware of CENPERM's policies and procedures on good practice in research;
- c) make sure that their research complies with these policies and procedures, and seek guidance from CENPERM when necessary;
- d) work with CENPERM to ensure that they have the necessary training, resources and support to carry out their research; and
- e) suggest to CENPERM how guidance on good practice in research might be developed or revised.

Training, mentoring and safety

- CENPERM should provide training for researchers to enable them to carry out their duties and develop their knowledge and skills throughout their career. This should include training in the responsible design, conduct and dissemination of research. They should support researchers in identifying unmet needs for training and development. CENPERM should provide qualified mentors to assist in the training and career development of new researchers and also provide career development and educational opportunities for researchers who are more established in their careers.

- CENPERM must ensure that associated researchers, research assistants and students have taken the relevant safety courses prior to fieldwork in the Arctic. It is important in advance to clarify what the relevant safety course is, as this depends on the nature of the fieldwork. No one standard can be applied.
- All CENPERM field work in the Arctic involving bachelor or master students must be made under the supervision of a permanent staff member, who is responsible for appropriate training, mentoring and safety.

Research design

When designing research projects, CENPERM and associated researchers should ensure that:

- the proposed research addresses pertinent question(s) and is designed either to add to existing knowledge about the subject in question or to develop methods for research into it;
- the design of the study is appropriate for the question(s) being asked and addresses the most important potential sources of bias;
- the design and conduct of the study, including how data will be gathered, analysed and managed, are set out in detail in a pre-specified research plan or protocol;
- all necessary skills and experience will be available to carry out the proposed research, in the proposed research team or through collaboration with specialists in relevant fields;
- sufficient resources will be available to carry out the proposed research and that these resources meet all relevant standards; and
- any issues relating to the above are resolved as far as possible prior to the start of the research.

Researchers should try to anticipate any risks that the proposed research might produce results that could be misused for purposes that are illegal or harmful. Researchers should report any risks to, and seek guidance from, the appropriate person(s) in CENPERM and take action to minimise those risks.

Conflicts of interest

CENPERM and associated researchers must recognise that conflicts of interest (i.e. personal or institutional considerations, including but not limited to financial matters) can inappropriately affect research. Conflicts of interest must be identified, declared and addressed in order to avoid poor practice in research or potential misconduct.

Health and safety

CENPERM and associated researchers must ensure that all research carried out under their auspices, or for which they are responsible, fulfils all requirements of health and safety legislation and good practice. When conducting, or collaborating in, research in Greenland or in other countries, all research must comply with the legal and ethical requirements existing in Denmark and in the countries where the research is conducted. *CENPERM* and associated researchers should bear in mind that certain types of research, for example research in remote arctic regions, can present particular issues of health and safety. They should ensure that all research which involves potentially hazardous or harmful material or which might cause harm to the environment complies with all legal requirements and other applicable guidelines. Furthermore, they must ensure that all research projects have sufficient arrangements for insurance and indemnity prior to the research being conducted.

Collection and retention of data

- *CENPERM and associated researchers* should comply with all legal, ethical, funding body and organisational requirements for the collection, use and storage of data, especially personal data, where particular attention should be paid to the requirements of data protection legislation. They should also maintain confidentiality where undertakings have been made to third parties or to protect intellectual property rights. *CENPERM* and associated researchers should ensure that research data relating to publications is available for discussion with other researchers, subject to any existing agreements on confidentiality.

Data should be kept intact and saved, subject to any legal, ethical or other requirements, for ten years. It should be kept in a form that would enable retrieval by a third party after being published, subject to limitations imposed by legislation and general principles of confidentiality.

- *CENPERM* should have in place procedures, resources (including physical space) and administrative support to assist researchers in the accurate and efficient collection of data and its storage in a secure and accessible form. Data should, as a minimum, be labelled with: date, equipment, samples and name of responsible researchers.
- Researchers should consider how data will be gathered, analysed and managed, and how and in what form relevant data will eventually be made available to others, at an early stage of the design of the project.
- Researchers should collect data accurately, efficiently and according to the agreed design of the research project, and ensure that it is stored in a secure and accessible form. Data should always be saved in a digital format; with backups; updated; quality tested and with notes on unclear aspects.

Publication and authorship

- CENPERM aims for a **transparent publication procedure**. This means that all CENPERM members should know what data are published, by whom, when, and in what journal. The idea is to present and discuss main results at CENPERM meetings prior to submission, and to keep the CENPERM administration updated with respect to the process.
- **PhD students** are expected to publish **at least two first-author papers** and CENPERM **postdocs** to be allowed to complete at least **one first-author paper per year**.
- We support **public outreach** as our results will be interesting and important for the public.
- **Affiliation:** The following CENPERM affiliation should be used by all CENPERM members as a secondary address on all relevant publications published after 1st February 2012.

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First authorship: The first author is the key person undertaking the collection of data, data analysis and writing the paper. Obviously, this is often split between more people, and the first-authorship can therefore be discussed. Joint-first authorship is possible. First author is responsible for completing the paper and has to provide the CENPERM administration with a PDF of the paper upon acceptance, together with a short abstract (in both English and Danish) and one key figure for the website. If the study/data is part of a defined PhD-project special attention should be taken to ensure that the PhD-thesis can be completed.

- **Corresponding authorship:** By default permanent CENPERM staff members should be corresponding authors on key CENPERM papers due to the expected mobility of PhD students and postdocs. Exceptions can be made from case to case, based on discussion between co-authors.

- **Co-authorship:** Only people who contributed significantly to designing the work, collection of data, analysis, interpretation and/or writing should be listed as co-authors, and this issue should be discussed openly. Guest authors must be avoided. Authorship should be accepted by all co-authors prior to submission of a manuscript.
- **Prior to submission:** First authors are expected to present a few slides at a CENPERM seminar summarising the main story of a paper prior to submission, in order to keep all CENPERM members up to date and to stimulate discussion. Well-written and thorough point-to-point internal reviews should be considered as they can greatly improve papers prior to submission. We want to ensure that the interpretations of results, which reach the public, are in accordance with overall the scientific understanding of CENPERM.
- **Journal of choice: Results are to be published in the best and most appropriate journals possible.** Broad discussion before submission in terms of journal choice is expected. High impact factor, relevance and open access are all factors to be considered. The ambition of CENPERM is to publish the results in high impact journals. The authors should aim high (i.e. *Nature, Science group*) if this is realistic but a balance between high-impact gain and prolonged publication time due to rejections and resubmissions should be maintained (rejections from journals are acknowledged to be a part of the “game”). Both CENPERM and The Danish National Research Foundation encourage authors to publish in open-access journals in order to increase visibility and citation impact. To the extent that the journal of choice allows dual publication authors are requested to parallel-publish a digital version of the final, peer-reviewed scientific article which has been accepted by a scientific journal, e.g. as PDF in digital archive with a delay of six months. Authors should take the processing time of alternative journals into account when choosing where to submit manuscripts. Publishing in books should be avoided, as it is less focussed, low-impact and is likely to delay publication.
- **PhD supervisors** should make sure that other CENPERM researchers do not publish data that are supposed to be the core of the thesis and first-author papers of their PhD students. Therefore, as part of the half year progress report after one year, PhD students should provide a detailed abstract of at least two key publications which they will be responsible for as first authors.

Recommended checklist

The Checklist lists the key points of good practice in research for projects and is applicable to all subject areas. Bear in mind that, subject to legal and ethical requirements, roles and contributions may change during the time span of the research.

Before conducting your research:

1. Is your research design appropriate for the question(s) being asked?
2. Have you reached an agreement relating to intellectual property, publication and authorship among all authors?
3. Have you reached an agreement relating to collaborative working and co-authorship, if applicable?
4. Have you agreed the roles of researchers and responsibilities for management and supervision?
5. Have all conflicts of interest relating to your research been identified, declared and addressed?
6. Have all the field work participants been made aware of potential risks and trained?

When conducting your research:

1. Are you following best practice for the collection, storage and management of data?
2. Are you following health & safety rules?

When finishing your research:

1. Will your research and its findings be reported accurately, honestly and within a reasonable time frame?
2. Will all contributions to the research be acknowledged?
3. Are agreements relating to intellectual property, publication and authorship being complied with?
4. Will research data be retained in a secure and accessible form and for the required duration?