

Strategies for making geoscience PhD recruitment more equitable

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Summary

Admission to doctoral study is a crucial step in the academic pipeline, but discriminatory procedures can disproportionately impact students from ethnic minority backgrounds. We show how these policies contribute to inequity in the geosciences and propose strategies for change.

Introduction

Geoscience is one of the least diverse science disciplines in the Global North in terms of ethnic minority representation¹⁻³. Efforts to improve access and participation have been expanding in recent years - with funding bodies recognizing the need to invest in this work⁴. Nonetheless, representation at senior levels within academia and industry remains poor⁵. This lack of diversity contributes to inequity and hostile environments within the discipline, impacting the effectiveness of research teams and their partnerships with the communities they serve⁶.

While ongoing, long-term, and properly funded structural change is needed in the discipline as a whole, a key barrier to progress is the disproportionately low number of students from ethnic minority backgrounds transitioning to postgraduate (PG) research^{6,7}. Efforts to address this disparity must account for its causes, which involve a complex interplay of structural and cultural factors⁹⁻¹¹. ~~A further complication is that the students most impacted by biased recruitment procedures often do not continue in academia⁸.~~

The Equator project¹² set out to improve equity and representation in geoscience postgraduate research, and (in addition to a mentoring program and a research school¹³) set up a working group involving seven UK doctoral training organizations focused on admissions practices. The outcome was a collection of recommendations, designed to be transferable beyond the UK context, aimed at making recruitment into doctoral programs more equitable.

Recommendations

Our recommendations are divided into three themes: student-facing, evaluative, and procedural. Fig. 1 provides a graphical representation of identified barriers, suggested interventions, and intended outcomes. The full Equator project report¹³ includes a further discussion of performance indicators and timeframes.

Student-Facing Improvements

- 1. Advertising:** Evidence from demographic networks (e.g. Black in Geoscience) and Equator research school participants indicate that a lack of visibility amongst the relevant communities is one cause of low application numbers. Whilst increased traditional means of advertising such as online PhD databases and mailing lists can help, expanded use of demographic networks is likely to be more effective. This could be combined with specific outreach resources designed to engage students from minoritised backgrounds earlier in the recruitment process.
- 2. Resources:** Written resources should proactively address the potential concerns of applicants, rather than just generally promoting PhD study in the geoscience. This may include expanding upon the financial support available, potential application fee waivers, and offering information about stable career paths post-PhD. Paying current students and undergraduates from minority backgrounds to check and guide this content could ensure it is engaging, effective, and accessible.
- 3. Pre-application support:** Students from minority ethnic backgrounds often report a lack of confidence or familiarity with research careers, making them less likely to apply to doctoral programs. Results from the Equator Mentoring Network and Research School showed that these

concerns can be addressed through funded pre-application support, including workshops, online Q&A sessions, office hours, networking events, and mentoring – all of which can improve the sense of belonging amongst applicants.

4. Paid research placements: Paying undergraduates to undertake research placements in geoscience departments can be an effective recruitment tool. Some doctoral organisations already use such placements, many funded by government research agencies, to diversify their incoming cohorts by encouraging students to undertake placements in departments other than their own. Work undertaken in the United States suggests these schemes serve to increase knowledge of doctoral research amongst minoritised applicants, whilst also helping to develop transferable skills¹⁵. Schemes that combine research internships with application skills workshops, such as the University of Oxford's UNIQ+ program, have also shown promise¹⁶.

5. Standardised expressions of interest: Writing initial expressions of interest to potential supervisors can be a daunting prospect. Standardised expression of interest forms or clearer guidelines are likely to give candidates a clearer idea of the type and style of information they should convey. This may be extended to the use of standardised templates for CV templates (e.g. currently offered by the Oxford NERC Doctoral Training Partnership) or reference letters – which would make them more easily cross-comparable.

Evaluation Reform

1. Reducing bias: Preexisting relationships with a potential supervisor can be advantageous to applicants¹⁷, although further research on the exact impacts of these conscious (and potentially unconscious) biases is needed. To improve equity, recruitment committees may wish to reduce the emphasis on supervisor-specific nominations during initial applicant sorting stages, or require declarations of potential conflicts of interest. Alternatively, supervisors could be allowed to nominate an additional candidate from a minority background.

2. Reforming assessment metrics: Traditional assessment criteria are often rigid and fail to account for structural inequalities, such as awarding gaps between white and non-white students at undergraduate level¹⁹ and reduced admission of ethnic minority students to high-cost, competitive universities²⁰ and masters' programs²¹. These criteria should be replaced by tools that judge *potential* rather than simply access to opportunity. Such an evaluation scheme could include downweighting grade point averages or number of prizes and awards won by an applicant, while upweighting evidence that they possess the skills necessary for future academic success from interviews, reference letters, and personal statements.

3. More holistic interview questions: Following approaches of organisations like the UK's Civil Service, interview questions that prompt candidates to present the transferable skills and qualities they feel make them suitable for research positions is likely to improve diversity by alleviating biases in evaluation. Questions could include topics directly related to the proposed course of study, but also prompts designed to let candidates showcase relevant values and character attributes (e.g. resilience or creativity). These interviews should also be scored using standardised frameworks, which ideally would be uniform across institutions or funding bodies.

Procedural Change

- 1. Demographic data collection:** Standardised information collection at the point of application can improve equity within groups of doctoral programs. While many funding bodies often have minimum legal requirements for personal data collection from applicants, these should be expanded to include other factors – such as undergraduate institution – relevant to increasing the diversity of the applicant pool. Funder-mandated frameworks for collection of such data would enable interventions to be more easily designed, evaluated, and shared.
- 2. Equitable use of contextual data:** At undergraduate level, the use of contextual information, wherein an applicant’s personal circumstances are taken into consideration, have been shown to improve diversity in the UK when considered in a consistent, legally-justified framework²². The framework to enable use of a similar approach for postgraduate admissions remains to be developed, but will be crucial to sustained widening participation in the geosciences amongst underrepresented groups.
- 3. Dedicated, ring-fenced opportunities:** Guaranteed interviews may be offered to candidates from minority backgrounds who meet minimum requirements. Doctoral training programs should also consider use of conditional offers, where candidates with lower academic scores but high potential are offered places dependent on the completion of paid training prior to the start of a their degrees. Improvements in this area are emerging; the Leverhulme Trust is now offering combined masters-PhD funding to increase access for under-represented students²³, alongside other programs in the UK offering ring-fenced PhD studentships²⁴.

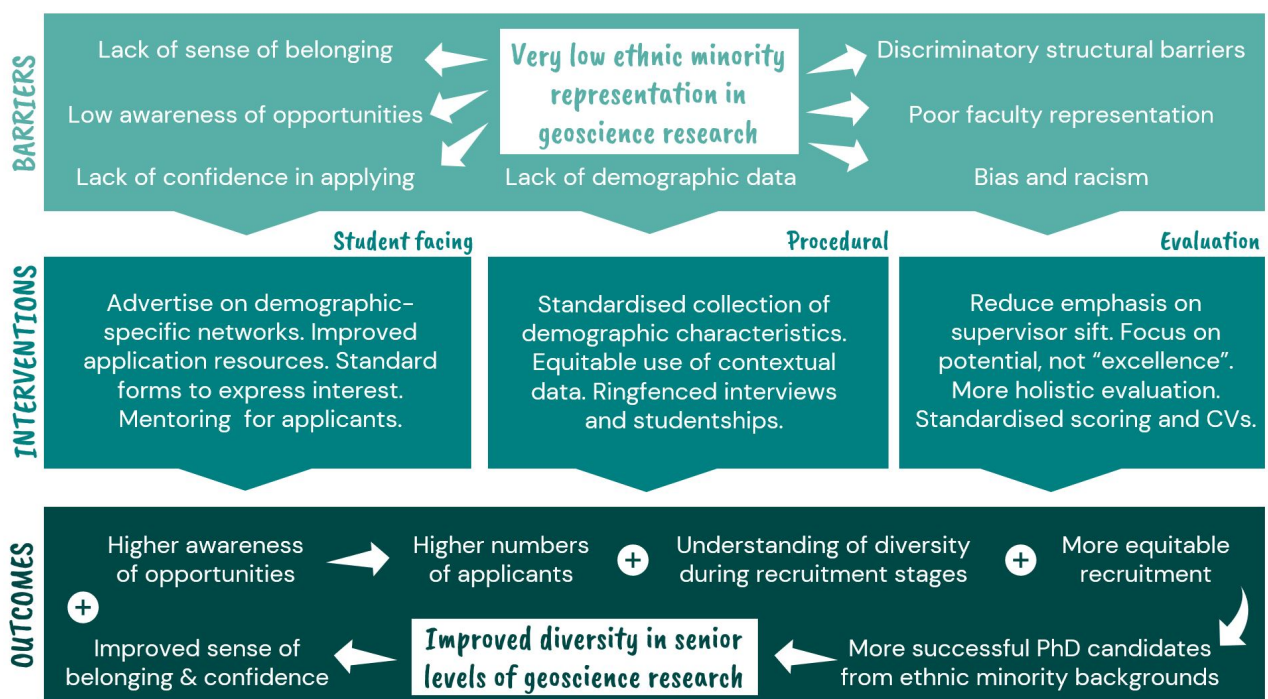


Fig. 1: Identified barriers to increased representation of ethnic minority individuals in postgraduate geoscience, our suggested interventions (grouped into three themes: student-facing, procedural, and evaluative), and cycle of intended outcomes.

Looking forward

These recommendations, one part of a bigger picture of structural changes needed, are designed as a potential framework within which efforts to improve the diversity of postgraduate

researchers in geosciences can be formulated. Meaningful and successful implementation will require critical self-reflection – as well as sustained investments of time and money from academic institutions and funding bodies.

Our list is not exhaustive. Multi-year investigations following groups of students are needed to evaluate the effectiveness of specific interventions in the admissions process, and should make a greater consideration of intersectionality. Tailored support, to ensure representation and retention of PhD students throughout geosciences programs, will be equally vital to making the community more equitable, diverse, and inclusive.

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