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Teaching historical context to encourage social responsibility and justice in the geosciences

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Geoscience is a discipline where knowledge production, legitimization, and dissemination were founded in the broader sociopolitical context of imperial expansion. This results in intrinsic biases of the discipline—within its members as well as in in societal perceptions of the discipline—that can alienate geoscientists from marginalized backgrounds and the global South if these biases go unacknowledged in academic spaces. Furthermore, a lack of awareness of historical context can lead to harmful biases becoming further entrenched during an era where the geosciences are increasingly called upon in global issues of resource extraction, environmental degradation, and land management. Such issues have complex social dimensions wherein Western scientific endeavors have historically resulted in more harm to peoples and lands than benefit. Thus, an initiative of growing importance is decolonizing the curriculum, which includes naming and exploring the context, framing, and motivations of geoscience knowledge, i.e., answering the who, why, and where of how science is practiced and becomes accepted as truth.

In general, STEM higher education focuses on technical knowledge with limited venue for teaching ethics or social context. Unequal burden can be placed on students from marginalized backgrounds to reckon with historical context or share personal experiences, negatively affecting feelings of well-being, belonging, and science identity. Pedagogical opportunities for students to introspect and critically engage with their course material in context can help them understand their role as geoscientists in society and more broadly, as humans in the Earth system. Content that fulfills these objectives is currently difficult to integrate into curricula due to a lack of accessible resources and additional burden on instructors to prepare appropriate material. Here, I present a step towards this pedagogical issue in the form of resources for university Earth science courses that are “modular” instead of “modules”. I focus on activities that use maps and imagery in case studies as tools to illuminate the history of ideas. This enables instructors to integrate content with different courses and teaching styles and promotes relatedness and thinking beyond the classroom.