

## Intellectual Merit Criterion

### Overall Assessment of Intellectual Merit

Excellent

### Explanation to Applicant

Strengths: The applicant has been cultivating their interests in ecology, biogeography and conservation for a long time, and have been very productive and active as a consequence. The applicant has a great academic record, and presents a compelling and clear research project. They have also been already working on topics related to the project and have the expertise to have it produce useful and meaningful data and tools, which can then be used by other researchers and conservation specialists.

Weaknesses:

## Broader Impacts Criterion

### Overall Assessment of Broader Impacts

Excellent

### Explanation to Applicant

Strengths: The applicant has been participating in Broader Impact activities for quite a while, and in different contexts. The application makes a strong case on how the proposed project can be combined with other outreach and open-science approaches, for which the applicant has already experience and seems to have already have developed connections. The plans related to these BI activities are relatively clear and seem to reflect a real commitment to them. Weaknesses:

## Summary Comments

This is a strong applicant and application, which includes an interesting research idea, with compelling Broader Impacts. The applicant has a strong academic background as well as a lot of experience with outreach, activism, and open-science communication at different educational levels.

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### Explanation to Applicant

The applicant has an excellent academic and research record. She has presented results of previous research as posters, one of which won an award at an international conference, and is currently working on a two collaborative manuscripts from her work to date. The proposed research is sound, interdisciplinary (combining Earth science and data science), of high quality, and the applicant is well supported by her advisor and institution.

## Broader Impacts Criterion

### Overall Assessment of Broader Impacts

Excellent

### Explanation to Applicant

The applicant shows strong commitment to broader impact activities including translating research into policy (she developed a figure for the 2022 IPCC report), as well as scientific communication and outreach. She has led environmental advocacy groups, and activities for elementary students such as tours of a sustainable building, and developing a curriculum for conservation and

sustainability. The proposed research has clear broader impacts in terms of helping inform climate change predictions and the research statement outlines plans for disseminating the findings. There is brief mention of an educational kit but does no mention of the target audience.

## Summary Comments

A well written application from a motivated young researcher. The intellectual merit and broader impacts of past and future research are clearly indicated and sound. The applicant appears to be a highly-motivated, intelligent individual possessing all of the qualities needed to succeed in graduate school.

## Intellectual Merit Criterion

### Overall Assessment of Intellectual Merit

Excellent

### Explanation to Applicant

The applicant has substantial research experience as an undergraduate, has presented work at 4 in-house conferences and two international conferences, and has two manuscripts in prep (one as first author). The proposed research uses big-data approaches to improve understanding of vegetation range shifts in response to past climate change, which is a recent advance in the field. The proposed project is interesting, somewhat novel/innovative, and is likely to yield interesting and compelling results that will further other research and be of interest to other scientists in a variety of fields. The applicant appears to have the personal qualities, interest/drive, and support to complete the proposed work.

## Broader Impacts Criterion

### Overall Assessment of Broader Impacts

Excellent

### Explanation to Applicant

The applicant has an interest in working outside of academia in a field that prioritizes communicating science findings and has both work and volunteer experience in this realm. The applicant has concrete plans to disseminate work to relevant audiences (international conferences and mapping interface) as well as to less common audience of Master Naturalists. Their background suggests that they will be successful in these pursuits. The proposed research has implications for understanding anticipated plant responses to climate change.

## Summary Comments

The application overall presents an applicant who is creative, driven, and likely to succeed with the proposed research. Further, the applicant appears to be genuinely interested and experienced in communicating science to the public and to scientists in potentially overlooked areas.