I read the entire article

The authors wrote this paper in order to increase awareness and to discuss the ethical considerations of utilizing Artificial Intelligence techniques in the environmental sciences world. They wanted start this discussion to ensure that while AI approaches become more common in the world of environmental science, people are fully aware of the limitations and possible limitations of such use. They recognized that AI has been used much more extensively in other domains, and therefore much can be learned about how its use in these contexts has led to possible unintended consequences. If we are able to recognize the problems that have arisen in these other domains, we can help to ensure that similar biases do not sneak into environmental science research as AI begins to be used more and more frequently. The authors made sure to not discount the potential benefits of AI in the environmental sciences community, but rather focused on how proper precautions are necessary for major meaningful impact. It has the potential to reduce climate and environmental injustice, but only with the proper precautions in place. The paper went into details giving a few examples of how AI could go wrong in the environmental sciences sphere. It mentioned the potential of biased or incomplete training data, which given a few examples, environmental science studies may be particularly susceptible to. The authors also mentioned the generation of datasets and training labels and how bias can sneak in easily causing issues. Finally, they went into faulty model choices and even the potential of increasing carbon footprint due to increasing computational demands. All in all, the authors advocate for the consideration of transparency, ethics, and fairness as AI is deployed in the field of environmental science.

This paper did a great job at being thorough in describing how exactly researchers can go wrong in different applications of AI. I like how the authors gave specific example of how specific topics in environmental science may be particularly susceptible to the perpetuation of bias. One example they used was the fact that black Americans seem to be underserved by the Doppler weather radar network. If one were to use this as training data, many areas would be underrepresented, and potentially misleading information could be distributed. They used a few other vivid examples of potential pitfalls AI would be susceptible to in the environmental sciences. I also thought it was cool how they pushed for the use of explainable AI so as to not push out the researchers that are experts in the field of environmental science, but don’t have expertise or much knowledge of AI. This allows for fairness across the field as well as inclusivity and the fact that experts are still very necessary for meaningful research. It was great at giving a variety of examples of how to ensure the ethical use of AI in environmental science.

The papers had a few weaknesses that I noticed while reading that I feel could have been beneficial if addressed. One thing that could have been done better was how specific they got about how to use AI in the field. They gave specific examples of potential pitfalls and a bunch of negative things that could happen when proper precautions are put into place, but they never gave a specific framework or actionable strategies for developing AI in the environmental sciences. This may have been just a preference, but I thought that the examples used to emphasize how AI can be used unethically in environmental science were fairly nonspecific to the environmental science field. They gave warnings and talked a lot about what experts in the field of AI are very aware of. For example, it is well known amongst AI researchers what the limitations of AI are and how training data affects the outcome, so many are very explicit about not overstating. One potential for future research could be diving deeper into green AI and how people can be specific in implementing strategies to reduce their computational carbon-footprint.

This was my own work