1. **Enhancing connections across the program**: Extremes-related research is pervasive across the program, as is AI/ML research; this is a feature, not a bug! Enhancing connections and knowledge sharing across the program would enhance research throughout the portfolio.
2. **UQ and AI/ML is an emerging new direction**: UQ continues to be important, especially for extremes which are rare and require large sample sizes, and investments in exploring new methods for incorporating AI and ML into UQ could substantially change the quality and comprehensiveness of our UQ efforts (e.g., ML emulators, ML-informed autotuning of E3SM)
3. **We will hit the data & I/O singularity soon**; ultra high resolution and massive ensemble sizes are already making data storage and transfer infeasible already and it will soon be impossible, especially for simulations and analyses related to extremes. We need inline data reduction ASAP, both in E3SM and in ML/AI emulators. In particular, inline data reduction methods that allow easy community input (e.g., Python bindings and an associated API for adding new output variables to E3SM) could be game-changing.