

AGU SESSION

ABSTRACT INVITATION

GC077 | Future Map: The Convergence of Generative GeoAI, Population Synthesis, and Agent-Based Modeling to Develop Geographic Futures for Climate Assessments

Conveners:

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The climate community has long developed reliable climate models grounded in trusted Earth systems data and physics, but it has not been until recently that human dynamics and feedbacks have been viewed as a necessary coupling within these models. Including human dynamics within integrated models necessitates a forecasted understanding of human transitions within the landscape. The geospatial science domain has typically not looked forward through simulations. Advances in agent-based modeling, synthetic population generation, and GeoAI/GenAI are presenting new opportunities for generating future-oriented representations of humans landscapes, enabling the development of scenario-specific forecasted datasets, such as synthetic satellite imagery, land cover/land use, the built environment, and more. This session will explore the boundaries of geospatial modeling, data synthesis, and microsimulations for forecasting. Emphasis will be placed on research and studies that show how synthetic forecasted data can enable high fidelity assessments of climate futures and population impacts.