

# Solar Climate Intervention

A diagram illustrating solar climate intervention. At the top, yellow arrows represent incoming solar radiation. Some arrows are blocked by a satellite in space, which reflects them away. Other arrows pass through the atmosphere and hit a city silhouette on the ground. A red arrow points upwards from the city, representing heat and greenhouse gas emissions. Another red arrow points downwards from the atmosphere towards the city, representing the cooling effect of the intervention. The background shows a sky with clouds and a silhouette of a city and mountains at the bottom.

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Can we **design** a solar climate intervention **scenario** to meet **specific needs**?



What data we have:



Earth System Models



Aerosol injection at different  
**Locations**  
**Altitudes**  
with different  
**Amount**

Model Output

- Temperature
- Rain
- Wind
- Sunlight
- Pressure
- Plant Growth
- Ocean Productivity
- ⋮

## Can machine learning be applied to **downscale coarse**-resolution climate data for **high**-resolution impact studies?

What data we have:

### Earth System Model Output

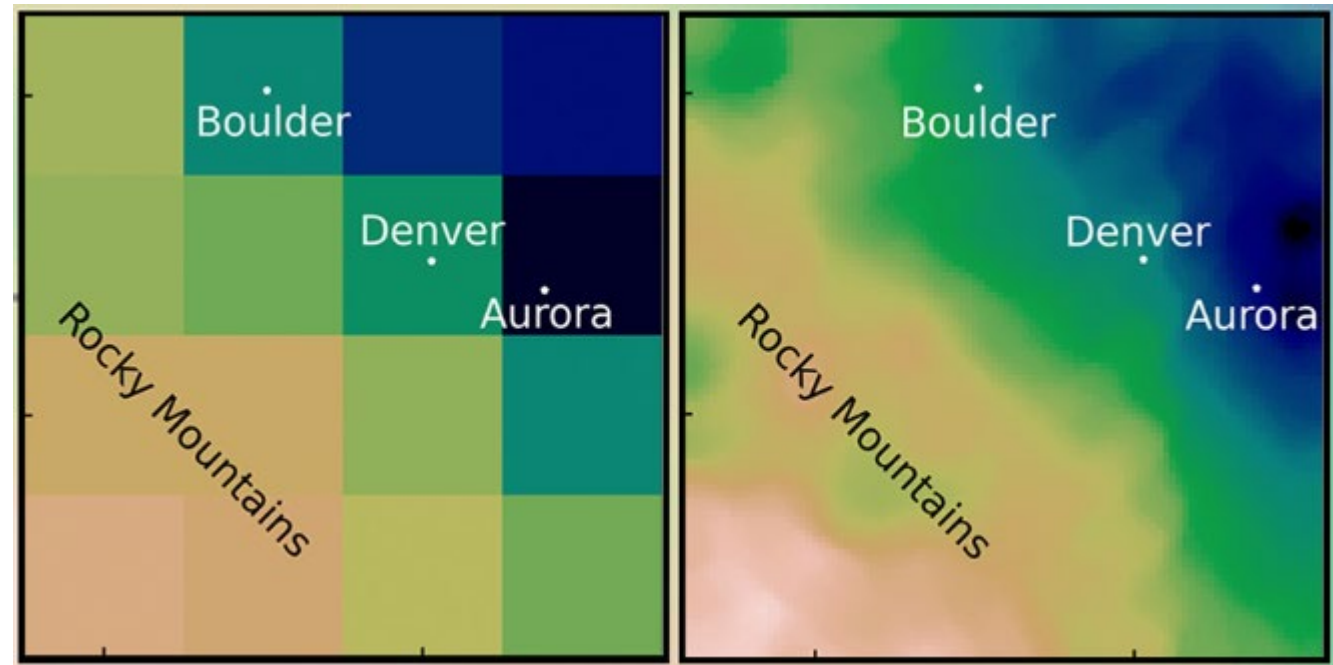
- Temperature
- Rain
- Wind
- Sunlight
- Humidity
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Our goal

**Multi Climate Variables**

**Preserve Climate Trend; Capture Extremes**

Precipitation from (0.25° x 0.25° to 0.01° x 0.01°)



(Saha and Ravela, 2024)

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