

Modeling Light Pollution Encroachment Near Powell Point, Grand Canyon National Park

How regional light pollution is encroaching on one of America's darkest protected night skies

Final Infographic

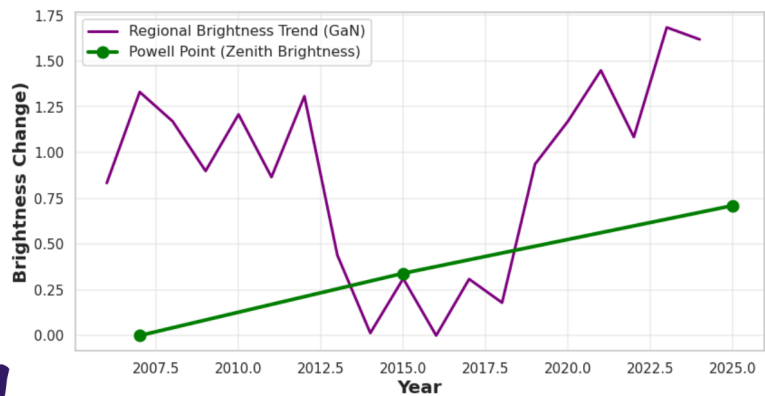
Modeling Light Pollution Encroachment Near Powell Point, Grand Canyon NP

Source: Globe at Night data, NPS night-sky measurements, and modeled urban skyglow.

Why Powell Point?

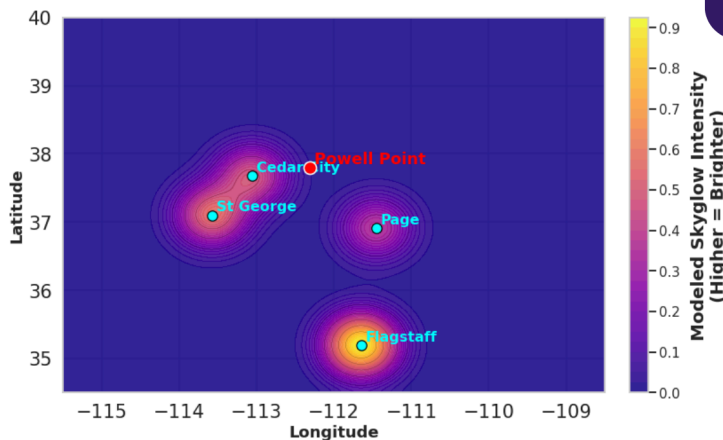
Powell Point is nationally recognized as one of the darkest protected night skies in the United States. However, expanding light pollution from surrounding cities is gradually brightening its sky over time.

Night Sky Brightening: Utah Region vs Powell Point (2006-2025)



Key Fact: Skyglow can travel up to **100–300** miles from its source under clear atmospheric conditions

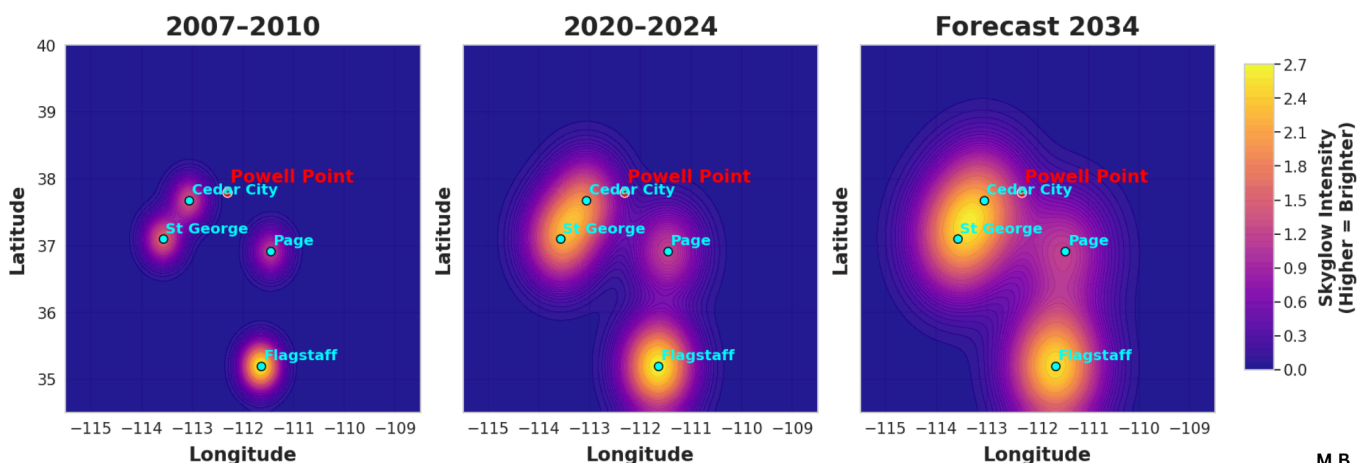
Model of Light Pollution Encroachment Toward Powell Point



Over the past **two decades**, regional night skies have steadily brightened (**0.04 mag/year**), and modeled skyglow from nearby cities increasingly overlaps Powell Point.

This suggests encroaching light pollution threatens even protected dark-sky sites.

Modeled Light Pollution Encroachment Toward Powell Point (Past, Present, and Forecasted Future)



M.B.

Description

This infographic examines how light pollution from nearby cities is increasingly encroaching on Powell Point, a nationally recognized dark-sky location within Grand Canyon National Park. Using Globe at Night citizen-science observations and National Park Service night sky measurements, the visualization compares regional brightening trends with localized conditions at Powell Point.

The composition combines a temporal trend plot, spatial skyglow models for multiple time periods, and a simple forecast to show how regional light pollution has intensified over time and may continue to expand toward protected dark sky areas in the future.

Resource Manifest

Resource	Description	Link
Globe at Night Data	Citizen-science observations of night sky brightness (limiting magnitude)	https://www.globeatnight.org
NPS Night Sky Data	National Park Service measurements of night-sky brightness	https://www.nps.gov/subjects/nightskies
Notebook 1	Data acquisition and organization	notebook1.ipynb
Notebook 2	Data exploration and visualization experiments	notebook2.ipynb
Notebook 3	Final product documentation	notebook3.ipynb
Final Infographic	Designed infographic combining plots and annotations	infographic_powell_point.png

How to Read the Infographic

- The top plot shows how regional night-sky brightness has increased over time, compared to conditions at Powell Point.
- The middle and bottom maps compare modeled skyglow during early (2007–2010) and recent (2020–2024) periods, highlighting expanding light influence from nearby cities. The furthest right of the triad plots represents the forecasted modeled skyglow in future years.