



A Geospatial Analysis for Astrotourism Development in Zambia

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INTRODUCTION

- Astrotourism is an emerging form of science-based tourism.
- Zambia has large areas of low light pollution and clear skies.
- This study identifies optimal locations for astrotourism development using geospatial analysis.

METHODOLOGY

VIIRS LIGHT POLLUTION

SAFETY INDICATORS

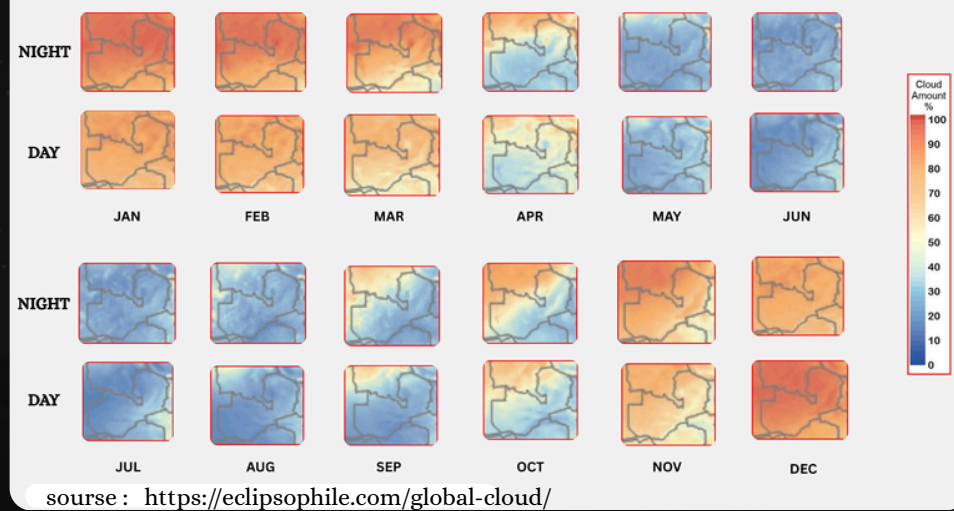
CLOUD COVER DATA

TOURISM LOCATIONS

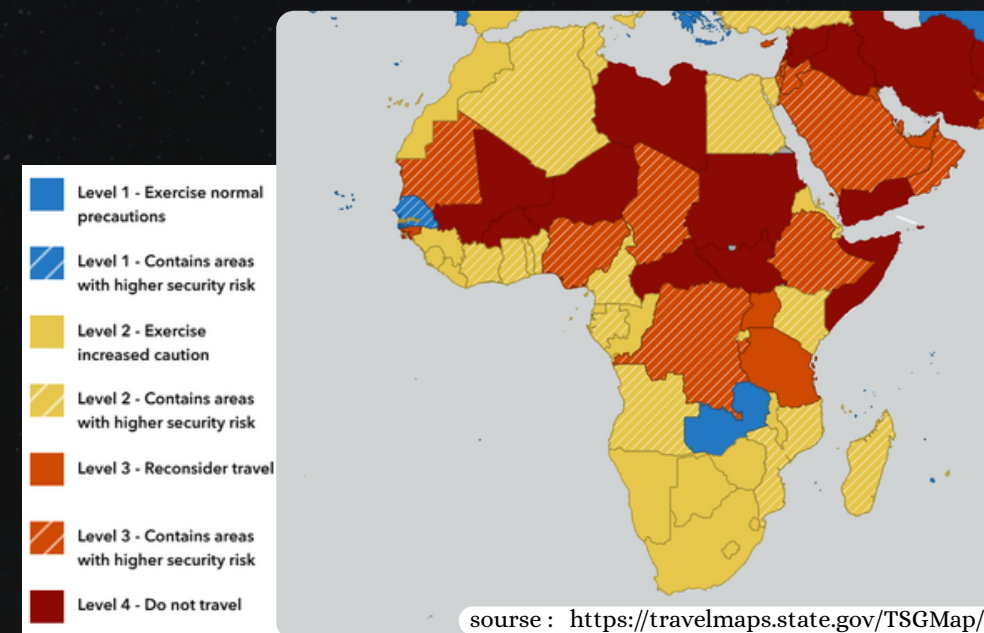
STAGEMEANING
GEO.SPATIAL SUITABILITY
ANALYSIS

ASTROTOURISM
SUITABILITY MAP

AVERAGE MONTHLY CLOUD COVER (DAY AND NIGHT)

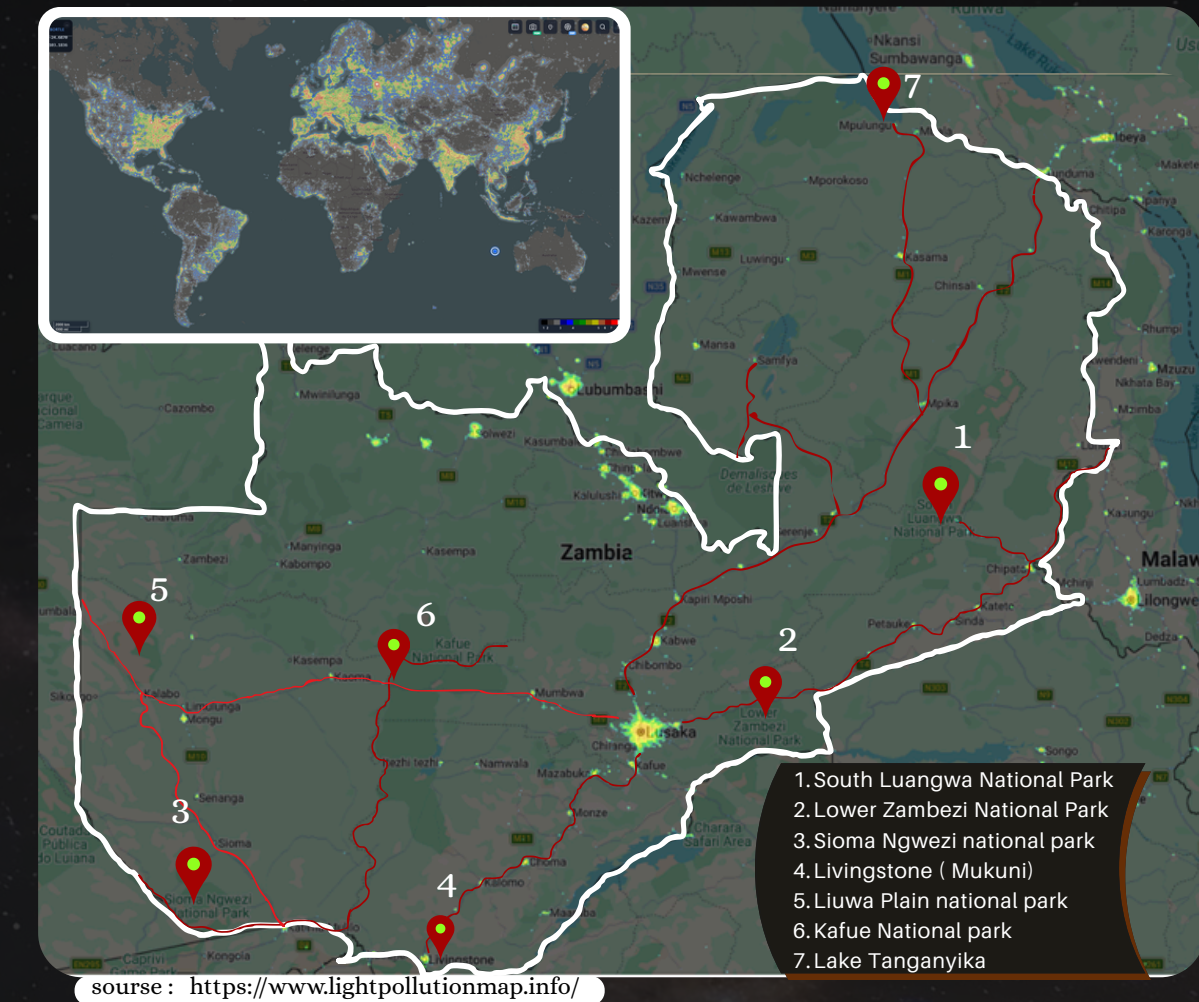


REGIONAL SAFETY ADVISORY OVERVIEW



Government travel advisories classify Zambia as generally safe with standard precautions, supporting long-term dark-sky tourism development.

LIGHT POLLUTION AND LOCATIONS OF MAJOR TOURISM SITES IN ZAMBIA



INSTITUTIONAL & STAKEHOLDER SUPPORT

- **Astronomy capacity building:** (DARA) programme, engagement with the African Astronomical Society (AfAS) and projects with
- **Tourism collaboration:** Initial engagement with the Ministry of Tourism and accommodation providers to explore astrotourism integration.

SOUTHERN HEMISPHERE ADVANTAGE

From southern Zambia (e.g., Livingstone), observers can view:

- The Southern Cross (Crux) and The Galactic Centre of the Milky Way (winter peak visibility) Zambia starlore
- Indigenous knowledge links the night sky to navigation, seasons, and cultural traditions. (e.g the Chokwe people from north-western describes the milk way as Mulanji meaning the resting river)

AIM (INTERACTIVE SUITABILITY MAP)

The project aims to present the results in an online interactive map, allowing users to explore potential astrotourism sites across Zambia. The clickable platform will enable potential visitors to identify locations with favourable dark-sky and observing conditions.

DISCUSSION

Dark Sky Potential

- Most of Zambia experiences Bortle 1–2 skies, among the darkest globally.
- Major tourism areas such as Livingstone reach pristine dark skies within short distances from town.

Cloud Cover & Observing Conditions

- May–September: >80% cloud-free nights across Zambia.
- April & October: favourable observing conditions, especially in western and southern regions.
- November–March: About 50% partly cloudy nights, still compatible with year-round astrotourism (e.g., New Zealand).

