

RxR-Trained Agents with Tryout Controller in Unseen Complex Environments

Assignee Research

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Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: How does the path efficiency of RxR-trained agents with the tryout controller scale with increasing complexity of unseen environments (e.g., larger maps, more obstacles) compared to R2R-trained agents. Eccentric planets may spend a significant portion of their orbits at large distances from their host stars, where low temperatures can cause atmospheric CO₂ to condense out onto the surface, similar to the polar ice caps on Mars. The radiative effects on the climates of these. 12 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A One-Dimensional Energy Balance Model Parameterization for the Formation of CO₂ Ice on the Surfaces of Eccentric Extrasolar Planets. Research question: How does the path efficiency of RxR-trained agents with the tryout controller scale with increasing complexity of unseen environments (e.g., larger maps, more obstacles) compared to R2R-trained agents?.

2 Methodology

Systematic literature search across multiple databases yielded 4 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.2/10.

3 Results

4 papers retrieved. 12 claims extracted; 1 independently verified. Quality review score: 3.2/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
Warm-start planets with an eccentricity of 0.9 do not reach temperatures low enough to harbor CO2 ice on their surface.	×	0.10
M-dwarf planets with an eccentricity of 0.5 also fail to reach temperatures corresponding to the CO2 condensation limit,	×	0.09
F-, G-, K-, and M-dwarf planets on circular orbits require 5% of the orbit-averaged solar constant, equivalent to 68 W/m	✓	0.15
With an increase in eccentricity from 0 to 0.5, the instellation levels for CO2 condensation are 5% of the orbit-average	×	0.10
Cold-start planets begin with CO2 ice and require a higher flux to melt the CO2 ice on their surfaces due to increased a	×	0.12
F-, G-, K-, and M-dwarf planets on circular orbits need 75%, 65%, 55%, and 30% of the orbit-averaged solar constant, res	×	0.12
A comparison between the results of our 1D EBM and observed data of Earth's top-of-atmosphere (TOA) albedo and global me	×	0.04
The Earth's TOA albedo data are sourced from Energy balance and filled (CERES EBAF) (Loeb et al., 2018).	×	0.06
The annual surface temperature data were obtained from ERA5 reanalysis (Hersbach et al., 2020).	×	0.04
Different obliquities were tested for model validation; however, a 0° obliquity was considered for all simulations in ou	×	0.04
Research by Graham et al. (2022) indicates that at low instellation (stellar flux from the host star), rocky planets wit	×	0.07
Previous studies employing 1D energy balance models (EBMs) (Ramirez et al., 2020; Simonetti et al., 2024), 2D EBMs (Rami	×	0.06

References

- <http://arxiv.org/abs/2501.11667v1>

- <http://arxiv.org/abs/2210.04940v1>
- <http://arxiv.org/abs/1710.05833v2>