

Review Report:

In this manuscript, authors study the empirical improvements in the atmospheric characteristics for the ground-based telescopes. They use a Weather Research and Forecasting (WRF) model to characterize these effects, with a high spatial resolution, within the Baikal Astrophysical Observatory. In my opinion, this manuscript deserves publication after addressing a few queries. My comments are the following:

General:

1. In Section 2, a precise description of the WRF model with some physics arguments is needed for better understanding of the work to the readers.
2. Authors only discuss the day-time characteristics of the atmosphere. It will be interesting to comment on the night-time characteristics as optical and IR telescopes are operated during night times.

Minor:

Abstract

Line 2: Weather Research And Forecasting Model (WRF) is => Weather Research and Forecasting (WRF) Model is

Line 5: results of simulations shows that => results of simulations show that

Line 8: In the paper, we consider parameter seeing that represents => In this work, we consider the seeing parameter that represents

Introduction

Line 14: microwave ranges of the => microwave bands of the

Line 16: atmosphere on propagation => atmosphere on the propagation

Line 24: infrared and microwave ranges => infrared and microwave regions

Line 34: the WRF model was used to => the WRF model has been used to

Line 37: improvements of the methods => improvements in the methods

Methods

Line 45: non-hydrostatic Weather Research and Forecasting (WRF) model => non-hydrostatic WRF model

Line 66: In the study we present => In this study, we present

Calculated and measured

Line 103: Please provide appropriate reference

Line 112-113: Cite a reference for the Dewan Model. Also, explaining this model briefly.

Line 123: sensor is shown => sensor are given

Line 127: Please provide appropriate reference for these formula. Also, briefly discuss the difference between Equation (1) and (6) relating to the seeing parameter.

Line 131: coefficient $K_l \Rightarrow$ coefficient K_i

Modified model for estimation....

Line 170: Briefly explain, which correlation K_{corr} stands for ? And how it has been computed ?

Line 175: analysis of statistical characteristics show that $\Rightarrow$ analysis of statistical characteristics shows that

Line 185: Cite a reference for Hufnagel-Valley model.

Discussion

Line 221: structure atmospheric turbulence $\Rightarrow$ structure the atmospheric turbulence.

Line 222: WRF $\Rightarrow$ WRF model