Atmos. Chem. Phys. Discuss.,
doi:10.5194/acp-2016-1002-RC2, 2017

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Investigation of the mixing layer height derived from ceilometer measurements in the Kathmandu Valley and implications for local air quality" *by* Andrea Mues et al.

Anonymous Referee #2

Received and published: 13 March 2017

This MS describes a unique data set on the mixing height for a complete one year in the Kathmandu Valley and provides an essential information over this region. There are not many studies with such round the clock observations over the year period in this part of the world. However, I still see scope for a significant improvement in the MS.

Since there are very limited studies, it is better to provide some more information on the mixing height variations over this region. I strongly feel that it will be very good to show (Fig 3) monthly diurnal variation in-stead of seasonal. This will also provide a good

reference for a region with very complex topography. Additionally, average (sunrise, noon and sunset time) mixing height with 1 standard deviation can be provided for each month in a tabular form. Some of the specific and general comments are -

Abstract: Line 9-10: This is a common feature. It is better to add some quantitative information here. Like, height during night and day time, how does it changes with seasons?

Introduction: It includes very basic discussion on the boundary layer and it can be trimmed down.

Section 2.1: It is better to provide a brief description of BC instrument (Aethalometer) and if any data correction method is used.

Section 2.2: The Ceilometer is a commercial instrument and it has been used widely. Therefore, a brief mention of methodology adopted by others on mixing height determination and also its average reporting (from minutes to hours) can be provided.

Results:

Section 3.2: Fig 4: It would be useful to discuss briefly the differences in the diurnal patterns of solar radiation and mixing layer height. Peak of mixing layer height is about 3-4 hours later than the peak in solar radiation, why?

Section 3.3.1: Page 11, line 14-17: I presume that this correlation is determined using 24 hours average data. I feel that if this correlation is calculated for 2-3 time windows (morning, noon, evening etc), it will give better information.

General:

Page 3, line 11-15: These lines on ceilometer are not needed here and can be moved in to section 2.2.

Page 5, line 10-13: A reference for this comparison will provide a clear information to the readers. Briefly, outcome of the comparison can also be mentioned.

Figure 5 and 6: It is better to change the colour scheme. Yellow and green colours are not clearly visible.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-1002, 2017.