Atmos. Chem. Phys. Discuss., 9, S1542–S1544, 2009
www.atmos-chem-phys-discuss.net/9/S1542/2009/
© Author(s) 2009. This work is distributed under
the Creative Commons Attribute 3.0 License.

Atmospheric Chemistry and Physics Discussions

Interactive comment on "A daytime climatological distribution of high opaque ice cloud classes over the Indian summer monsoon region observed from 25-year AVHRR data" *by* A. Devasthale and H. Grassl

Anonymous Referee #1

Received and published: 17 April 2009

This paper describes a new high resolution cloud dataset for the South Asian monsoon region. Using the brightness temperature information from the AVHRR instrument on the NOAA satellites, the authors present climatologies and case studeis of the occurrence of High Opaque Ice Clouds (HOICs) and further subdivide these into 3 classes (very deep, deep and background) based on the brightness temperature. This dataset represents a very high quality tool for future research into the monsoon and the cloud patterns associated with it.

One drawback of a dataset based on AVHRR output, and particularly using an algo-

rithm that relies on one of the visible channels, is that the dataset is limited to daytime information which the authors comment upon. They also comment on the fact that, due to the sun-sychronous nature of the polar orbiting satellites, the data goiung into the cloud algorithms will be biased towards the time of day for which the satelites pass over. The combination of these 2 facts may well mean that the clouds detected by the algoritm may not represent the peak of convective activity during the day. This in itself is no reason not to use the data but is an important caveat for users of this dataset to bear in mind.

The authors use the dataset to speculate on the actual mechanisms of the monsoon itself, and suggest that the patterns of HOIC distribution through the monsoon season support the hypothesis that the monsoon is a seasonal migration of the ITCZ. However, in order to properly speculate on the nature and causes of the monsoon, a lot more data, including dynamical and surface fields would also need to be analysed, and in actual fact, the nature of the monsoon is down to a complex combination of many different factors. The authors shoul acknowledge more explictly that their dataset is not the answer to the question of what causes the monsoon, but will prove to be a very useful tool in getting to the bottom of this important question.

the detailed analysis of the relationhip between HOIC occurrence and detailed orography is very interesting and is a useful example of how a finescale daatset of this type can be used to interpret patterns of convective activity.

there are a few typographical errors.

Page 26, line 12, changes should be change Page 26, line 13 "It is also investigated that" would be better as "Also investigated is" Page 28 line 18 atleast should be at least Page 29 line 22 dominates should be dominate Page 30 line 29 "hottest part) do not receive" should be "hottest parts) does not receive" Page 31 line 14 nontheless should be nonetheless Page 36 line 6 "so as the" should be "as is the" Page 37, line 7 "atleast" should be "at least"

ACPD

9, S1542–S1544, 2009

Interactive Comment

On the wholes I think this is a very useful paper and I hope that the dataset described will be made widely available to researchers studying the Indian monsoon. I recommend publishing with minor revisions.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 23, 2009.

ACPD

9, S1542–S1544, 2009

Interactive Comment