

Weather Clim. Dynam. Discuss., referee comment RC1
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Comment on wcd-2021-45

A. P. Dimri (Referee)

Referee comment on "Synoptic processes of winter precipitation in the Upper Indus Basin"
by Jean-Philippe Baudouin et al., Weather Clim. Dynam. Discuss.,
<https://doi.org/10.5194/wcd-2021-45-RC1>, 2021

Review comments on 'Synoptic processes of winter precipitation in the Upper Indus Basin'
by Baudouin et al.

This is one of the very interesting work on the WDs and associated precipitation over the
UIB which provide extended understanding and explanation on exiting researches.. My
comments are below.

Abstract

I strongly think 'cross-barrier' term to be replaced with orographic interaction in abstract
and also later if there in manuscript too where ever it is meant for that purpose.

Now the big question: all winter, if DJF, precipitation is not always by WDs. There is
precipitation during to non-WDs days as well. In addition, there are WDs but at times they
all don't precipitated. Authors are advised to distinctly make this clear.

And I advise authors for a future study to take pressure; temp-moisture feedback
mechanisms; vorticity together to determine that. As authors themselves are as well
mentioning 'baroclinicity'.

And, to include impacts of gravity/Kelvin/Rossby waves too.

Introduction

Don't agree with statement 32-24: 'Despite the abundant interest, a precise and non case-specific understanding of the relationship between WD characteristics and precipitation variability is still lacking'. I would appreciate if authors reframe this sentence with mention of 'physical processes are still less understood'.

In Fig. 1 I will suggest to include map of Indian subcontinent first as (a) so that most of the readers can geographically know the study region.

Sections 2 and 3 are perfectly fine in detailing the study region, data, methods etc. I still have reservation in using term 'cross-barrier', In fact this orographic interaction is the process which modulates the precipitation forming mechanisms.

Section 4: Results

4.1.2. What is the rationale of mentioning it as cold core? Either provide or rename something else. Figure 3 (no lag) suggest it is warm core.

There is need of showing orographic interaction: as upslope flow along the windward side and then sinking of the flow, if once cross the barrier.

Pls see work: western Disturbances: A review.

I strongly recommend this paper but with above revisions.