

## ***Interactive comment on “A Close Observation to a Typical Continental Valley Glacier Surge in Northeastern Pamir” by X. Yao et al.***

**D. Shangguan (Referee)**

dhguan@lzb.ac.cn

Received and published: 25 March 2016

General comments: This paper examined a typical continental valley glacier surge in Northeastern Pamir, using multi-temporal RS images and their own field surveys. The triggering factors are interesting and important for broad audiences as the authors understand. The manuscripts were overall readable. However, The presented techniques in this paper are not well-established. there are several issues that should be addressed before the manuscript is ready for publication. And the glaciological significance is rather weak.

The first critical problem is the velocity. It is widely known that velocity is important one of factors to identify the glacier surge. Although authors are knowledgeable enough to measure the velocity, they selected those surface features no enough to measure the

C1

velocity. Furthermore, the authors did not even show the velocity during active phase. The present writing is unclear to show the velocity field. The second is volume. Volume change or ice transportation is key signal to show the “reservoir” and “receiving” area. However, the authors just calculated the ice volume. No any information showed the ice movement from reservoir area to receiving area. I have to say the volume section is useless or few useful to this manuscript. The third is term. For example AAR(no RAA); debris covered ice (no Back ice); seracs (no ice forests) and so on. The forth: Development process is the biggest inexplicability.

Specific comments Line 19 slid->move Line 20 Mt Jiubie, Kongur Mountain? Jiubie Peak, Kongur Mountain. The same as line 58 Line 22 the find 1 is common knowledge. It could not be shown as one of results. Please point out which difference it is. Line 24 Oceanic glacier->maritime glacier Line 30 “severe strength reduction of glacier” The result is not shown in your manuscript. Actually, the glacier extent expanded slightly. Line 41 In->in Line 44 Mustagh River-> Yarkant River Line 46 Authors mentioned several times this surge is difference with maritime glaciers. Authors only gave the information about glacier surge in high mountains observed hardly. But what is the difference between high mountains and maritime glaciers?

Line 59 delete “,” between “In” and “the” Line 72 “The annual precipitation ranges from 60 to 120 mm” -please provide the observation station information. Line 74 precipitations->precipitation (the same as others); increases->increase Line 95 “RAA”->AAR Line 98 Three major tributaries, why? Maybe four major tributaries is better. Line 99 “slow movement” How much is it? Did you have reference?

Line 118. “Scenes of “->”Event of ” Lines 121-123 it is difficult to be understood. Line 126 ice forests->seracs Lines 169-171 The velocity of tributaries a and b is faster than tributaries C. Do you have any evidence? The surface change of tributaries a and b is little. However, the surface of tributary c is coarse and develops lakes. How do you identify the velocity difference among tributaries a,b,c. Line 184 “were significantly darkend”? what ‘s your mean. It may be related to snow melt out Line 212-214 Pint-

C2

>point Why do not use cosi-corr to extract the velocity field? Point a, b are in lateral deposition; There is obvious landslide in Point c Point e and f are ok. However, can you identify the active phase of glacier surge?s Line 278 clear “this” Lines 298-310 there are two types of triggering mechanisms. But Authors should point out which one it is in this work? Lines 366-367 This sentence is no significance because it is when the glacier was in quiescent and surging phasing. Authors have to point out what difference it is.

Figure 1 parts of text can not be readable, they should be magnified. Figure 3 text can not be readable, they should be magnified.

---

Interactive comment on The Cryosphere Discuss., doi:10.5194/tc-2015-235, 2016.