

## ***Interactive comment on “Topographic control of snow distribution in an alpine watershed of western Canada inferred from spatially-filtered MODIS snow products” by J. Tong et al.***

### **Anonymous Referee #2**

Received and published: 1 October 2008

I think this is a very good paper, and I recommend publication. It presents a technique, previously developed, to reduce cloud coverage over an 8-day period using MODIS daily snow-cover standard products, and compares those results with the MODIS 8-day snow-cover standard product.

Some important and some minor issues are provided below.

### **Important Issues:**

I am somewhat confused about exactly how the study was done. As I indicated in the

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



first paragraph, I think that the authors used MOD10A1 (daily MODIS standard product) to develop an 8-day spatially-filtered (SF) product. They then compared the SF results with the MOD10A2 (8-day standard product) results. This is fine. The problem is that it does not really read that way, say for example in the Abstract which states in the first line that the SF method is used to reduce clouds in MOD10A2. I suggest re-wording to indicate that MOD10A1 was used to create the SF.

Can the authors address the significance, hydrologically, of only about a 1 day difference in SD of SCDs which is achieved using the SF method as compared to using MOD10A2?

p.2350, Lines 2 – 6, The authors have a mis-understanding about the use of the cloud mask in the Collection 4 & 5 standard snow-cover products. They correctly state that a liberal cloud mask was developed, and they reference Riggs et al. (2003). However, later testing revealed that the liberal cloud mask did not provide consistent results globally, though it worked well in some regions. So for Collections 4 & 5 the liberal cloud mask was dropped. The current standard products use a conservative cloud mask. Please also change the Riggs et al. (2003) reference to Riggs et al. (2006) which is the updated User Guide.

p.2352, Lines 22-24, Can the authors speculate on why the accuracy of the SF data declines with elevation?

p.2355, line 4 and in Concluding discussion, why are the highest melt rates of SCF always on 14 March?

p.2356, Line 13, is there some ground data or validation that indicates that the SF method showing a longer SCD is more accurate?

Concluding discussion, lines 6-9, this is a good conclusion, but it would even be better if the authors could show that the 2.5 percentage point reduction in cloud cover using the SF method is significant hydrologically.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Concluding discussion, line 26, please change “bands” to “band,” and “occurs” to “occur” to match the noun which is the word, “rates.”

### Minor Issues:

Abstract, Line 6, I suggest the following change in wording, “The new product developed using the SF method, hereafter referred to as SF, shows larger SCF. . .”

p.2352, Line 1, include the Hall and Riggs (2007) reference after Zhou et al., 2005

p.2352, Line 11 or somewhere appropriate earlier in the paper, perhaps it would be good to say something like, “..such that the SF product, hereafter referred to as SF, is adopted to. . .” The reason for this is that it’s fine to say SF method or SF product, but elsewhere in the text the authors refer simply to SF which means Spatial Filter when the authors really mean spatial-filter method or product. This is a minor point but it would make the text read a bit more clearly.

p.2356, Lines 8-9, I suggest re-phrasing to the following, “. . . exhibits a much larger perennial snow cover than does the original MODIS data.”

p.2362, “threshold” should be “threshold”

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 2347, 2008.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper