

Responses to editor

Dear editor,

We have revised our manuscript by your comments. We sincerely hope that these corrections can reach your expectations.

Point-by-point response:

Lines 111 to 113: typesetters will change text (thousand) to numbers here. Authors will need to ensure accuracy of conversions.

Response: Thanks for your suggestion. We have provided the specific numbers and have ensured the accuracy of the numbers.

The training samples before 2000 included 717,172 snow samples, 804,104 non-snow samples, and 82,904 cloud samples. Samples after 2000 included 7,304,310 snow samples, 8,394,959 non-snow samples, and 44,422 cloud samples.

Line 141: HRMF should be HMRF? Acronym need definition at first use.

Response: Thanks for the careful check. HRMF have been modified to HMRF. It first appeared in line 141, so the full name was given. We also deleted the full name in line 233.

Fourth, the gaps caused by clouds or invalid observations in the preliminary SCE record were filled with a set of gap-filling techniques, including Hidden Markov Random Field (HMRF)-based interpolation and snow-depth interpolation.

The spatio-temporal modeling technique integrated AVHRR preliminary SCE record spatial and temporal contextual information within a HMRF model (Melgani and Serpico, 2003).

Line 182: no need to capitalize 'Green'

Response: The 'Green' has been revised by 'green'.

The NDSI is usually calculated using the green (around a wavelength of 0.50 μ m) and shortwave infrared (around a wavelength of 1.60 μ m) bands.

Please remove the S China Sea inset (9-dash area) in Figures 1, 8 and 12. Otherwise, Copernicus - as standard policy applied to all journals - will issue a disclaimer about these figures attached in prominent location to this manuscript. Particularly because this paper addresses snow cover, those tropical insets have no utility. Other investigators have successfully removed provocative map features.

Response: Thanks very much again. All these figures have been corrected in the new manuscript.

Other modification:

We also revised some wrong figure numbers (Fig.3, Fig.4 and Fig.5).