Dear Reviewer

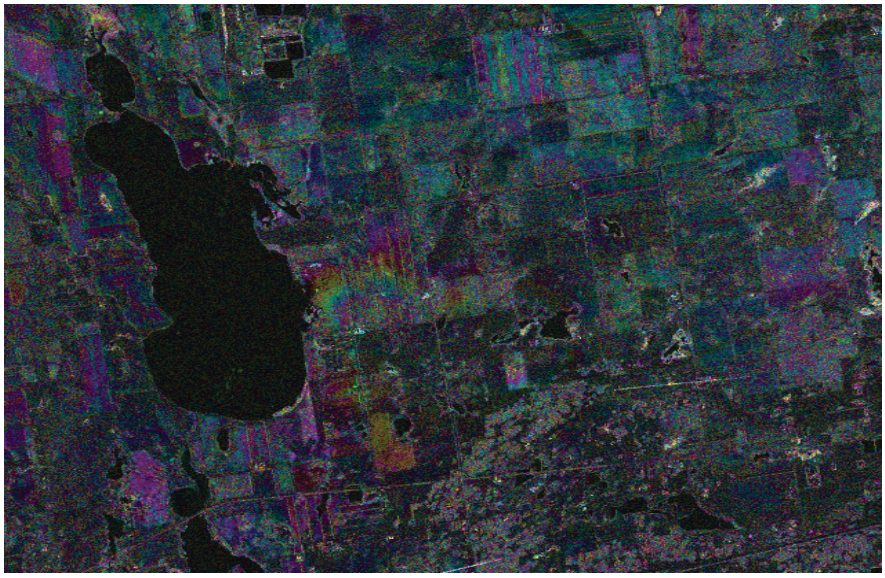
We would like to thank you for your valuable comments that helped us to improve our paper. Please find below our detailed reply to your comments presented in bold font.

Best regards,
Samsonov et al.

Specific comments:
The authors have got the surface subsidence time series using SBAS and MSBAS methods, why they only use two interferograms to model the subsidence. And from Fig 3, the coherences seem good enough for modeling. What is more, some statistical methods (e.g., F-test) can help the authors identify the source model for subsidence.

Reply:
We intentionally demonstrated in Figs 2-3 that the interferograms used for modelling accurately describe the observed phenomena, in both the temporal and spatial domains. The quality of these interferograms is superior to the quality of all other interferograms put together. On average, the coherence of individual interferograms was very poor. Half of the year this area is covered by snow and also is affected by seasonal changes due to agricultural field development, foliage, flooding and shallow groundwater. It was quite an effort to produce the MSBAS time series presented in Fig 3, using advanced filtering, phase unwrapping, filling gaps by interpolation etc. Still, most interferograms were partially incoherent. By analyzing individual interferogram and producing MSBAS time series, we concluded that modelling based on two highly coherent interferograms is more accurate and more reliable.

We included below an image of a typical wrapped interferogram from a high resolution MF3F beam. The loss of coherence is very apparent, especially in comparison to the interferograms used for modelling. The coherence of interferograms from coarser resolution S3 beam is even lower.



We now include results of an F-test in the last paragraph of the results section. These results also favour the sill model.

Technical corrections:
1. P5882/L5-6: the full terms of SBAS and MSBAS should be given here.
Reply: Corrected as suggested.

2. P5883/L6: typical measurement? Could you show some SARs as examples?
Reply: I think the reviewer meant P5884/L6. The example of a SAR image for this particular regions is shown as background in Fig 11b.

3. P5889/L11: What is the unit of sigma, a and b?
Reply: We added units [cm, 1/km,1/km].

4. P5890/L7: What is the unit of sigma, a and b?
Reply: We added units [cm, 1/km,1/km].

5. Fig. 3: The figure should include X/Y labels and a colorbar.
Reply: We included a colour bar into the first sub-figure. Coordinates, scale and location of this region are now shown in Figs 1-2, and we additionally added this information into the captions. We experimented, adding coordinates to each individual sub-figure but then the actual size of deforming area became very small and the quality of the entire image decreased.