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Interactive comment on "Assessment and Monitoring of Land Degradation Using Geospatial Technology in Bathinda District, Punjab, India" *by* Naseer Ahmad and Puneeta Pandey

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Answers to Comments of RC1 1) Comments of Referee: The study objectives are not clearly stated. The authors should also mention the novelty brought by this study, when compared to other similar studies. Author's Response: Objectives: This study aim to integrate remote sensing data and ïňĄeld-based soil data to assess severity of land degradation in the Bathinda District, Punjab. Novelty: Integration of remotely sensed data with ïňĄeld based data to determine the severity of land degradation is an important aspect of the present study. However, as far as land degradation assessment through geospatial technology is concerned, not much study has been done in the Bathinda region of Punjab, a north-western state of India. Author's

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Discussion paper

changes in the manuscript: Suggestions incorporated in line no. 2-4 of Page 4. 2) Comments of Referee: In the introduction, the authors state that “Improper land use practice has been attributed as one of the major causes of land degradation by various researchers”. A mention to the studies of Pacheco et al., 2014, 2016; Valera et al., 2016; Valle Junior et al., 2014a,b; 2015would be appropriate. Author’s Response: Improper land use practice has been attributed as one of the major causes of land degradation by various researchers (Biro et al., 2013; De Souza et al., 2013; Pallavicini et al., 2014; Mohawesh et al., 2015). A major form of improper land use is the one leading to environmental land use conïňĆicts that develop on soils used for activities not in compliance with the natural potential of the soil. This type of improper use is characterized by a deviation between the actual and natural uses set by land capability. Environmental land use conïňĆicts and their consequences for land degradation have been recently studied by various authors, namely (Pacheco et al., 2014, 2016; Valera et al., 2016; Valle Junior et al., 2014a,b; 2015). Author’s changes in the manuscript: Suggestions incorporated in line no. 12-17 of Page 2. 3) Comments of Referee: The description of the study is is rather short. What are the reasons of soil salinization in the studied area? Is that irrigation? Of what cultures? Since when? What are the main crops and management practices in the area? No basic information is provided in the study area description, which should appear in the revised version. Author’s Response: The study area was further described as per the comment received. So far as salinization is concerned a few studies (Sheng, 2010; El Baroudy, 2011; Koshal, 2012) were mentioned regarding the reasons of salinization. The crops grown in the study area and the management practices were also incorporated. Author’s changes in the manuscript: Line 16-29 of Page 4 incorporates the above mentioned suggestions. 4) Comments of Referee: Did the authors tried to use images free from meteorological effects, like MODIS? Author’s Response: No, MODIS images were not used for the present study. However, Landsat images used in the present study were cloud-free scenes. Author’s changes in the manuscript: Not required 5) Comments of Referee: What type of correlation analysis was used? Was it based on time series

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of DN or on average values? How was seasonality incorporated in the correlation analysis? A more detailed description of the results is required. Author's Response: Pearson's correlation analysis was used in the present study. It was not based on time series of DN or on average values; rather the DN value corresponding to geographical coordinates of sampling sites was considered for the present study. Author's changes in the manuscript: The table 6 describes the correlation analysis. Some text has been revised and presented in line 6-8 of Page 21. 6) Comments of Referee: As with the study area description, the presentation of methods is also fragile. The authors must improve this section in the revised version. Author's Response: The revised methodology and flowchart of methodology has been added in Section 2.6 of Materials and Method. Author's changes in the manuscript: Section 2.6 of lines 14-22 of Page 7.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/se-2016-172/se-2016-172-AC1-supplement.pdf

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