

Referee #2

The manuscript named “30 m annual land cover and its dynamics in China from 1990 to 2019” proposed a multi-year land cover dataset derived from Landsat and SRTM DEM data by using a supervised classification method. Accuracy estimation showed the superiorities of the data. The manuscript was clearly written with a logical order that is easy to follow. I believe this manuscript can be considered to publish after some minor revision. Only some minor comments listed as below:

"GloLand30" should be "GlobeLand30"

R: Much obliged. Corrected.

"FROM_GLC" or "FROM-GLC"?

R: Many thanks. We replaced "FROM-GLC" with "FROM_GLC" throughout the manuscript.

References or an ablation experiment may be good for the proposed spatial-temporal filtering.

R: Thanks for your suggestion. An ablation experiment has been added in the revised manuscript. We calculated the confusion matrix for CLCD without spatial-temporal filtering. It was indicated that the overall accuracy of CLCD without the spatial-temporal filtering was dropped by 0.71% than that with spatial-temporal filtering (Table R1 & R2). This showed the effectiveness of our proposed spatial-temporal filtering. Following your suggestion, we also added the references and revised the manuscript:

"We calculated the confusion matrix for CLCD without spatial-temporal filtering. It was indicated that the overall accuracy of CLCD without the spatial-temporal filtering was dropped by 0.71 than that with spatial-temporal filtering (Table S28 & S29). This showed the effectiveness of our proposed post-processing method."

Table R1. Confusion matrix of CLCD without spatial-temporal filtering based on visually-interpreted test samples. PA and UA are abbreviations for the producer’s accuracy and user’s accuracy, respectively. Bold number represents the overall accuracy.

		CLCD without spatial-temporal filtering									
Class		Cropland	Forest	Shrub	Grassland	Water	Snow/Ice	Barren	Impervious	SUM	UA (%)
Visually-interpreted samples	Cropland	955	62	4	91	5	0	8	14	1139	83.85
	Forest	72	962	9	56	0	0	0	1	1100	87.45
	Shrub	21	65	36	32	0	0	2	0	156	23.08
	Grassland	79	57	16	983	1	9	71	2	1218	80.71
	Water	10	3	0	2	109	1	2	2	129	84.50
	Snow/Ice	0	0	0	2	0	79	5	0	92	85.87
	Barren	5	0	0	351	6	11	1028	5	1413	72.75
	Impervious	62	2	0	9	0	0	1	142	216	65.74
	SUM	1197	1173	62	1510	119	101	1114	176	5463	
	PA (%)	79.78	82.01	58.06	65.10	91.60	78.22	92.28	80.68		78.60

Table R2. Confusion matrix of CLCD with spatial-temporal filtering based on visually-interpreted test samples. PA and UA are abbreviations for the producer’s accuracy and user’s accuracy, respectively. Bold number represents the overall accuracy.

		CLCD with spatial-temporal filtering									
Class		Cropland	Forest	Shrub	Grassland	Water	Snow/Ice	Barren	Impervious	SUM	UA (%)
Visually-interpreted samples	Cropland	963	61	2	83	5	0	5	20	1139	84.55
	Forest	68	976	5	48	0	1	0	2	1100	88.73
	Shrub	19	68	38	29	0	0	2	0	156	24.36
	Grassland	72	72	15	982	1	9	63	4	1218	80.62
	Water	9	3	0	3	108	1	3	2	129	83.72
	Snow/Ice	0	0	0	3	0	84	5	0	92	91.30
	Barren	5	0	0	347	5	13	1036	7	1413	73.32
	Impervious	58	3	0	8	0	0	1	146	216	67.59
	SUM	1194	1183	60	1503	119	108	1115	181	5463	
	PA (%)	80.65	82.50	63.33	65.34	90.76	77.78	92.91	80.66		79.31