

Supplementary Materials

Table S.1. Prediction accuracy results and error matrices of ResNet models performed with 50, 100 and 200 epochs.

ResNet Model - 50 epochs

Class Name	Marsh	Open Water	Swamp	Upland	Total	Users' Accuracy
Marsh	1169	747	43	6	1965	0.59
Open Water	75	1079	11	0	1165	0.93
Swamp	6	7	162	0	175	0.93
Upland	851	167	14	1994	3026	0.66
Total	2101	2000	230	2000	6331	
Producers' Accuracy	0.56	0.54	0.70	1.00		
Overall Kappa	0.56					
Overall Accuracy	0.70					

ResNet Model - 100 epochs

Class Name	Marsh	Open Water	Swamp	Upland	Total	Users' Accuracy
Marsh	1252	645	56	2	1955	0.64
Open Water	87	1148	5	0	1240	0.93
Swamp	5	1	152	0	158	0.96
Upland	757	206	17	1998	2978	0.67
Total	2101	2000	230	2000	6331	
Producers' Accuracy	0.60	0.57	0.66	1.00		
Overall Kappa	0.59					
Overall Accuracy	0.72					

ResNet Model - 200 epochs

Class Name	Marsh	Open Water	Swamp	Upland	Total	Users' Accuracy
Marsh	1282	639	8	5	1934	0.66
Open Water	101	1202	2	0	1305	0.92
Swamp	16	7	207	0	230	0.90
Upland	702	152	13	1995	2862	0.70
Total	2101	2000	230	2000	6331	
Producers' Accuracy	0.61	0.60	0.90	1.00		
Overall Kappa	0.62					
Overall Accuracy	0.74					

Table S.2 Error matrices of ResNet, Support Vector Machine, and Random Forest classifications

Reference Data					
Map Data	<i>ResNet Model 200</i>	<i>Marsh</i>	<i>Open Water</i>	<i>Swamp</i>	<i>Total</i>
	Marsh	1280	639	8	1927
	Open Water	101	1202	2	1305
	Swamp	16	7	207	230
	Total	1397	1848	217	3462
Reference Data					
Map Data	<i>ResNet Model 200</i>	<i>Marsh</i>	<i>Open Water</i>	<i>Swamp</i>	<i>Total</i>
	Marsh	1282	822	81	2185
	Open Water	50	1078	17	1145
	Swamp	14	43	107	164
	Total	1346	1943	205	3494
Reference Data					
Map Data	<i>ResNet Model 200</i>	<i>Marsh</i>	<i>Open Water</i>	<i>Swamp</i>	<i>Total</i>
	Marsh	1279	688	61	2028
	Open Water	105	1121	16	1242
	Swamp	43	46	132	221
	Total	1427	1855	209	3491

Figure S.1. Examples of ground truth and Predictions of ResNet modelling based on 50 epochs. In the figure, brown depicts marsh, blue open water, and green swamps.

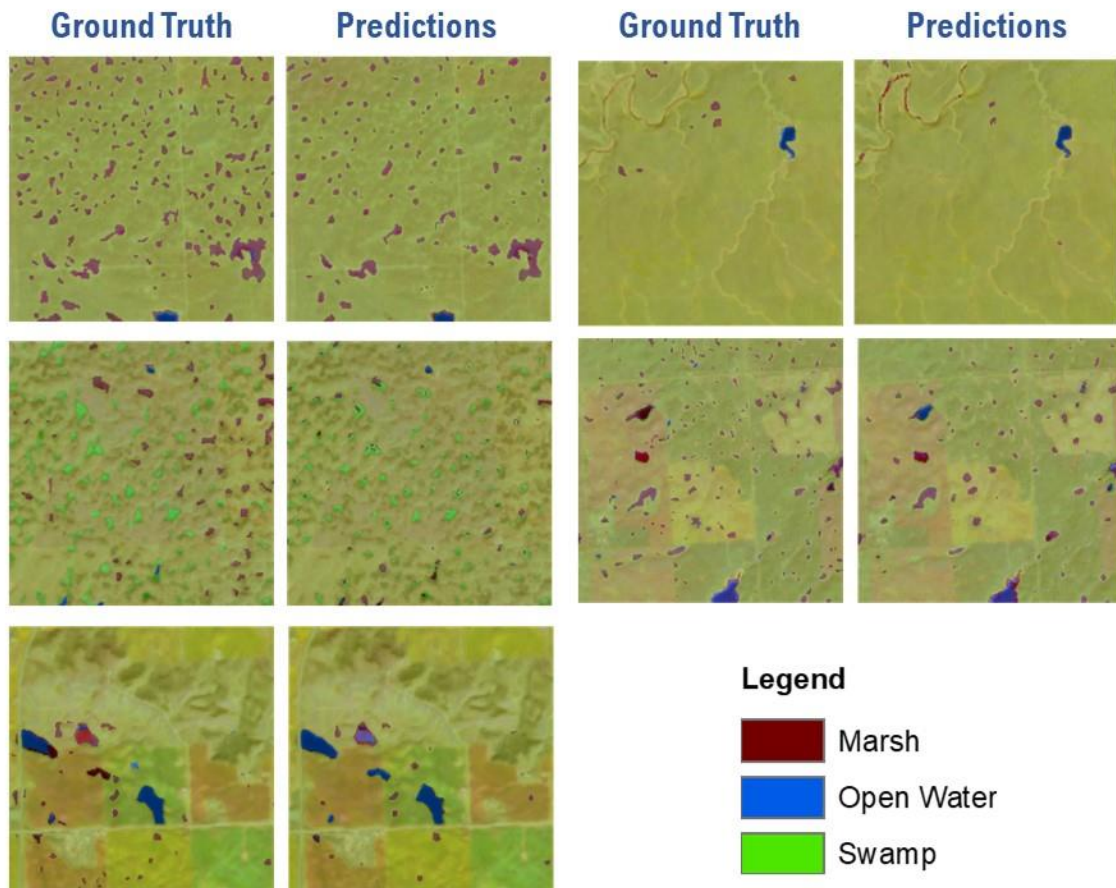
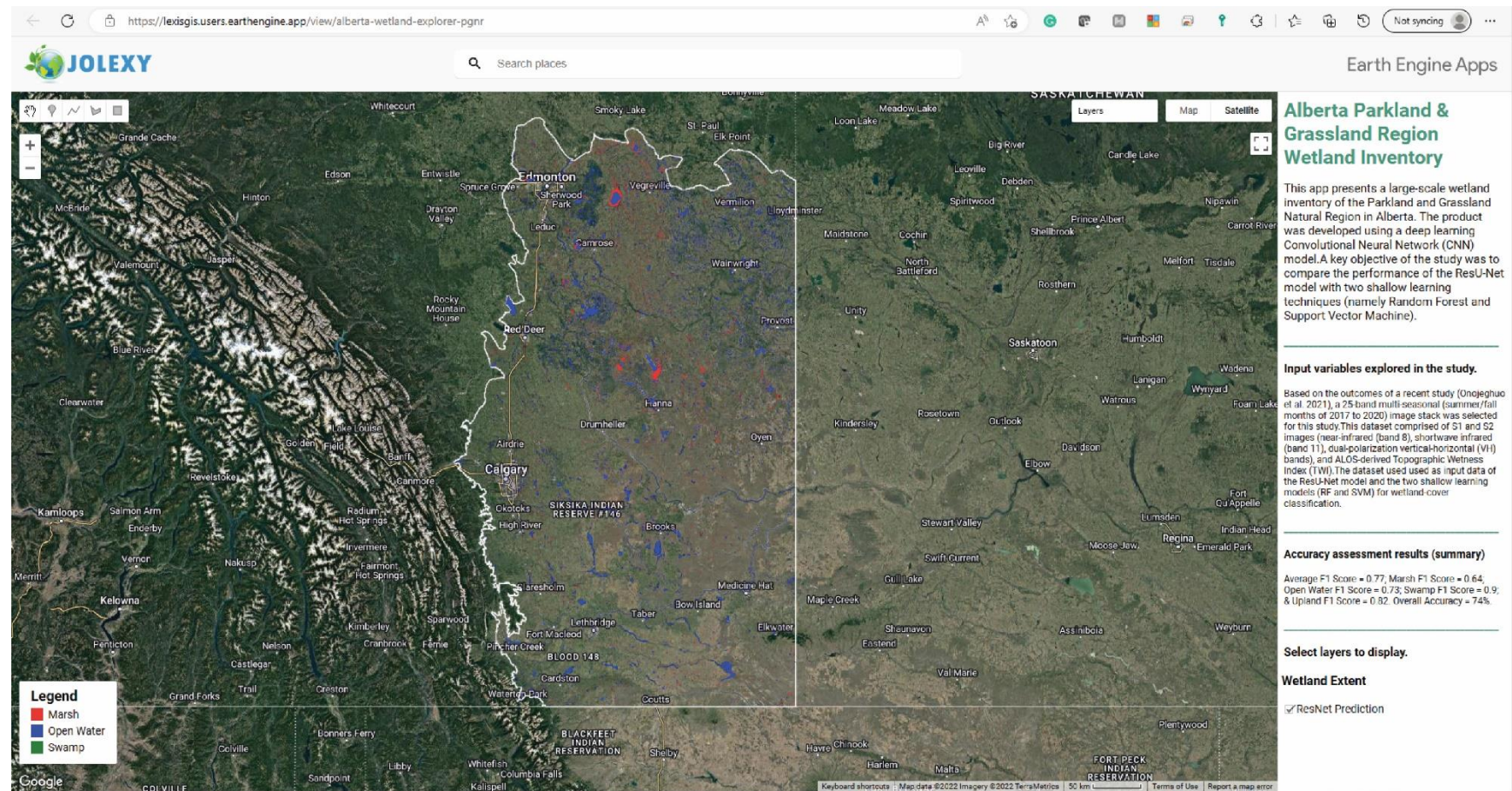
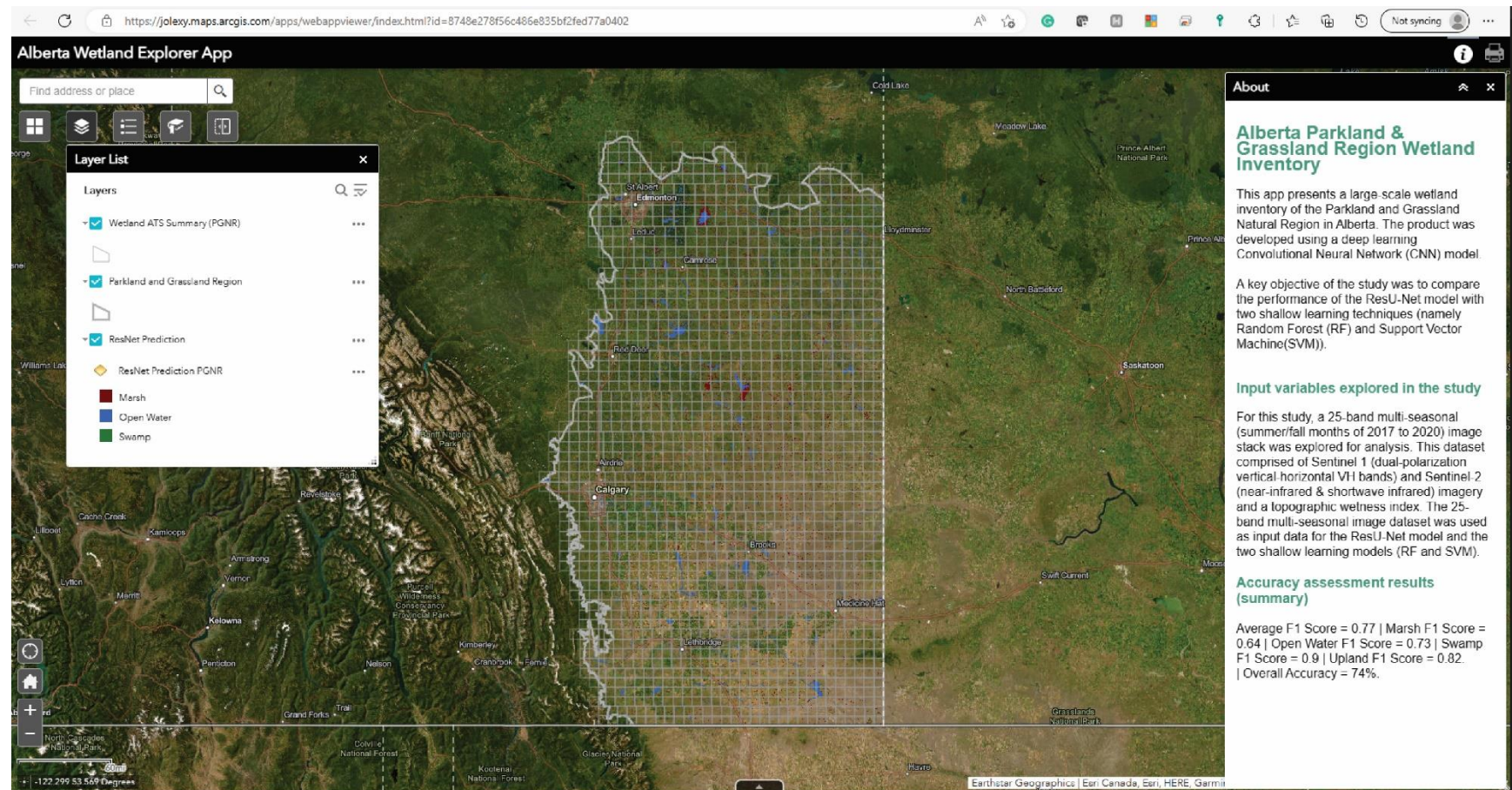


Figure S.2. Google Earth Engine wetland explorer app for the Parkland and Grassland Natural Region (landing page)



URL: <https://lexisgis.users.earthengine.app/view/alberta-wetland-explorer-pgnr>

Figure S.3. ArcGIS Online wetland explorer app for the Parkland and Grassland Natural Region (landing page)



URL: <https://jolexy.maps.arcgis.com/apps/webappviewer/index.html?id=8748e278f56c486e835bf2fed77a0402>

Figure S.4. Visual comparison of ResNet prediction with Alberta Biodiversity Monitoring Institute (ABMI) and Alberta Merged Wetland Inventory (ABMI) wetland inventory products with high-resolution satellite imagery (Maxmar imagery dated July 25, 2019) of selected locations in the study area. The top images represent Crawling Lake, and the bottom image is Beaverhill Lake, both prominent wetland habitats in the region.

