

# Supplementary Materials: Mapping Potential Plant Species Richness over Large Areas with Deep Learning, MODIS, and Species Distribution Models

Hyeyeong Choe Junhwa Chi and James H. Thorne

Table S1. Evaluation of the species distribution models using AUC and the Boyce index for 1574 plant species.

Species	AUC 1	Boyce 1	AUC 2	Boyce 2	AUC 3	Boyce 3	AUC 4	Boyce 4	AUC 5	Boyce 5	mean AUC	mean Boyce
<i>Abies holophylla</i> Maxim.	0.789	0.855	0.808	0.927	0.871	0.716	0.796	0.831	0.807	0.9	0.814	0.846
<i>Abutilon theophrasti</i> Medicus	0.479	0.199	0.501	0.307	0.459	−0.154	0.446	−0.446	0.436	0.221	0.464	0.025
<i>Acalypha australis</i> L.	0.605	0.762	0.661	0.898	0.653	0.805	0.695	0.738	0.695	0.897	0.662	0.82
<i>Acer barbinerve</i> Maxim.	0.868	0.83	0.872	0.84	0.895	0.663	0.847	0.842	0.784	0.888	0.853	0.813
<i>Acer buergerianum</i> Miq.	0.773	0.739	0.814	0.863	0.605	0.587	0.759	0.904	0.791	0.878	0.748	0.794
<i>Acer komarovii</i> Pojark.	0.975	0.538	0.971	0.713	0.925	0.89	0.931	0.856	0.931	0.883	0.947	0.776
<i>Acer mandshuricum</i> Maxim.	0.874	0.772	0.903	0.921	0.955	0.773	0.873	0.8	0.878	0.842	0.896	0.822
<i>Acer palmatum</i> Thunb. ex Murray	0.77	0.805	0.816	0.878	0.779	0.946	0.778	0.876	0.767	0.908	0.782	0.883
<i>Acer pictum</i> subsp. <i>mono</i> (Maxim.) Ohashi	0.743	0.897	0.791	0.929	0.767	0.905	0.757	0.617	0.774	0.915	0.766	0.853
<i>Acer pictum</i> var. <i>truncatum</i> (Bunge) C.S.Chang	0.783	0.92	0.756	0.507	0.809	0.782	0.746	0.263	0.745	0.636	0.768	0.622
<i>Acer pseudo-sieboldianum</i> (Pax) Kom.	0.796	0.96	0.794	0.94	0.79	0.978	0.789	0.961	0.752	0.813	0.784	0.93
<i>Acer tataricum</i> subsp. <i>ginnala</i> (Maxim.) Wesm.	0.726	0.958	0.797	0.958	0.711	0.91	0.762	0.926	0.761	0.961	0.751	0.943
<i>Acer tegmentosum</i> Maxim.	0.931	0.758	0.888	0.821	0.919	0.905	0.901	0.881	0.926	0.917	0.913	0.856
<i>Acer triflorum</i> Kom.	0.842	0.764	0.813	0.732	0.782	0.278	0.827	0.657	0.872	0.872	0.827	0.661
<i>Acer ukurunduense</i> Trautv. & C.A.Mey.	0.974	0.822	0.981	0.957	0.969	0.847	0.984	0.915	0.97	0.609	0.976	0.83
<i>Achillea alpina</i> L.	0.781	0.916	0.652	0.824	0.785	0.859	0.805	0.68	0.663	0.706	0.737	0.797
<i>Achillea millefolium</i> L.	0.556	0.819	0.342	−0.644	0.442	−0.45	0.615	0.084	0.507	0.387	0.492	0.039
<i>Achyranthes fauriei</i> H.Lev. & Vaniot	0.981	0.833	0.963	0.812	0.96	0.798	0.971	0.856	0.987	0.76	0.972	0.812
<i>Achyranthes japonica</i> (Miq.) Nakai	0.702	0.794	0.79	0.816	0.709	0.792	0.736	0.916	0.752	0.895	0.738	0.843
<i>Aconitum ciliare</i> DC.	0.845	0.918	0.915	0.912	0.753	0.903	0.732	0.824	0.748	0.869	0.798	0.885
<i>Aconitum coreanum</i> (H. Lev.) Rapaics	0.84	0.858	0.877	0.936	0.85	0.917	0.838	0.961	0.899	0.744	0.861	0.883

<i>Aconitum jaluense</i> Kom.	0.869	0.914	0.839	0.892	0.827	0.949	0.825	0.811	0.806	0.62	0.833	0.837
<i>Aconitum kusnezoffii</i> Rchb.	0.737	0.836	0.696	0.764	0.73	0.568	0.786	0.703	0.864	0.945	0.762	0.763
<i>Aconitum longecassidatum</i> Nakai	0.863	0.832	0.841	0.877	0.812	0.932	0.843	0.797	0.87	0.956	0.846	0.879
<i>Aconitum pseudolaeve</i> Nakai	0.906	0.836	0.772	0.803	0.873	0.915	0.806	0.826	0.777	0.818	0.827	0.84
<i>Aconogonon alpinum</i> (All.) Schur	0.819	0.525	0.853	0.535	0.812	0.726	0.748	0.817	0.77	0.721	0.8	0.665
<i>Acorus calamus</i> L.	0.633	0.536	0.712	0.563	0.277	−0.309	0.298	0.641	0.507	0.124	0.485	0.311
<i>Actaea asiatica</i> H.Hara	0.906	0.592	0.874	0.776	0.894	0.845	0.885	0.902	0.869	0.687	0.886	0.76
<i>Actinidia arguta</i> var. <i>arguta</i> (Siebold & Zucc.) Planch. ex Miq.	0.765	0.761	0.75	0.866	0.746	0.742	0.743	0.917	0.79	0.849	0.759	0.827
<i>Actinidia kolomikta</i> (Maxim. & Rupr.) Maxim.	0.735	0.828	0.852	−0.044	0.816	0.76	0.873	0.81	0.861	0.858	0.827	0.642
<i>Actinidia polygama</i> (Siebold & Zucc.) Planch. ex Maxim.	0.791	0.907	0.806	0.775	0.801	0.869	0.764	0.751	0.816	0.874	0.796	0.835
<i>Adenocaulon himalaicum</i> Edgew.	0.885	0.853	0.858	0.764	0.873	0.743	0.897	0.839	0.871	0.911	0.877	0.822
<i>Adenophora divaricata</i> Franch. & Sav.	0.802	0.601	0.835	0.904	0.767	−0.048	0.782	0.923	0.826	0.883	0.802	0.653
<i>Adenophora polyantha</i> Nakai	0.655	0.768	0.601	0.597	0.606	0.32	0.66	0.713	0.623	0.63	0.629	0.606
<i>Adenophora remotiflora</i> (Siebold & Zucc.) Miq.	0.929	0.443	0.863	0.909	0.861	0.843	0.883	0.783	0.733	0.74	0.854	0.744
<i>Adenophora stricta</i> Miq.	0.813	0.814	0.775	0.779	0.869	0.513	0.874	0.836	0.83	0.733	0.832	0.735
<i>Adenophora triphylla</i> var. <i>japonica</i> (Regel) H.Hara	0.721	0.852	0.763	0.911	0.789	0.937	0.663	0.861	0.77	0.911	0.741	0.894
<i>Adenophora verticillata</i> var. <i>hirsuta</i> F.Schmidt	0.438	−0.334	0.752	0.671	0.453	−0.162	0.551	0.007	0.557	0.201	0.551	0.077
<i>Adenophora verticillata</i> var. <i>verticillata</i> (Pall.) Fisch.	0.69	0.543	0.573	0.206	0.703	0.325	0.63	0.652	0.659	0.721	0.651	0.489
<i>Adonis amurensis</i> Regel & Radde	0.787	0.821	0.766	0.652	0.769	0.833	0.775	0.804	0.839	0.871	0.787	0.796
<i>Adoxa moschatellina</i> L.	0.845	0.735	0.71	0.743	0.824	0.616	0.834	0.766	0.769	0.715	0.796	0.715
<i>Aeginetia indica</i> L.	0.982	−0.325	0.989	−0.203	0.992	0.331	0.986	−0.329	0.982	0.001	0.986	−0.105
<i>Aeschynomene indica</i> L.	0.599	0.173	0.673	0.065	0.752	0.83	0.621	0.682	0.652	0.573	0.659	0.465
<i>Agastache rugosa</i> (Fisch. & Mey.) Kuntze	0.764	0.932	0.764	0.875	0.74	0.874	0.75	0.933	0.794	0.897	0.762	0.902
<i>Agrimonia coreana</i> Nakai	0.716	0.866	0.827	0.438	0.749	0.821	0.823	0.874	0.827	0.82	0.789	0.764
<i>Agrimonia pilosa</i> Ledeb.	0.725	0.964	0.736	0.928	0.691	0.891	0.729	0.967	0.738	0.937	0.724	0.937
<i>Agropyron ciliare</i> (Trin.) Franch.	0.657	0.67	0.691	0.811	0.659	0.605	0.754	0.875	0.721	0.77	0.697	0.746

Agropyron tsukushiense var. transiens (Hack.) Ohwi	0.658	0.805	0.643	0.919	0.654	0.582	0.709	0.681	0.696	0.711	0.672	0.74
Agrostis clavata var. clavata Trin.	0.823	0.891	0.778	0.928	0.806	0.726	0.759	0.842	0.805	0.804	0.794	0.838
Agrostis clavata var. nukabo Ohwi	0.781	0.852	0.754	0.855	0.685	0.644	0.625	0.621	0.652	0.679	0.7	0.73
Ailanthus altissima for. altissima (Mill.) Swingle	0.712	0.722	0.692	0.567	0.673	0.779	0.654	0.606	0.683	0.71	0.683	0.677
Ainsliaea acerifolia Sch.Bip.	0.831	0.918	0.806	0.842	0.825	0.919	0.802	0.844	0.826	0.915	0.818	0.888
Ainsliaea apiculata Sch.Bip.	0.916	0.679	0.855	0.765	0.998	0.976	0.923	0.827	0.858	0.819	0.91	0.813
Ajuga decumbens Thunb.	0.942	0.855	0.883	0.686	0.88	0.87	0.874	0.513	0.817	0.591	0.879	0.703
Ajuga multiflora Bunge	0.776	0.769	0.63	0.544	0.811	0.718	0.675	0.615	0.717	0.719	0.722	0.673
Ajuga spectabilis Nakai	0.835	0.725	0.847	0.717	0.816	0.817	0.801	0.553	0.809	0.888	0.821	0.74
Akebia quinata (Thunb.) Decne.	0.718	0.883	0.749	0.892	0.73	0.942	0.824	0.971	0.764	0.96	0.757	0.93
Alangium platanifolium var. trilobum (Miq.) Ohwi	0.768	0.759	0.807	0.916	0.777	0.921	0.805	0.924	0.763	0.92	0.784	0.888
Albizia julibrissin Durazz.	0.817	0.943	0.718	0.904	0.753	0.9	0.759	0.934	0.676	0.871	0.745	0.91
Aletris spicata (Thunb.) Franch.	0.991	0.838	0.99	0.911	0.997	0.805	0.991	0.833	0.99	0.857	0.992	0.849
Allium macrostemon Bunge	0.723	0.78	0.838	0.905	0.675	0.691	0.782	0.573	0.657	0.552	0.735	0.7
Allium monanthum Maxim.	0.795	0.658	0.759	0.759	0.709	0.061	0.729	0.777	0.78	0.877	0.754	0.626
Allium sacculiferum Maxim.	0.707	0.621	0.678	0.73	0.731	0.706	0.757	0.764	0.698	0.501	0.714	0.664
Allium thunbergii G.Don	0.708	0.585	0.805	0.934	0.755	0.828	0.706	0.738	0.755	0.921	0.746	0.801
Allium tuberosum Rottler ex Spreng.	0.696	0.749	0.468	−0.041	0.55	0.287	0.555	0.04	0.629	0.805	0.58	0.368
Alnus firma Siebold & Zucc.	0.808	0.741	0.841	0.914	0.878	0.846	0.857	0.883	0.848	0.93	0.846	0.863
Alnus hirsuta Turcz. ex Rupr.	0.75	0.956	0.691	0.88	0.753	0.91	0.721	0.851	0.782	0.945	0.739	0.908
Alnus japonica (Thunb.) Steud.	0.68	0.702	0.572	0.131	0.7	0.13	0.695	0.558	0.491	−0.192	0.627	0.266
Alopecurus aequalis Sobol.	0.625	0.864	0.645	0.75	0.573	0.293	0.709	0.845	0.606	0.773	0.632	0.705
Amaranthus lividus L.	0.44	−0.26	0.612	0.549	0.622	0.41	0.631	0.931	0.533	0.307	0.568	0.387
Amaranthus mangostanus L.	0.69	0.754	0.523	0.424	0.511	0.519	0.634	−0.038	0.463	0.32	0.564	0.396
Amaranthus patulus Bertol.	0.757	0.794	0.742	0.854	0.71	0.729	0.703	0.725	0.735	0.909	0.73	0.802