

Explainable AI for unveiling deep learning pollen classification models based on fusion of scattered light patterns and fluorescence spectroscopy - Supplementary Materials

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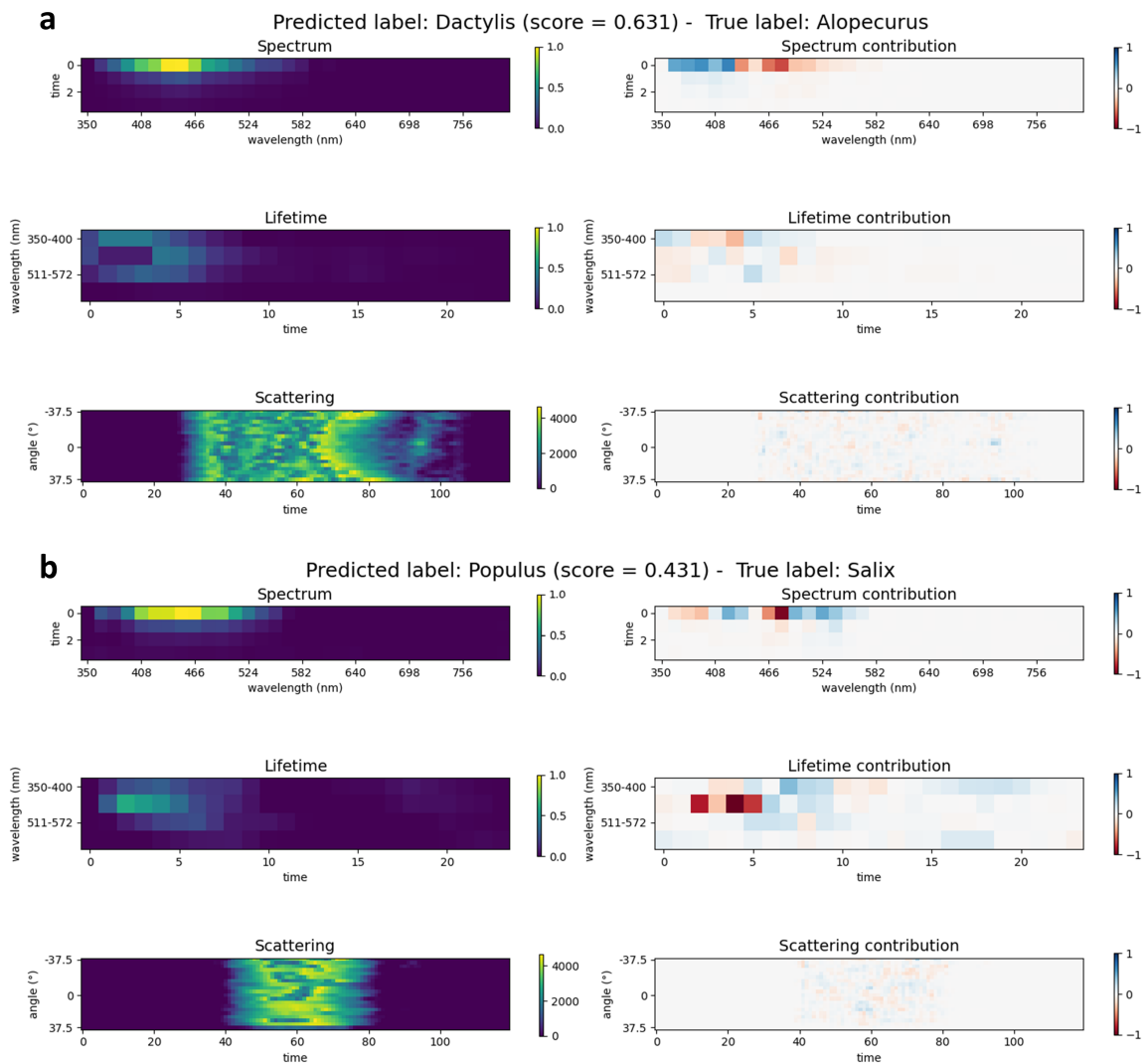
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Pollen sizes

Label	Pollen species	Polar view average size (standard deviation)	Equatorial view average size (standard deviation)
Acer	<i>Acer negundo</i> L.	32 (8) micron	22 (4) micron
Alnus	<i>Alnus glutinosa</i> (L.) Gaertn.	27 (1) micron	24 (2) micron
Alopecurus	<i>Alopecurus pratensis</i> L.	36 (2) micron	30 (2) micron
Carex	<i>Carex</i> sp.	52 (2) micron	44 (4) micron
Cupressus	<i>Cupressus arizonica</i> Greene	22 (1) micron	21 (7) micron
Dactylis	<i>Dactylis glomerata</i> L.	34 (3) micron	32 (4) micron
Juglans	<i>Juglans regia</i> L.	46 (3) micron	41 (4) micron
Morus	<i>Morus</i> sp.	22 (2) micron	16 (2) micron
Platanus	<i>Platanus x acerifolia</i> (Aiton) Willd.	22 (3) micron	18 (2) micron
Populus 1	<i>Populus nigra</i> var. <i>pyramidalis</i> Spach	25 (2) micron	22 (2) micron
Populus 2	<i>Populus alba</i> L.	30 (2) micron	25 (3) micron
Salix	<i>Salix</i> sp.	25 (4) micron	17 (1) micron
Ulmus	<i>Ulmus</i> sp.	30 (2) micron	26 (3) micron

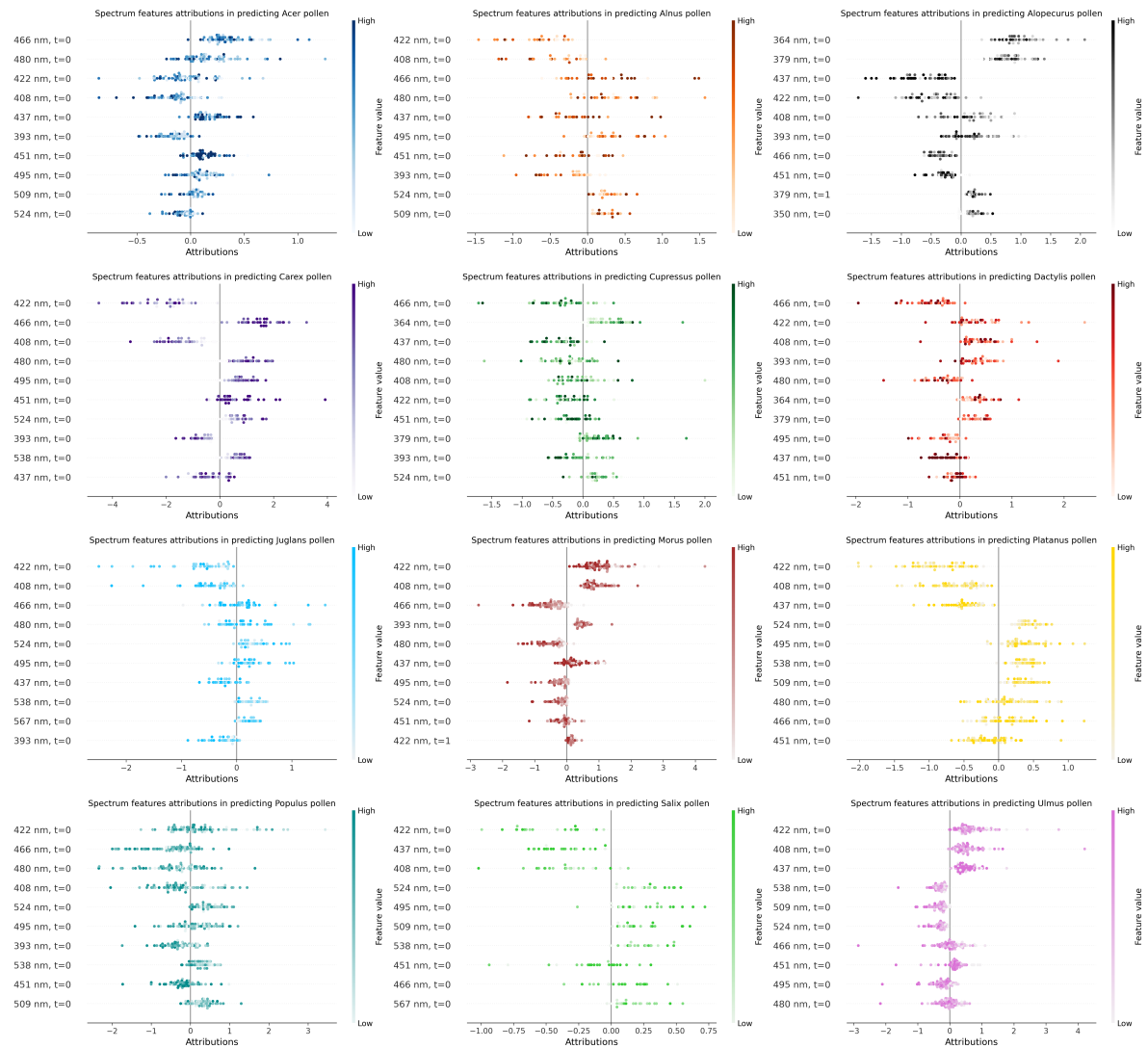
Supplementary Table 1: Measured averaged pollen sizes of examined pollen classes.

Instance level explanations - examples of misclassifications



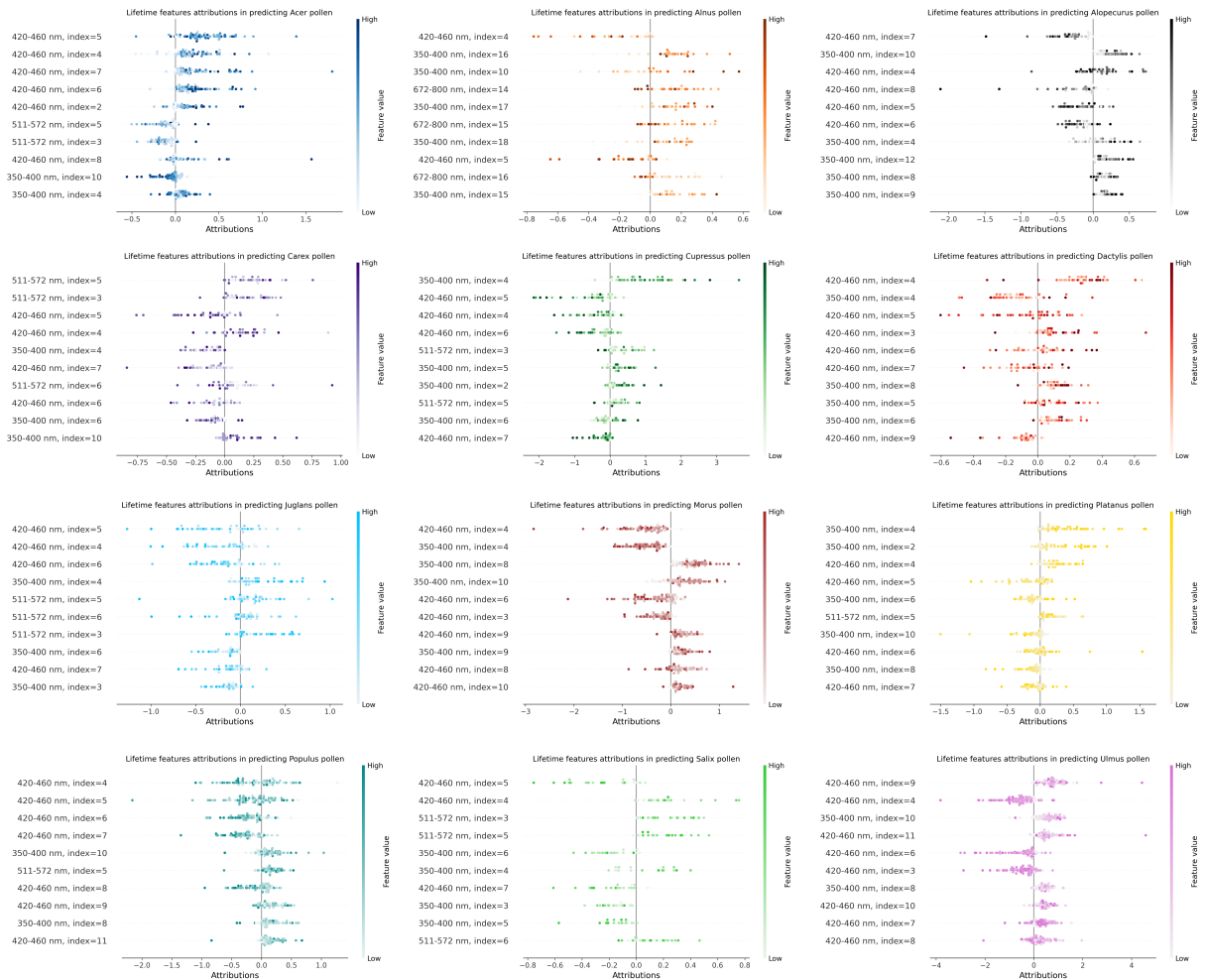
Supplementary Figure 1: Examples where classifier wrongly predicts test instances.

Model level explanation - spectrum attributions



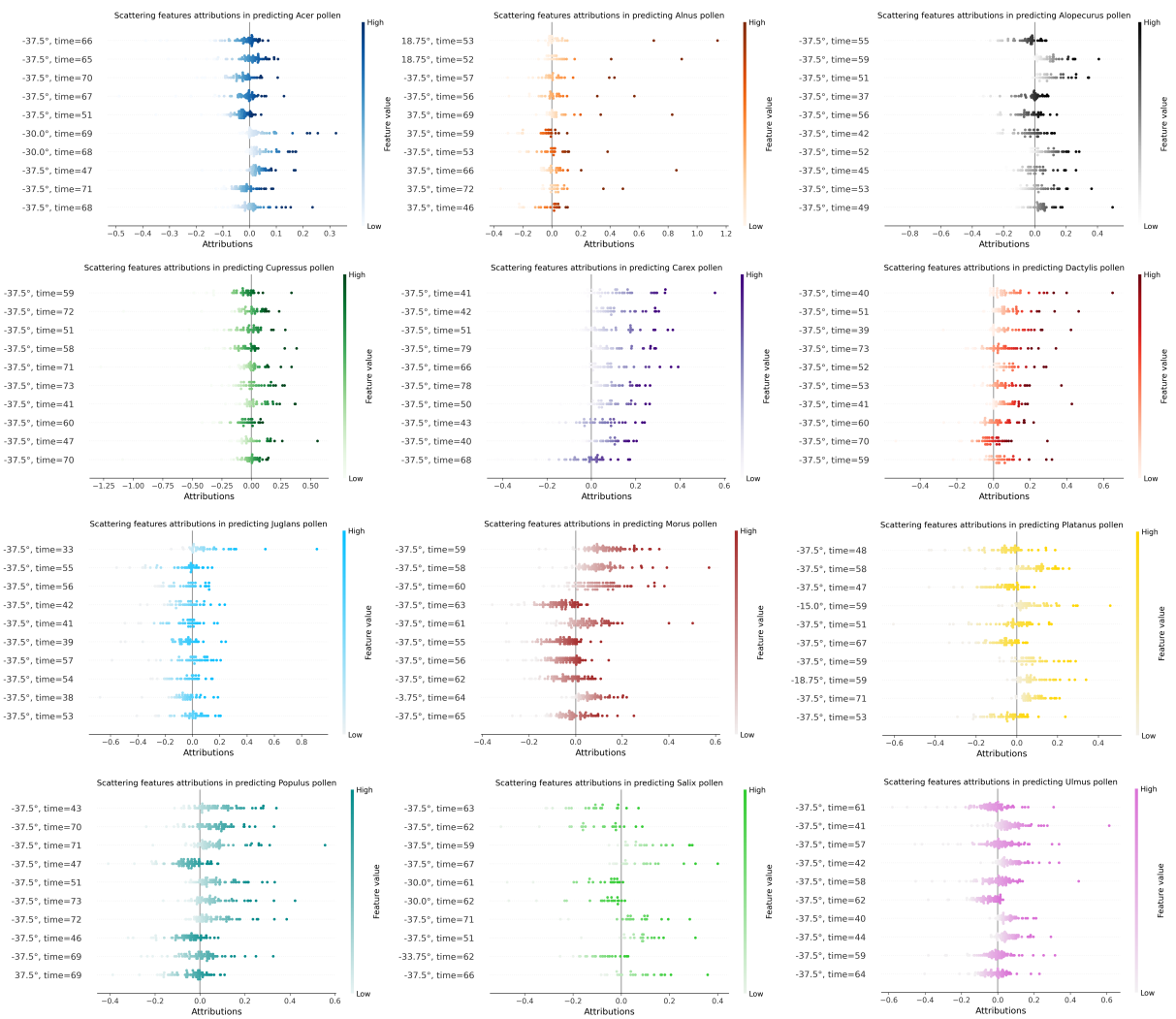
Supplementary Figure 2: Ranked attributions of top 10 spectrum features.

Model level explanation - lifetime attributions



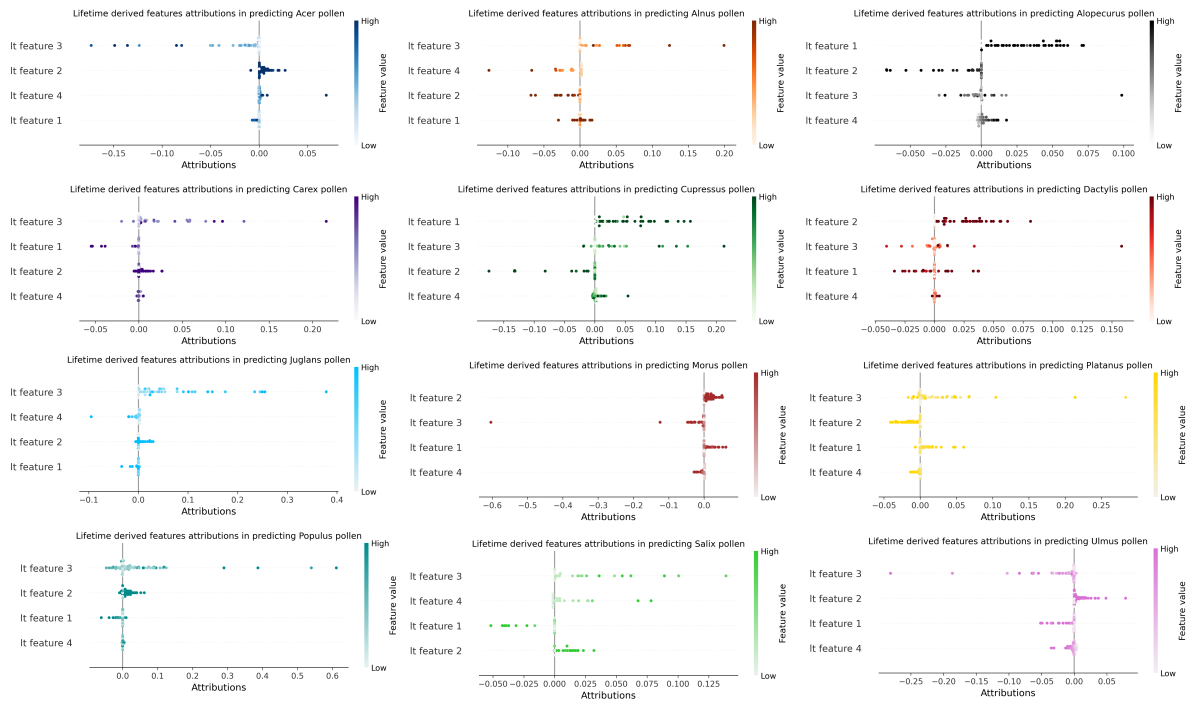
Supplementary Figure 3: Ranked attributions of top 10 lifetime features.

Model level explanation - scattering attributions



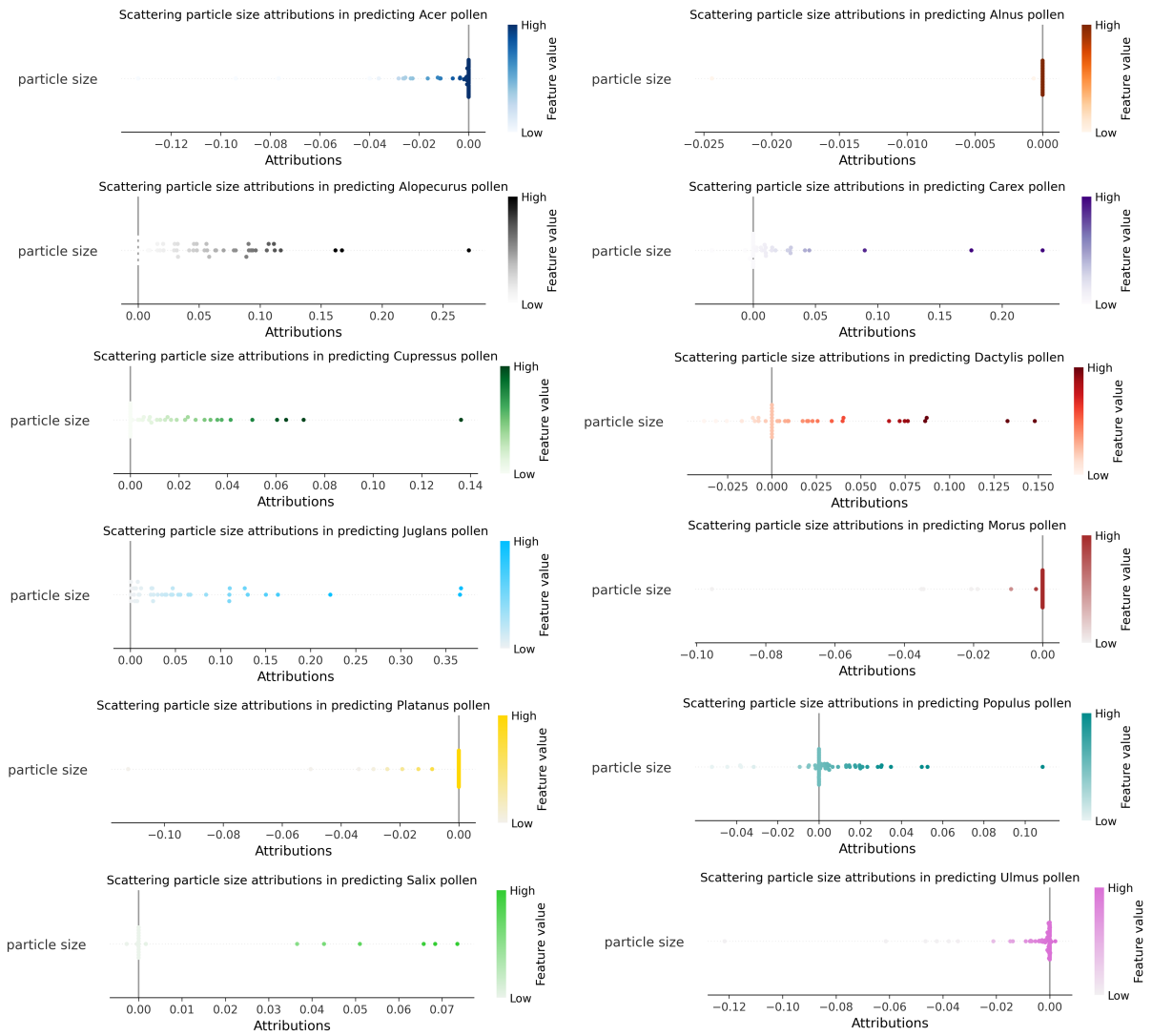
Supplementary Figure 4: Ranked attributions of top 10 scattering features.

Model level explanation - lifetime derived features attributions



Supplementary Figure 5: Ranked attributions of lifetime derived features.

Model level explanation - size feature attributions



Supplementary Figure 6: Attributions of scattering derived feature - size.