archeospec

Wed Jul 25 16:20:20 2018

Contents

Dataset

This report includes the signatures for 30 files. A completed listing can be found at the end of the document.

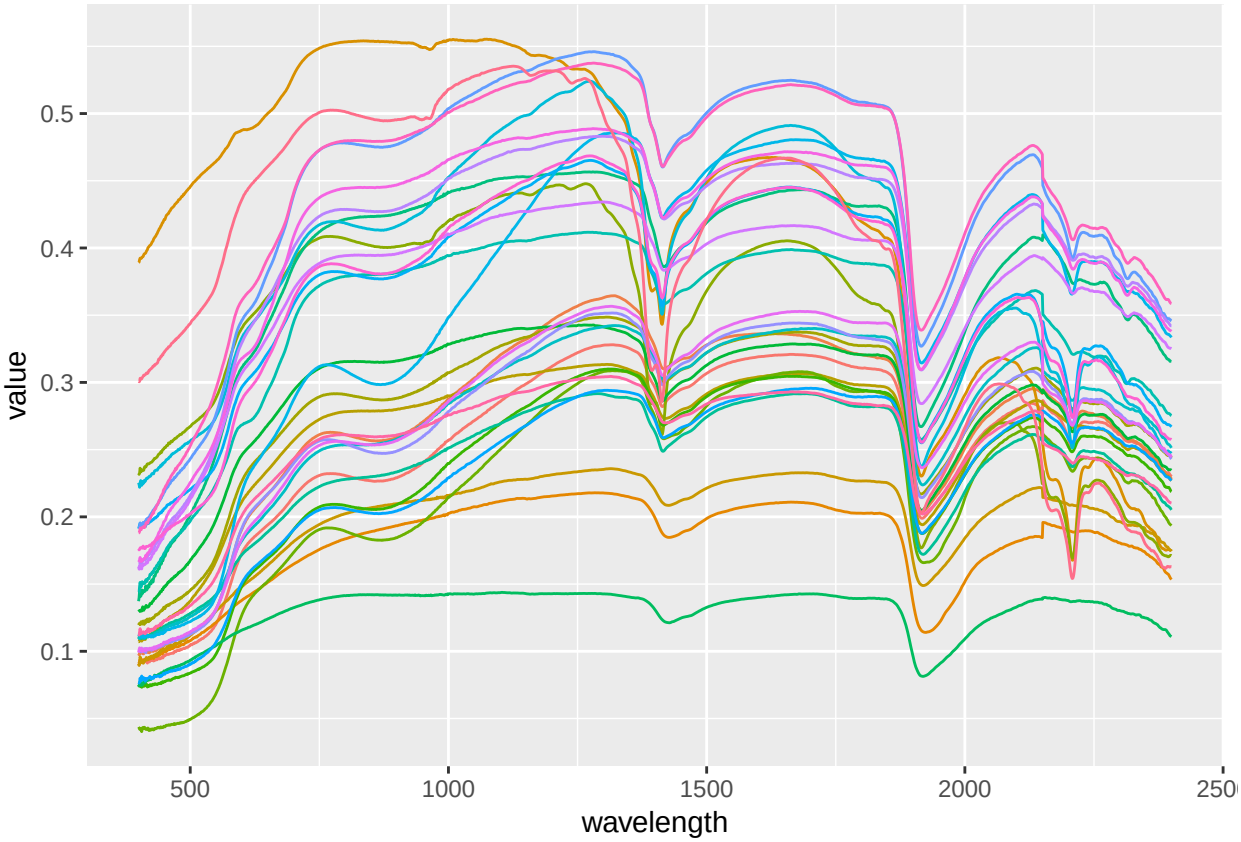
Parameters

The following parameters have been used:

- Unmixing Technique: VCA algorithm with 5 endmembers
- Clustering Technique: Endmembers selected as centroids
- Noise reduction has removed wavelengths ranges until 400
- Noise reduction has removed wavelengths ranges from 2400
- Signatures have been smoothed on ranges 1001,1831

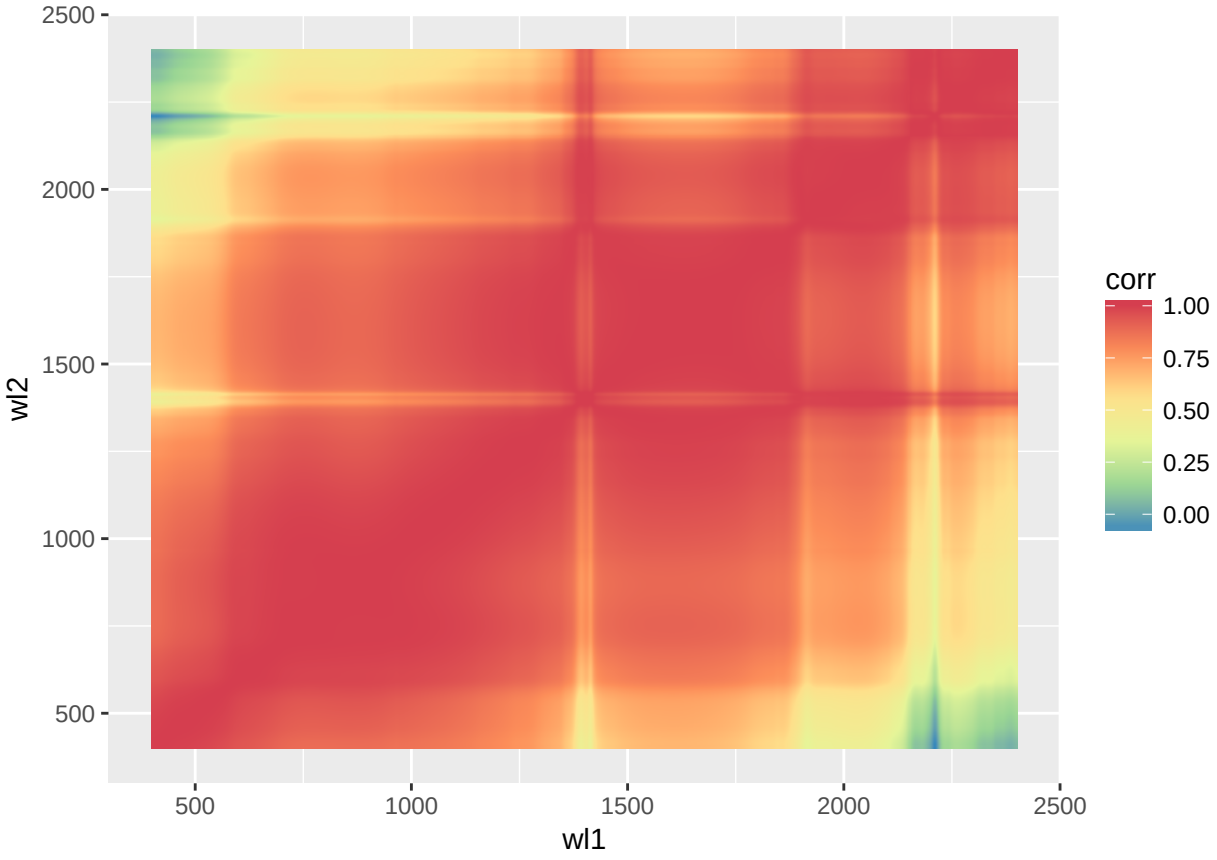
Visualization

The following figure shows the representation of every signature in the dataset. Colors are assigned at random.



Intracorrelation

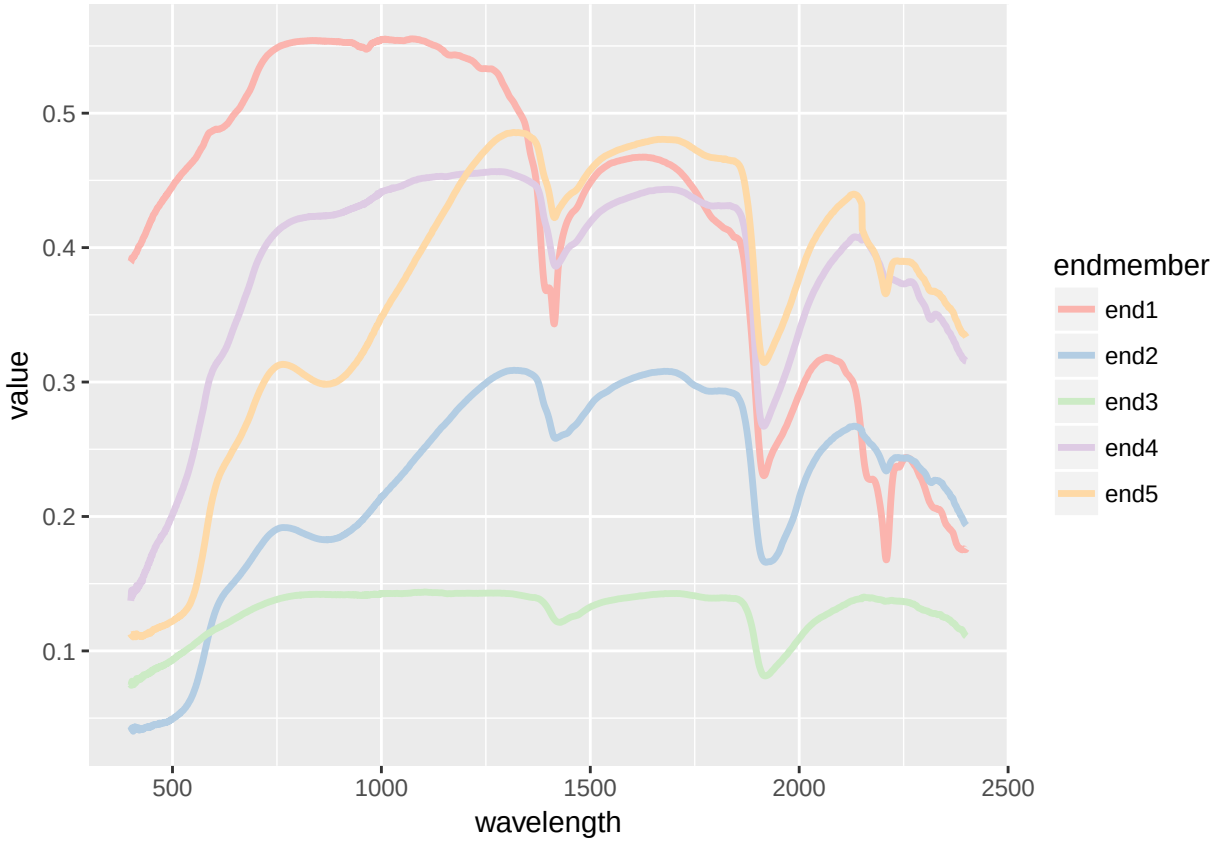
The following figure measures the intracorrelation for each pair of wavelengths.



Unmixing (VCA)

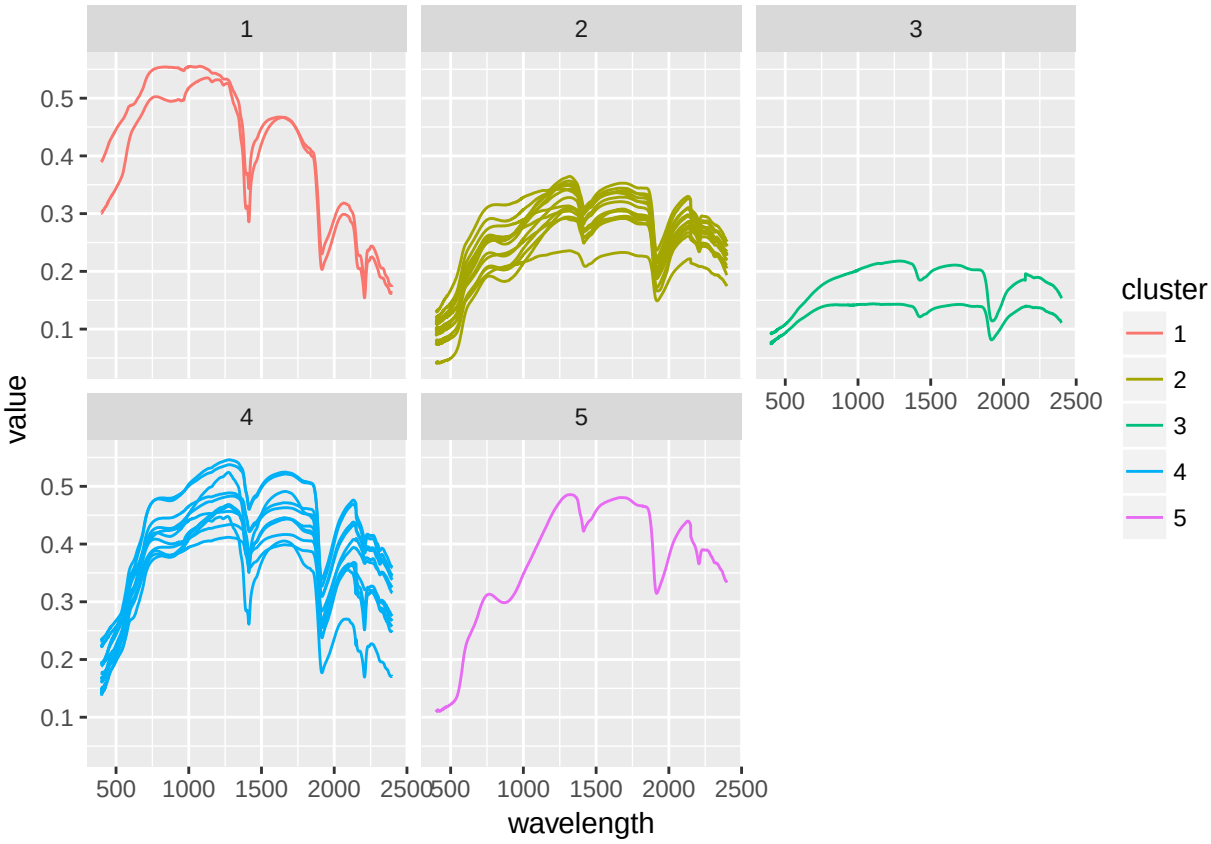
The following table and figure show the 5 endmembers selected by the VCA algorithm.

endmember	file
end1	signature0003.asd
end2	signature0008.asd
end3	signature0011.asd
end4	signature0012.asd
end5	signature0017.asd



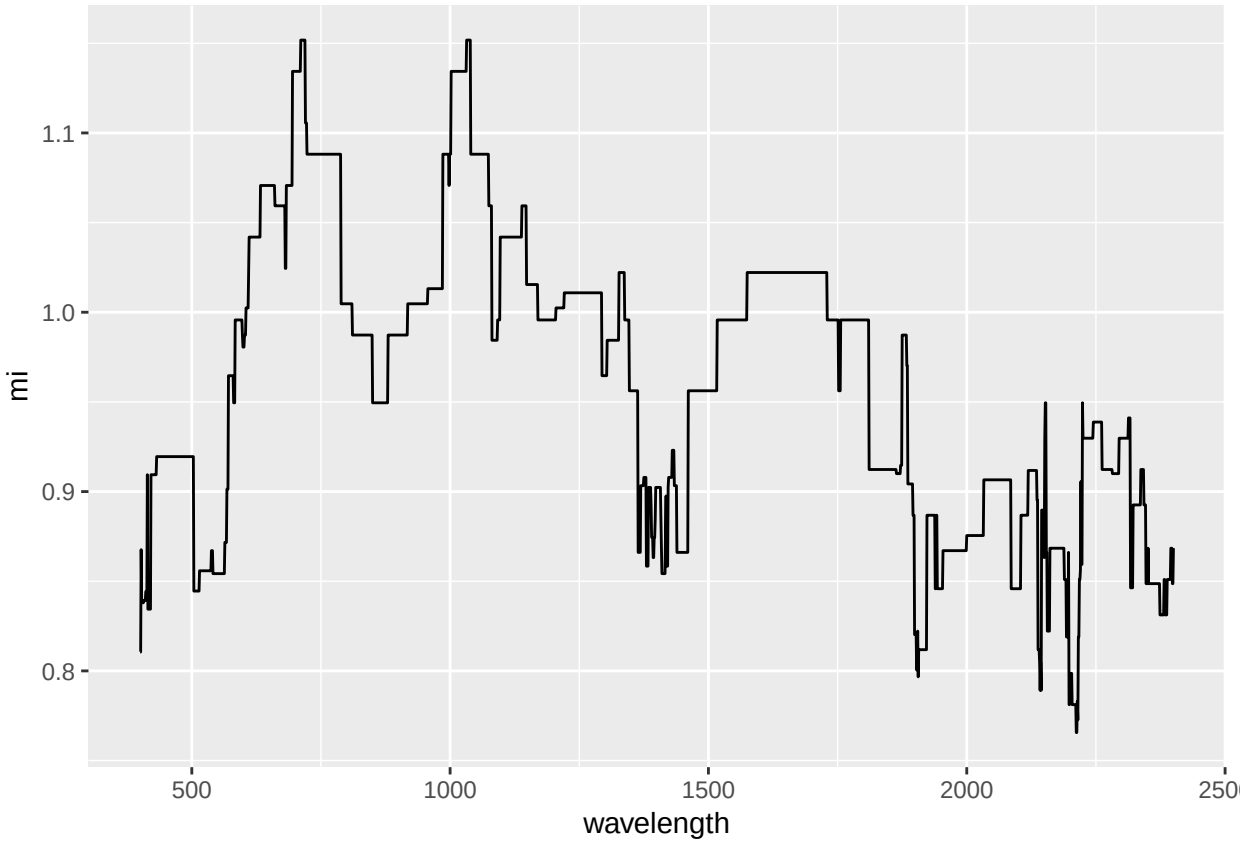
Clustering (manual)

The next figure shows the graphical representation of the dataset classified by the corresponding cluster assigned according to the specified centroids (corresponding with the endmembers).



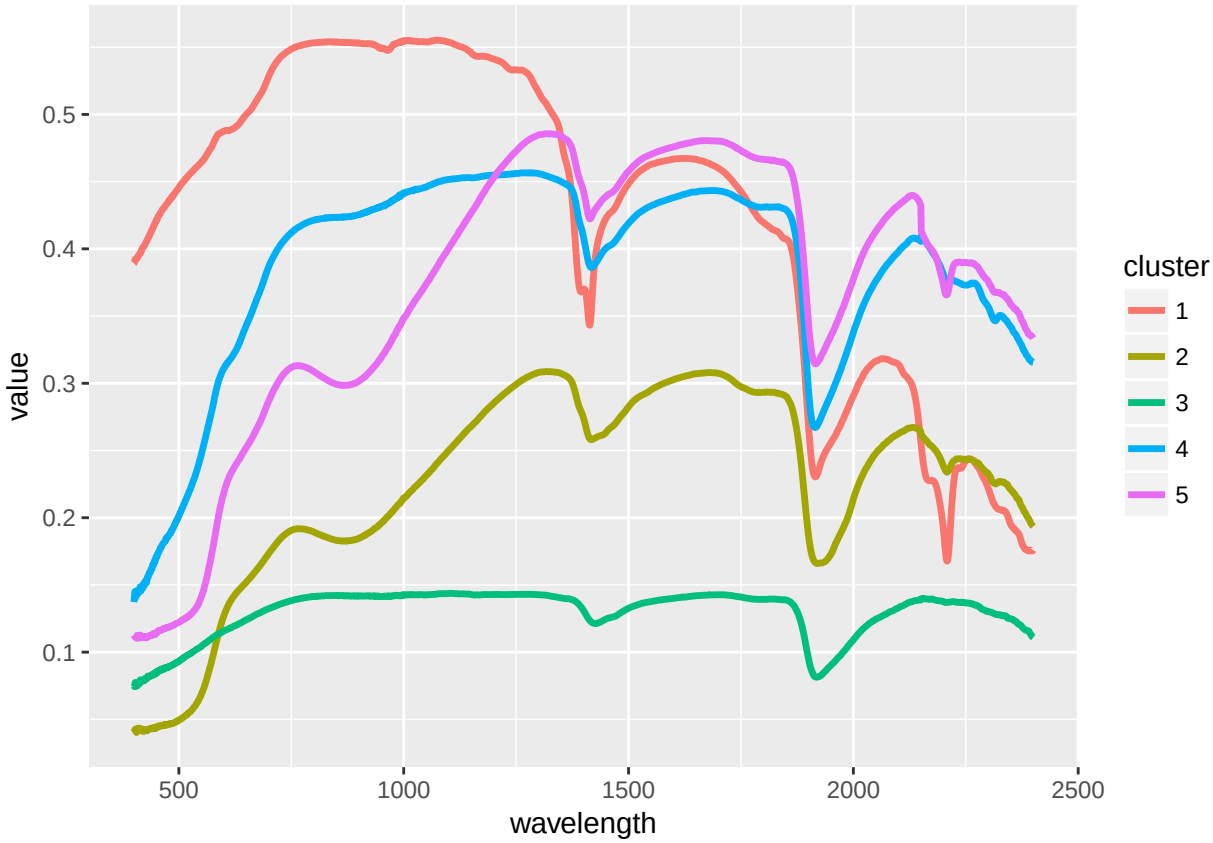
Mutual Information

The following figure shows the mutual information for each wavelength and the assigned cluster as the averaged value for all the samples in the dataset.



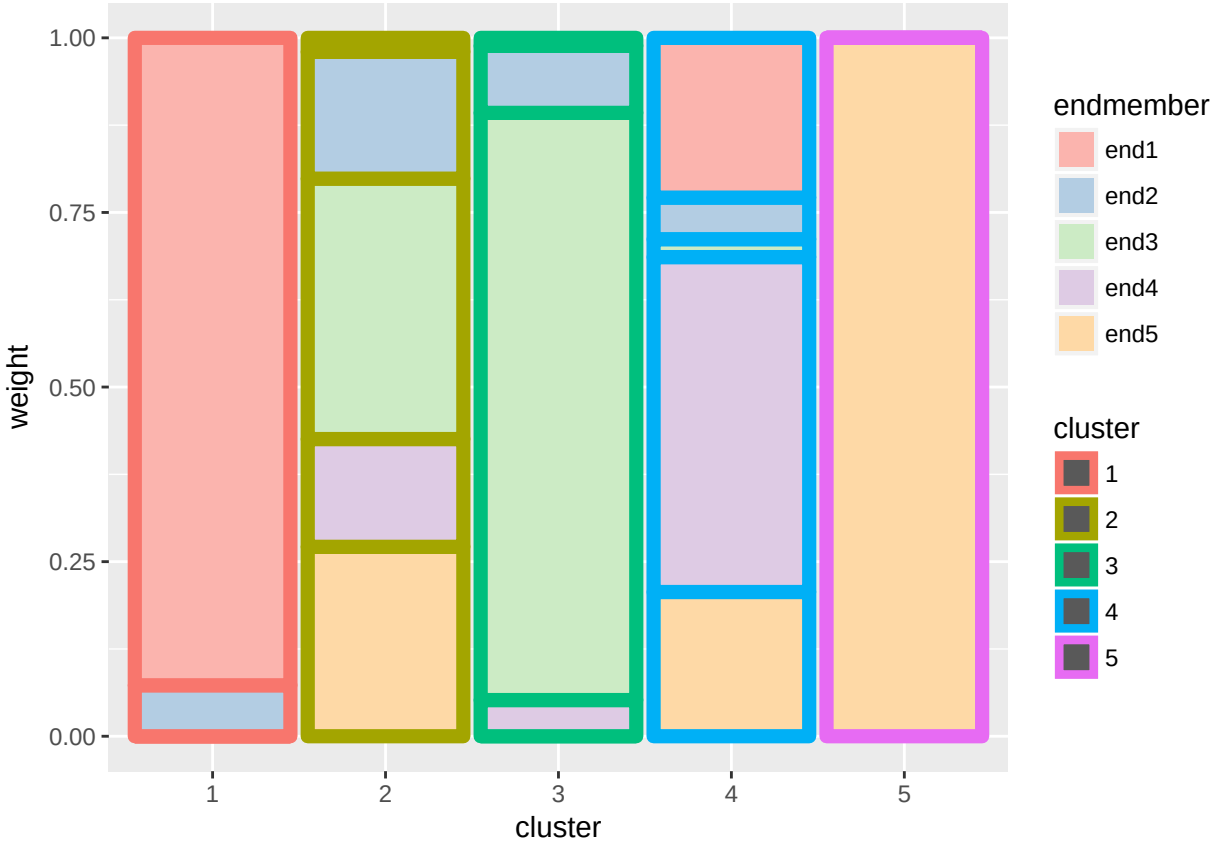
Endmember classification

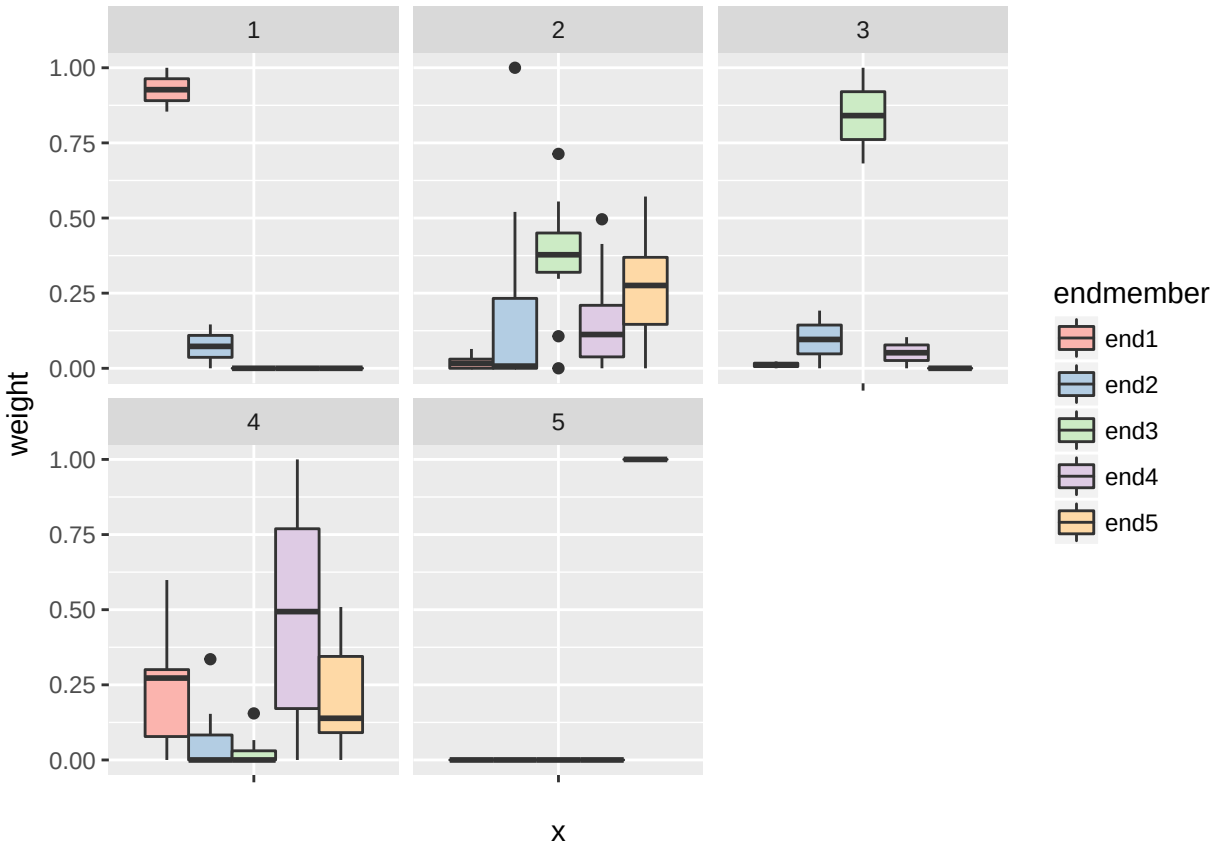
The next figure shows the correspondence between endmembers and clusters, note that kmeans can assign more than one ensemble to the same cluster, leaving some clusters unrepresented.



Endmember weights by cluster

The next two figures show the average mixture for each cluster among all endmembers. In the barplot Each column represents a single cluster and averages the weights of the contained signatures. The different colored segments of the bar represent the weight proportion for each endmember. The boxplot is analogous, with each box representing the distribution of weight for a particular endmember, separated in an individual plot for each cluster.

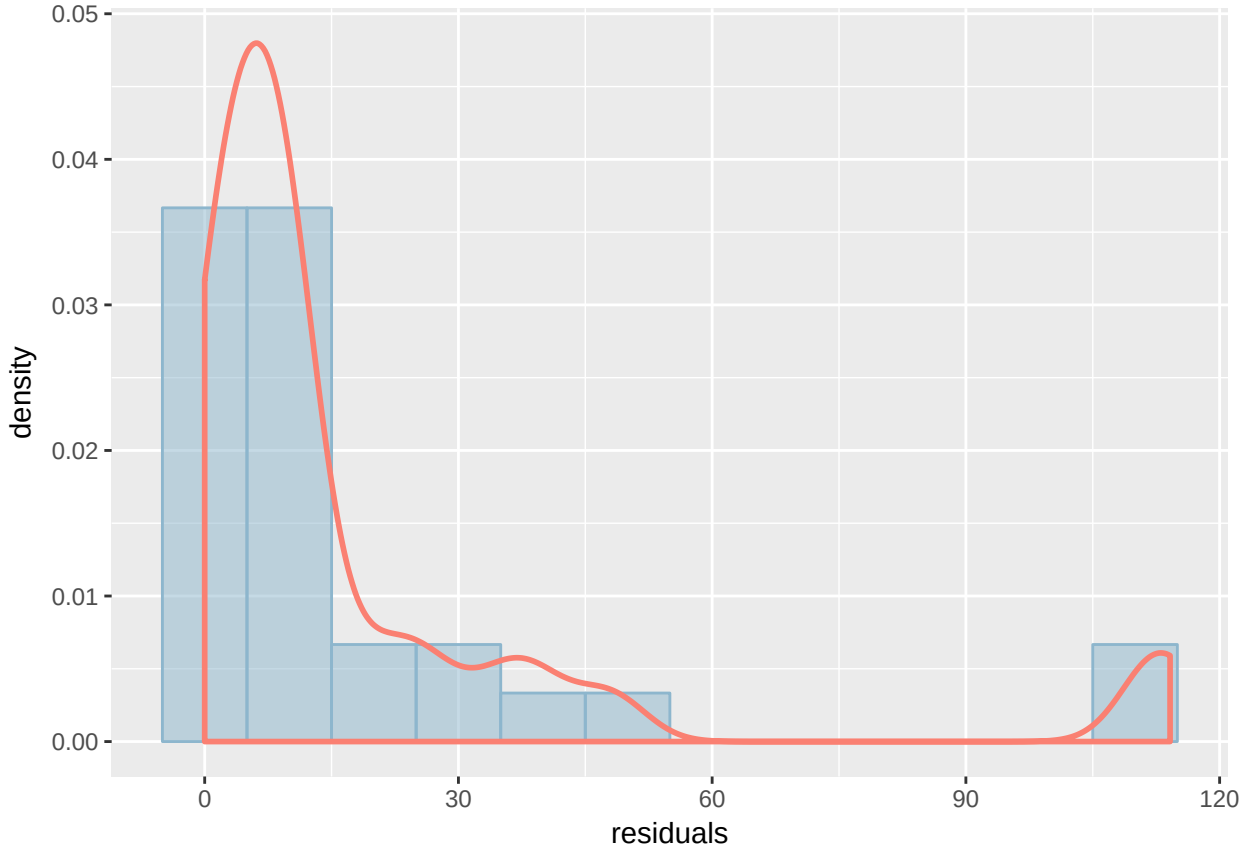



1
2
3
4
5
1.00
0.75
0.50
0.25
0.00
weight
x
endmember
end1
end2
end3
end4
end5

Residual values

The following table and figure show the distribution of the residual component from the the unmixing process. The distribution includes all endmembers and signatures in the dataset.

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0	4.443847	9.168717	18.09739	16.85554	114.1429



Summary table

The following table contains the summary of the whole experiment, showing the assigned cluster, distribution of weights and residuals for each signature in the dataset.

file	end1	end2	end3	end4	end5	residual
signature0000.asd	0.0136987	0.2114799	0.3509226	0.0473548	0.3765440	4.899245
signature0001.asd	0.0642812	0.5203584	0.1066802	0.1685518	0.1401284	10.878845
signature0002.asd	0.0228658	0.1919407	0.6815661	0.1036274	0.0000000	9.518788
signature0003.asd	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.000000
signature0004.asd	0.0000000	0.0000000	0.7133820	0.1221529	0.1644651	5.327019
signature0005.asd	0.0000000	0.0000000	0.4627381	0.4137253	0.1235366	3.272162
signature0006.asd	0.0278825	0.0000000	0.3742451	0.3472883	0.2505841	4.635369
signature0007.asd	0.5986639	0.3352120	0.0661241	0.0000000	0.0000000	23.270940
signature0008.asd	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.000000
signature0009.asd	0.0000000	0.3864551	0.3089339	0.0039855	0.3006255	6.936291
signature0010.asd	0.0610474	0.0000000	0.3812760	0.4958583	0.0618184	3.876170
signature0011.asd	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.000000
signature0012.asd	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.000000
signature0013.asd	0.0314461	0.0000000	0.5549775	0.0782478	0.3353286	6.763839
signature0014.asd	0.0749395	0.0000000	0.1549209	0.6399740	0.1301655	10.341873
signature0015.asd	0.0000000	0.0000000	0.3893332	0.1152089	0.4954579	9.812074
signature0016.asd	0.4733709	0.0176074	0.0000000	0.0000000	0.5090217	26.935826
signature0017.asd	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.000000
signature0018.asd	0.2955990	0.1485532	0.0000000	0.1662996	0.3895482	4.635505
signature0019.asd	0.0000000	0.2396517	0.4125905	0.0000000	0.3477578	10.314483
signature0020.asd	0.3056174	0.0000000	0.0000000	0.3849885	0.3093940	111.973089
signature0021.asd	0.0184649	0.1695293	0.2977832	0.1095334	0.4046893	4.380007
signature0022.asd	0.0810158	0.0000000	0.0000000	0.7802899	0.1386944	39.452227
signature0023.asd	0.0098544	0.0000000	0.0610081	0.8757253	0.0534122	18.529346
signature0024.asd	0.0195386	0.0146588	0.3595356	0.0348162	0.5714509	9.230587
signature0025.asd	0.1132128	0.0000000	0.0000000	0.7582538	0.1285334	47.940311
signature0026.asd	0.2912246	0.1534929	0.0000000	0.1757433	0.3795392	11.834142
signature0027.asd	0.2725064	0.0000000	0.0000000	0.4936649	0.2338286	114.142947
signature0028.asd	0.0438460	0.0000000	0.5075998	0.2232583	0.2252959	9.106846
signature0029.asd	0.8540686	0.1459314	0.0000000	0.0000000	0.0000000	34.913650

About archeospec

This report has been generated automatically using the archeospec package version 1.0.1.