

archeospec

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Dataset

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

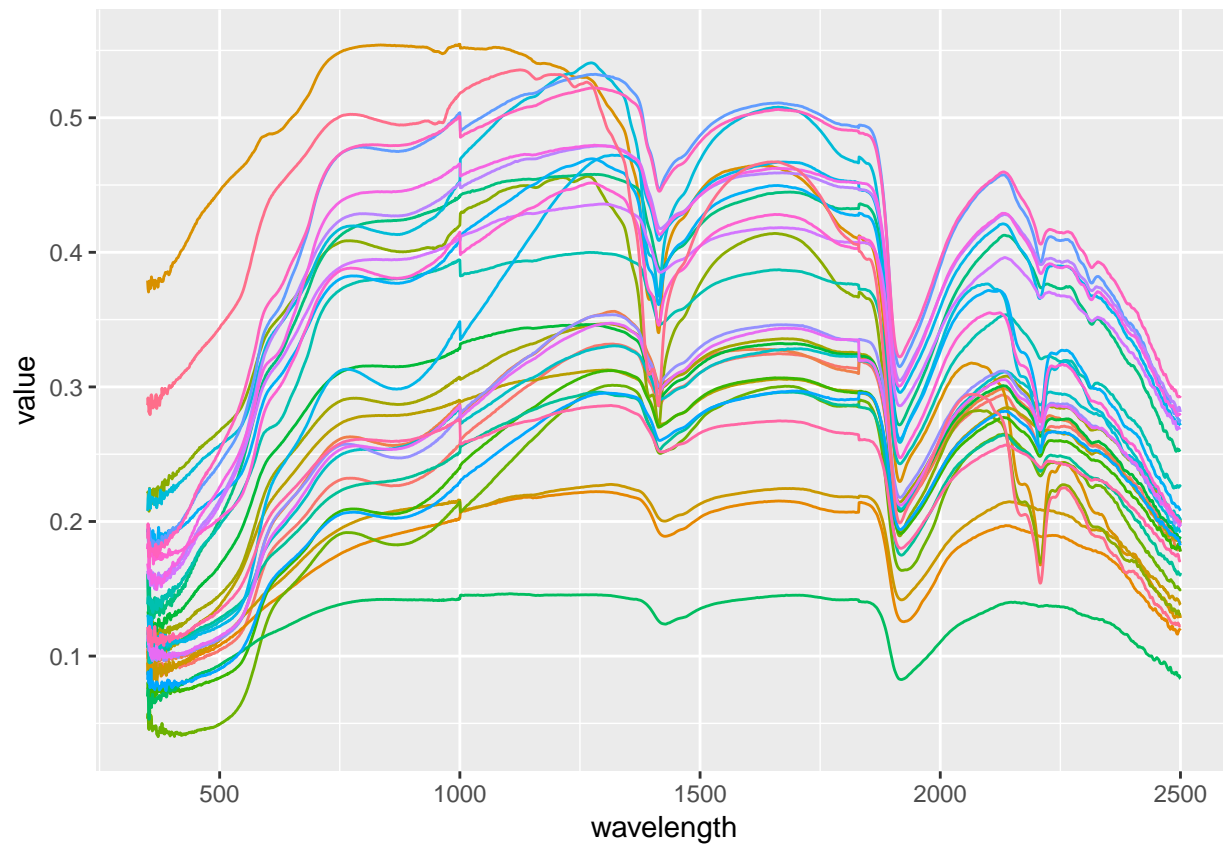
Parameters

The following parameters have been used:

- Unmixing Technique: VCA algorithm with 5 endmembers
- Clustering Technique: Kmeans algorithm with k=5
- No wavelength ranges have been cleaned at the beginning of the signature
- No wavelength ranges have been cleaned at the end of the signature
- No smoothing has been performed

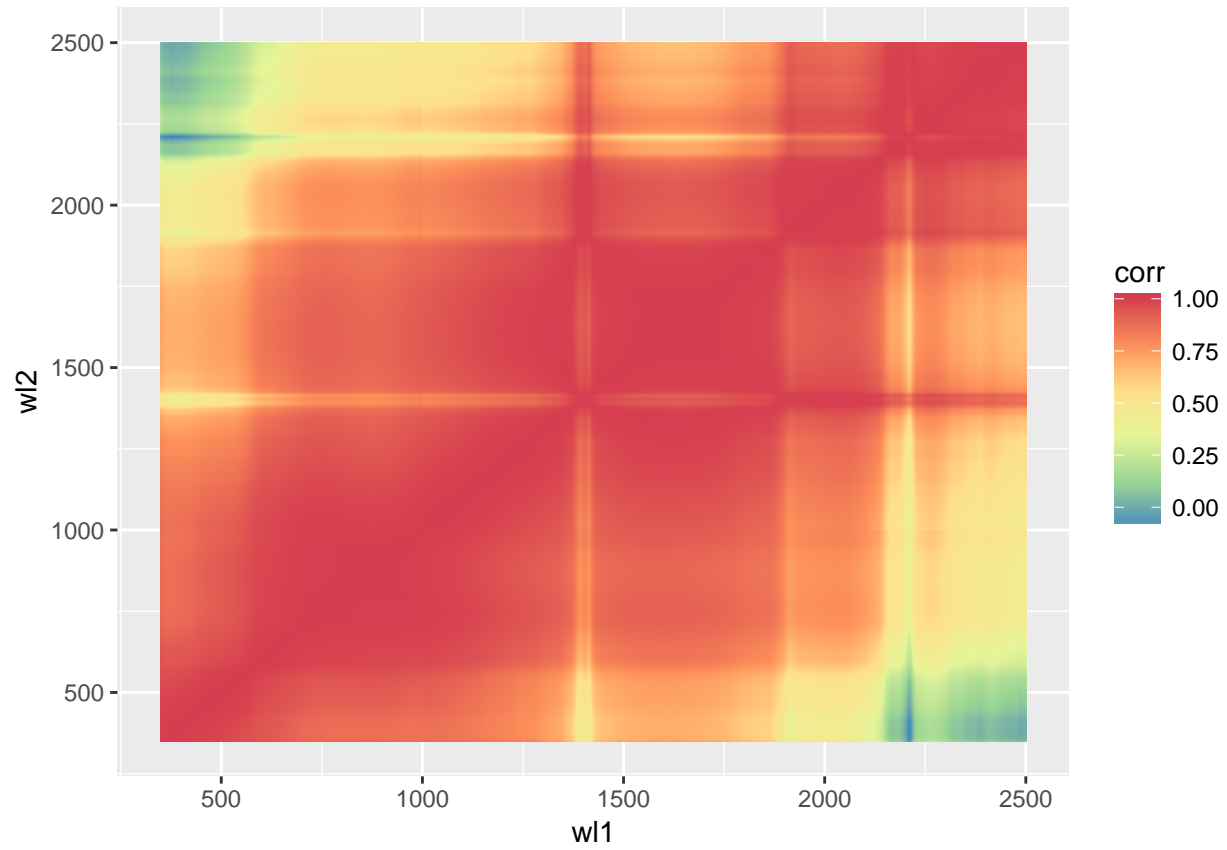
Visualization

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



Intracorrelation

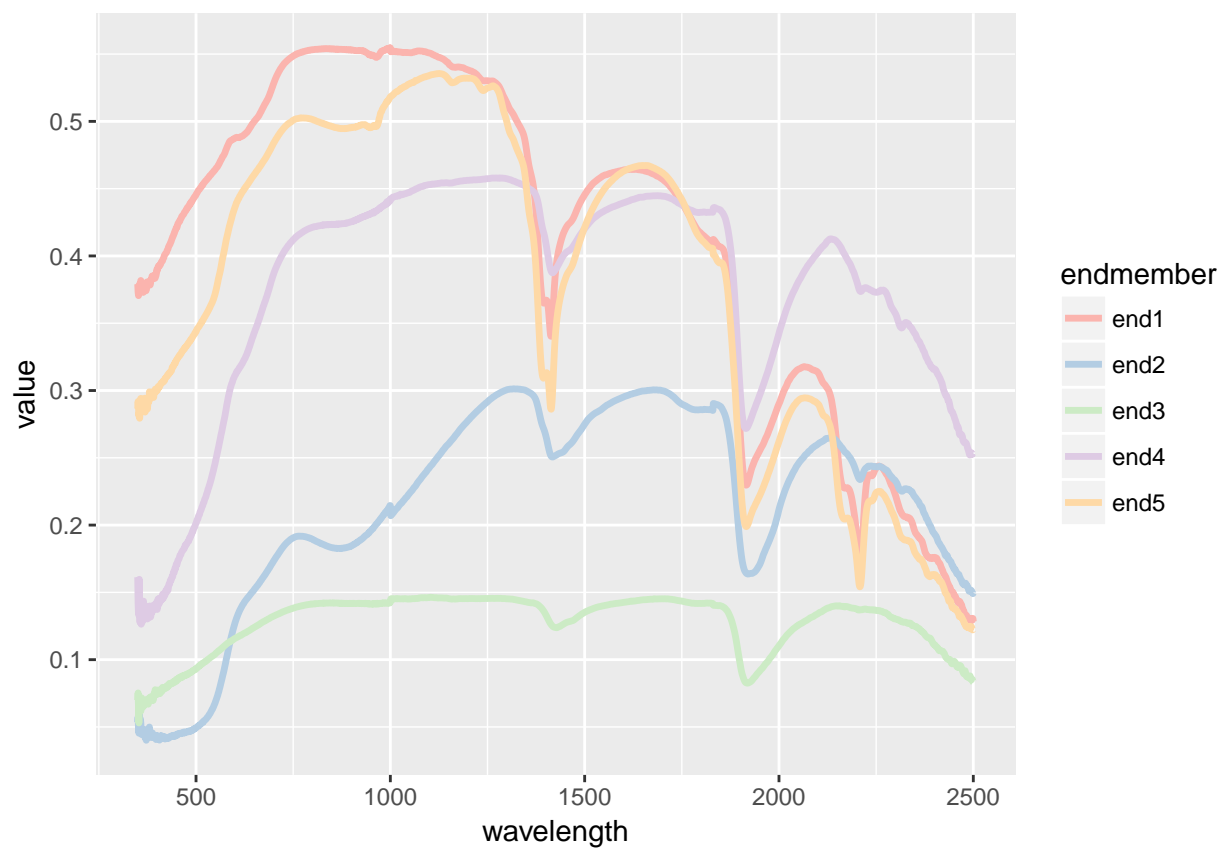
The following figure measures the intracorrelation for each pair of wavelengths.



Unmixing (VCA)

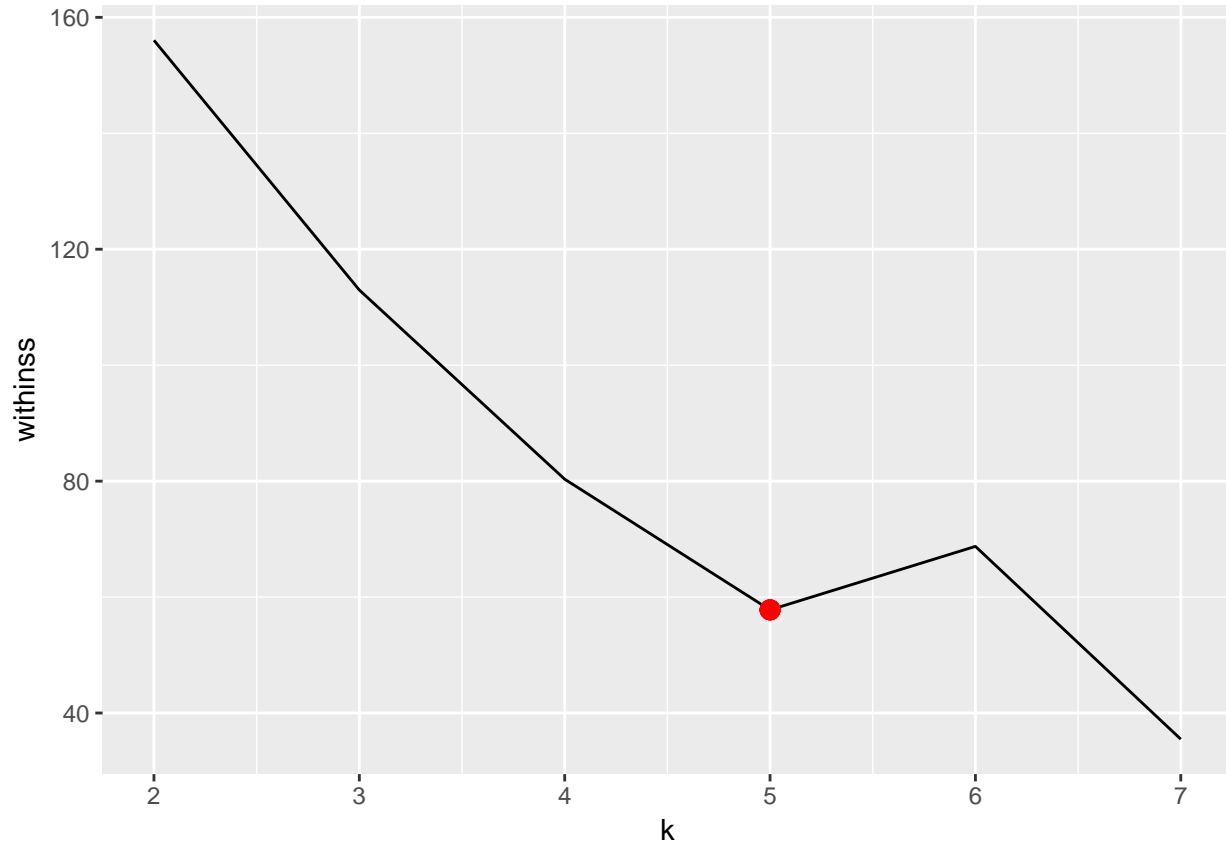
The following table and figure show the 5 endmembers selected by the VCA algorithm.

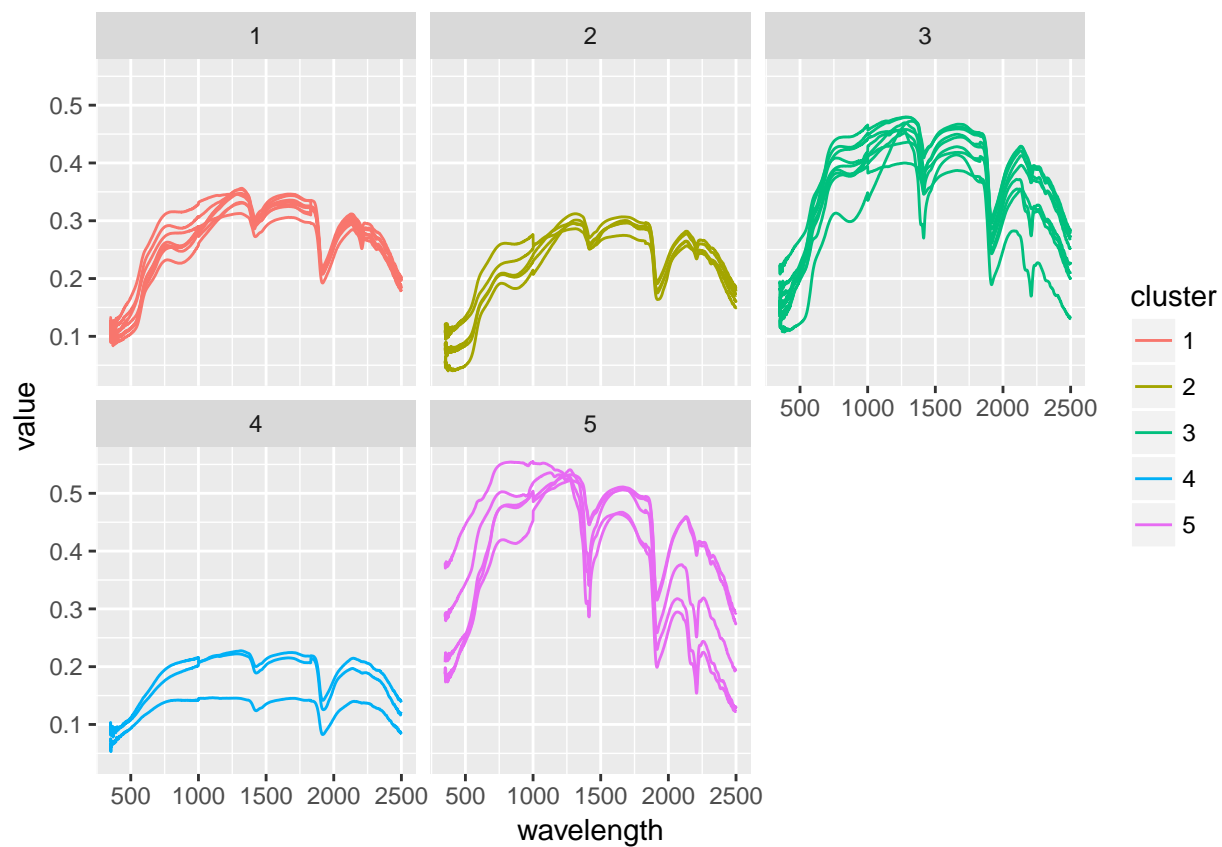
endmember	file
end1	signature0003.asd
end2	signature0008.asd
end3	signature0011.asd
end4	signature0012.asd
end5	signature0029.asd



Clustering (kmeans)

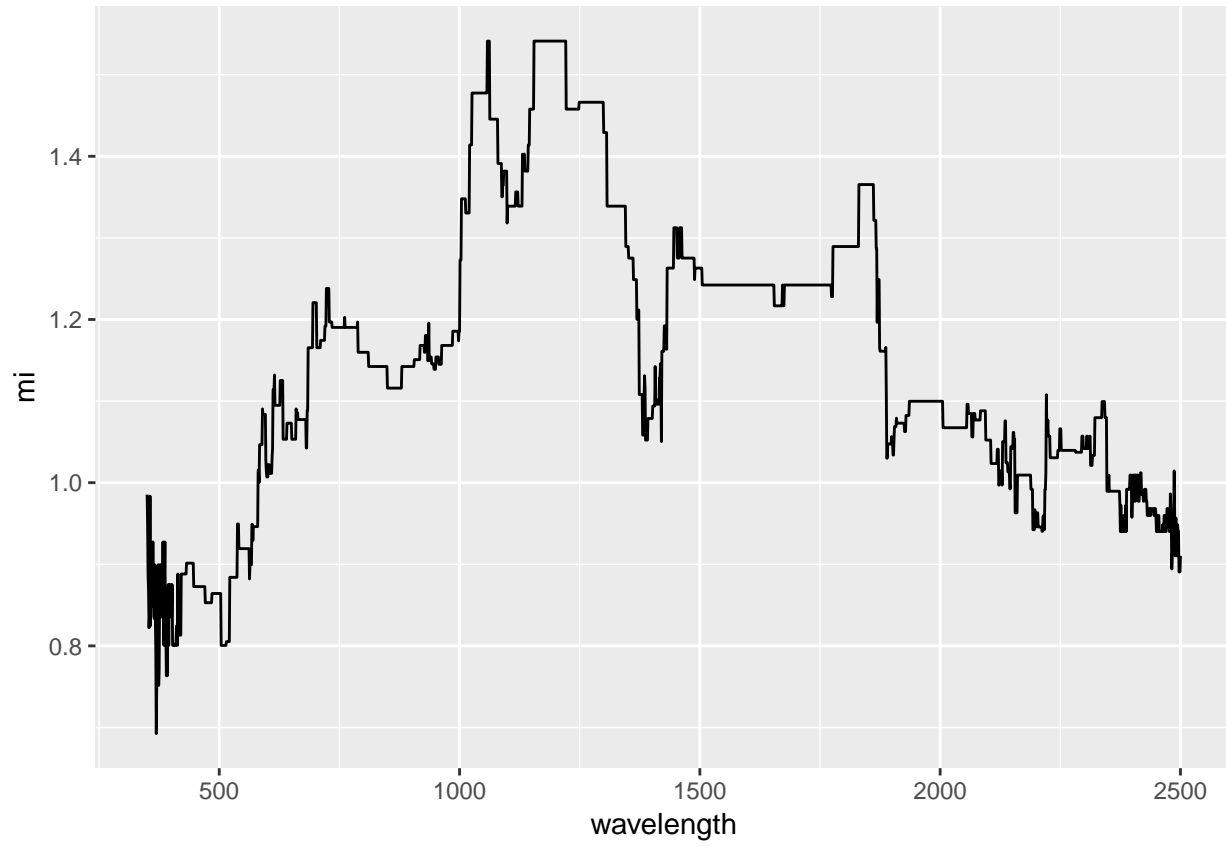
The following figure shows the error of the kmeans algorithm for increasing values of k , measured as the distance within clusters. The red dot represent the selected k value. The next figure shows the graphical representation of the dataset classified by the corresponding cluster assigned by kmeans.





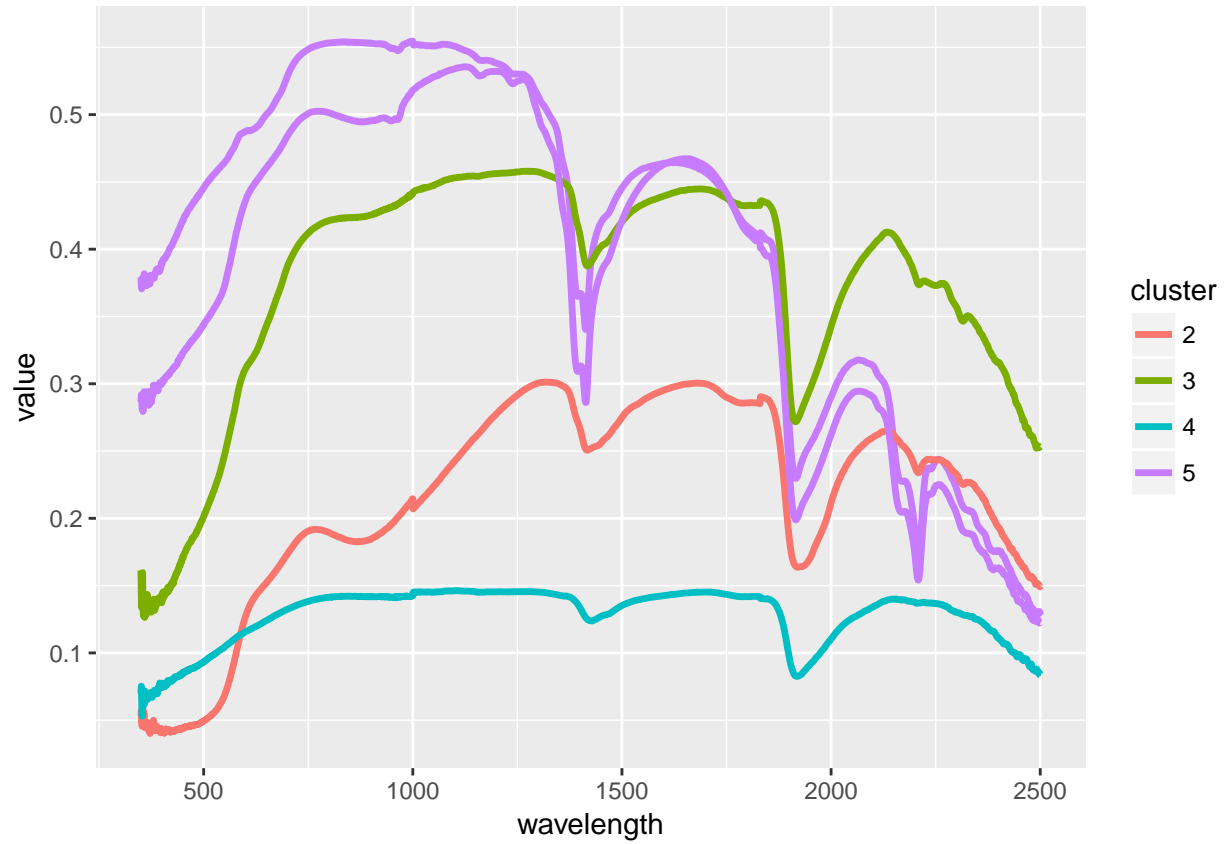
Mutual Information

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.



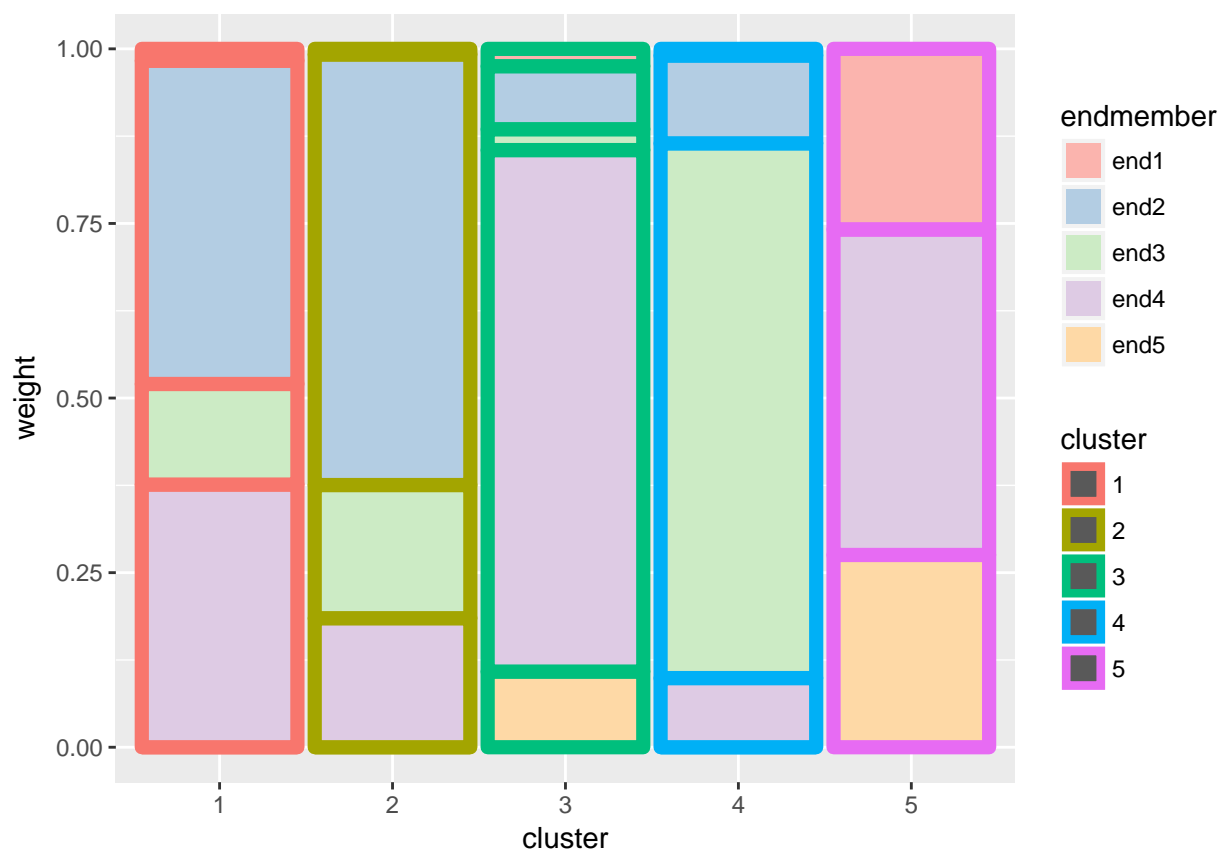
Endmember classification

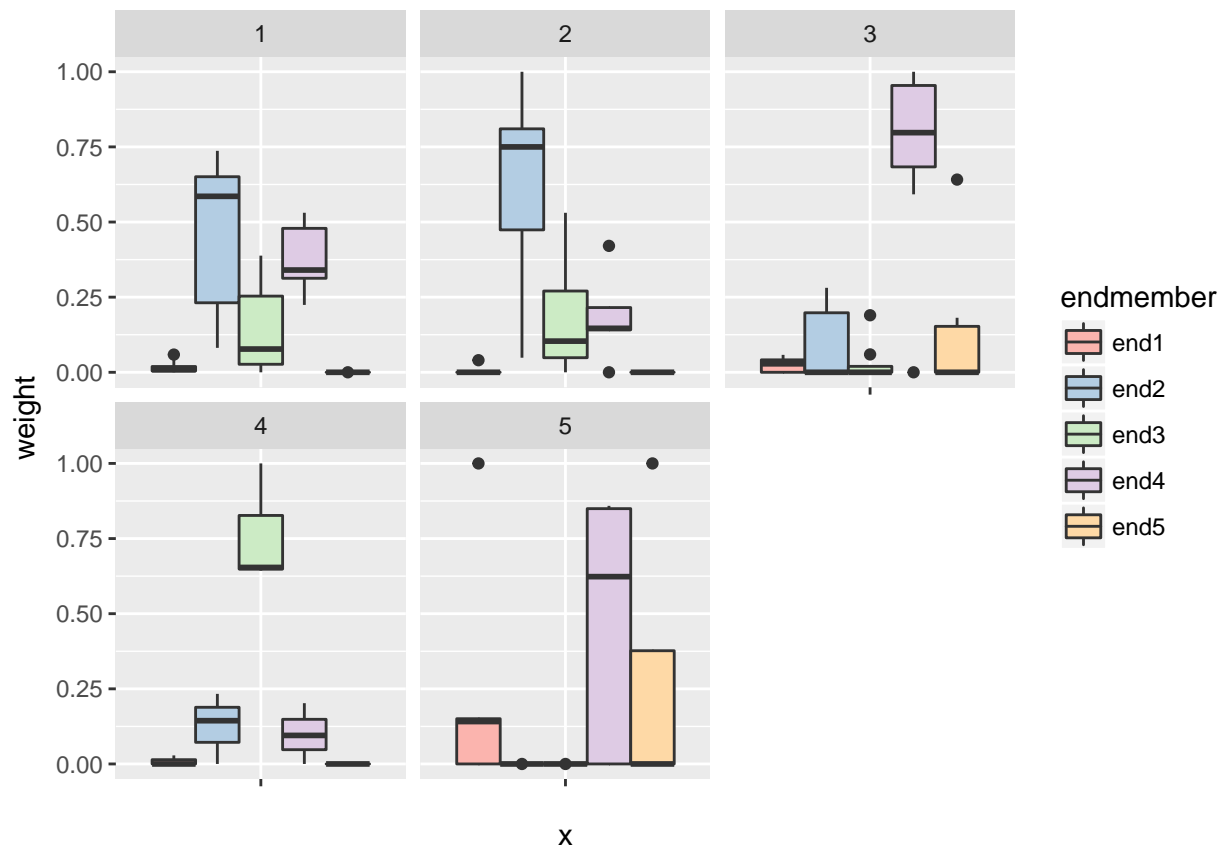
The next figure shows the correspondence between endmembers and clusters, note that kmeans can assign more than one ensemble to the same cluster, leaving some clusters unrepresented.



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.

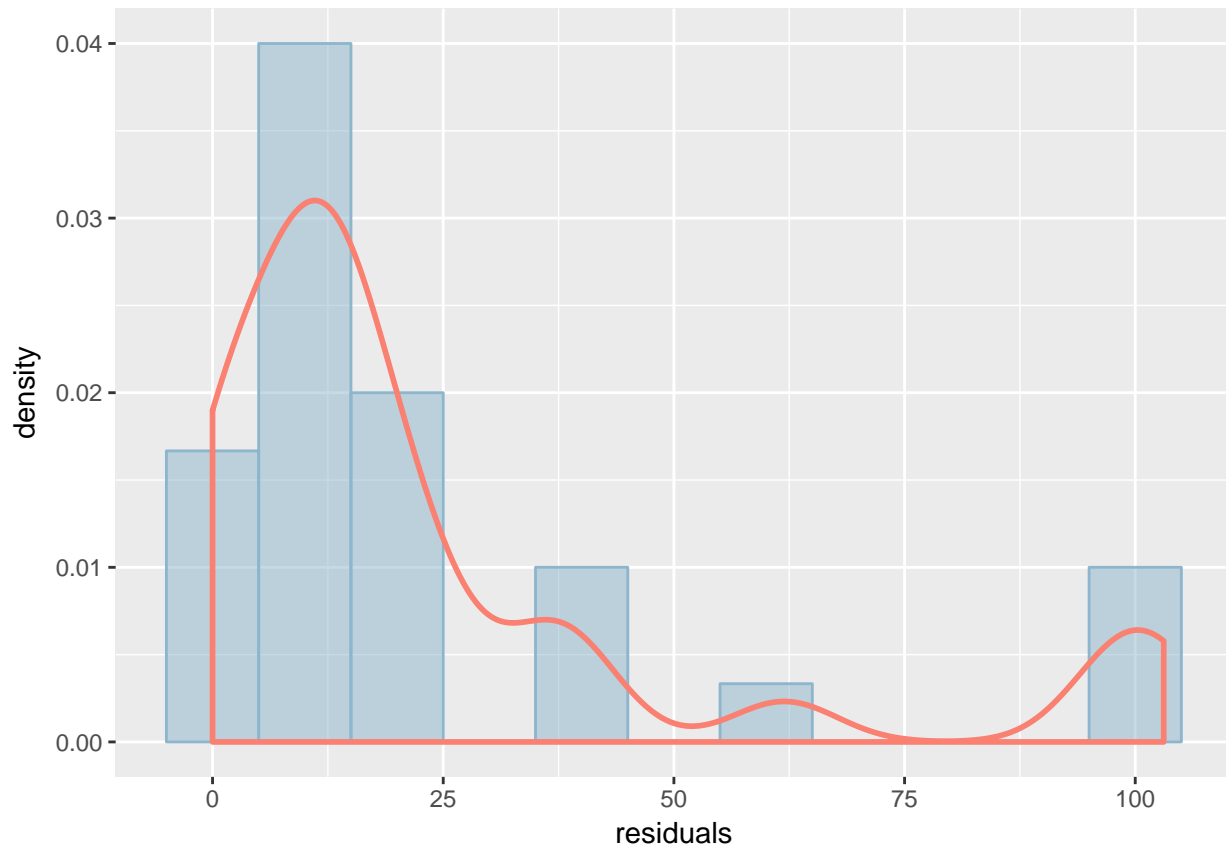




Residual values

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	6.973429	13.71946	23.92003	23.84471	103.0857



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	0.0114823	0.7368873	0.0274285	0.2242018	0.0000000	15.956950
signature0001.asd	0.0414054	0.6331557	0.0464189	0.2790201	0.0000000	13.080670
signature0002.asd	0.0285372	0.2332579	0.6432487	0.0949562	0.0000000	8.531558
signature0003.asd	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.000000
signature0004.asd	0.0000000	0.1439404	0.6538356	0.2022239	0.0000000	10.362773
signature0005.asd	0.0000000	0.1391133	0.3882184	0.4726683	0.0000000	6.454053
signature0006.asd	0.0118917	0.2620033	0.2283307	0.4977743	0.0000000	11.179555
signature0007.asd	0.0579847	0.2810929	0.0197757	0.0000000	0.6411468	5.528295
signature0008.asd	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.000000
signature0009.asd	0.0000000	0.8100577	0.0485625	0.1413798	0.0000000	14.224279
signature0010.asd	0.0589223	0.0813605	0.3288604	0.5308568	0.0000000	5.262400
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	0.0402067	0.4739234	0.2704024	0.2154675	0.0000000	13.214638
signature0014.asd	0.0414215	0.0000000	0.1898640	0.7687146	0.0000000	9.553423
signature0015.asd	0.0000000	0.5379121	0.1083741	0.3537138	0.0000000	23.940883
signature0016.asd	0.0000000	0.0000000	0.0000000	0.6232451	0.3767549	61.972060
signature0017.asd	0.0000000	0.2025992	0.0000000	0.7974008	0.0000000	97.366481
signature0018.asd	0.0332148	0.1303983	0.0000000	0.6834973	0.1528896	35.336380
signature0019.asd	0.0000000	0.7499646	0.1036880	0.1463473	0.0000000	23.556173
signature0020.asd	0.1505177	0.0000000	0.0000000	0.8494823	0.0000000	100.316748
signature0021.asd	0.0058344	0.6672872	0.0000000	0.3268785	0.0000000	15.155880
signature0022.asd	0.0166067	0.0000000	0.0000000	0.9833933	0.0000000	37.110530
signature0023.asd	0.0000000	0.0000000	0.0595197	0.9404803	0.0000000	22.002954
signature0024.asd	0.0061495	0.6451792	0.0245259	0.3241454	0.0000000	14.868551
signature0025.asd	0.0456410	0.0000000	0.0000000	0.9543590	0.0000000	40.123986
signature0026.asd	0.0283015	0.1980235	0.0000000	0.5921959	0.1814791	18.450872
signature0027.asd	0.1411209	0.0000000	0.0000000	0.8588791	0.0000000	103.085697
signature0028.asd	0.0000000	0.0485195	0.5307606	0.4207199	0.0000000	10.964994
signature0029.asd	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	0.000000

About archeospec

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