

# 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.

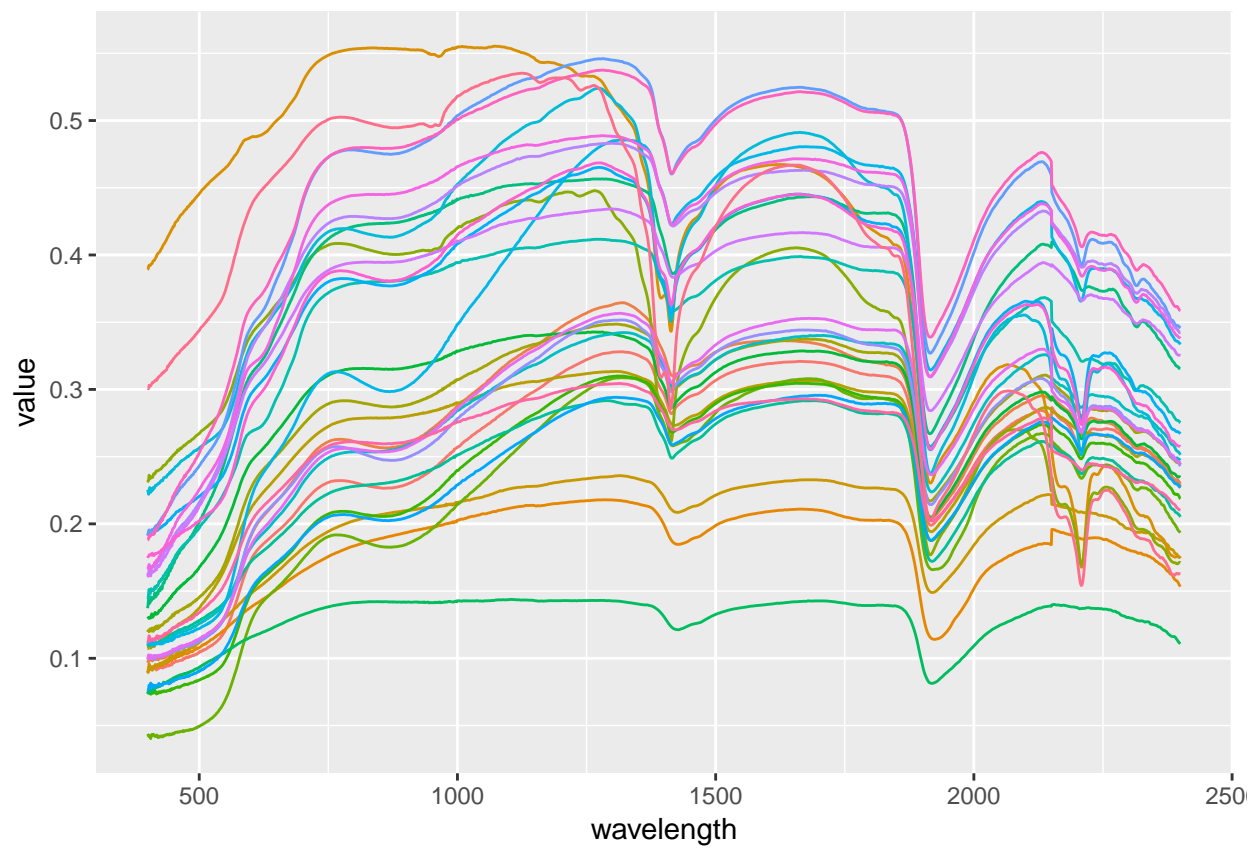
## Parameters

The following parameters have been used:

- Unmixing Technique: VCA algorithm with 5 endmembers
- Clustering Technique: 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

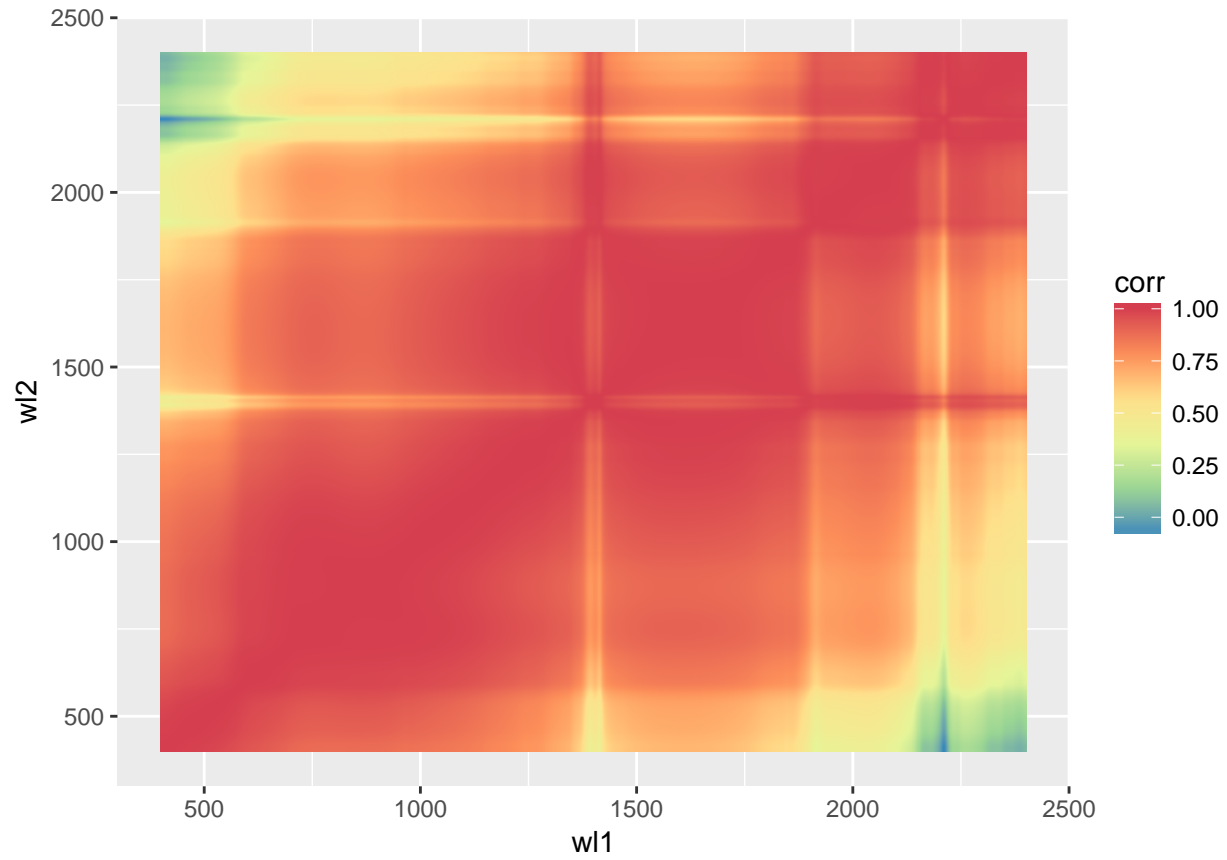
## Visualization

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



## Intracorrelation

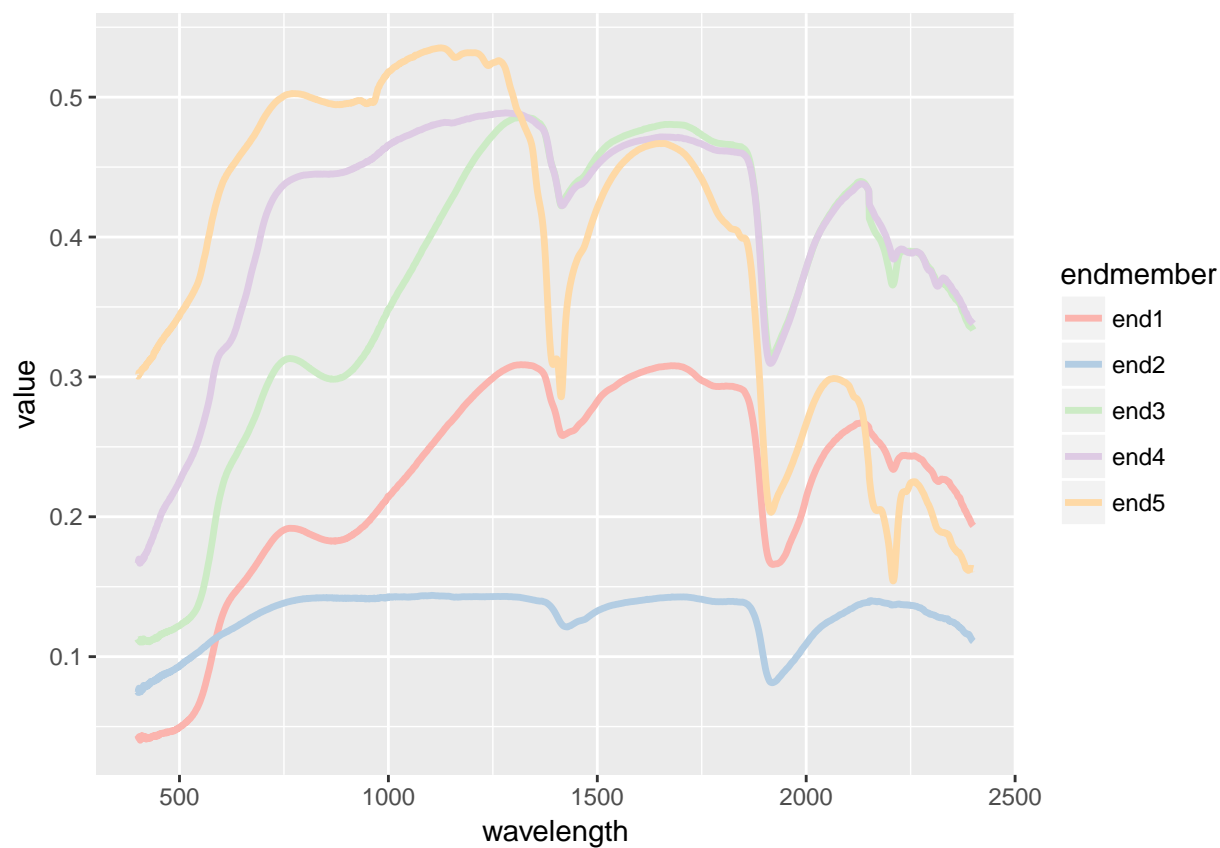
The following figure measures the intracorrelation for each pair of wavelengths.



## Unmixing (VCA)

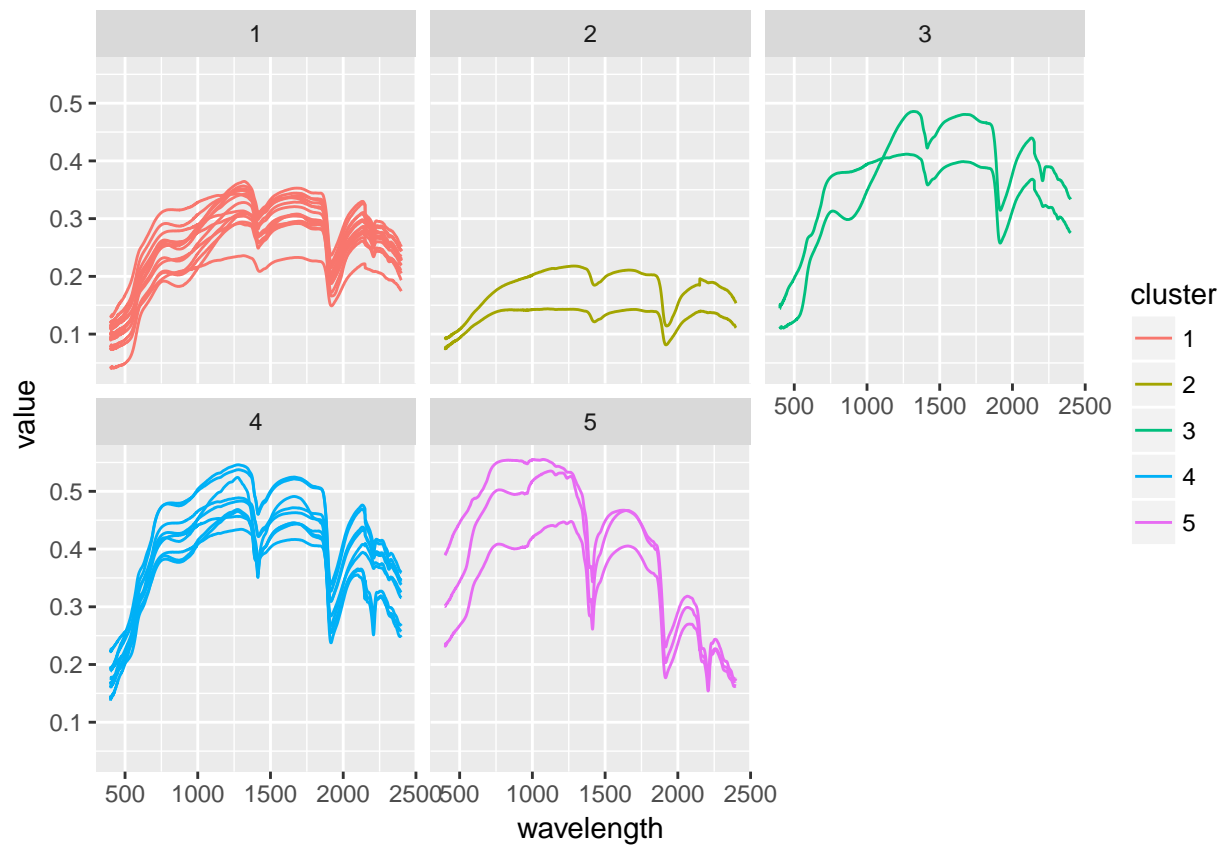
The following table and figure show the 5 endmembers selected by the VCA algorithm.

endmember	file
end1	signature0008.asd
end2	signature0011.asd
end3	signature0017.asd
end4	signature0025.asd
end5	signature0029.asd



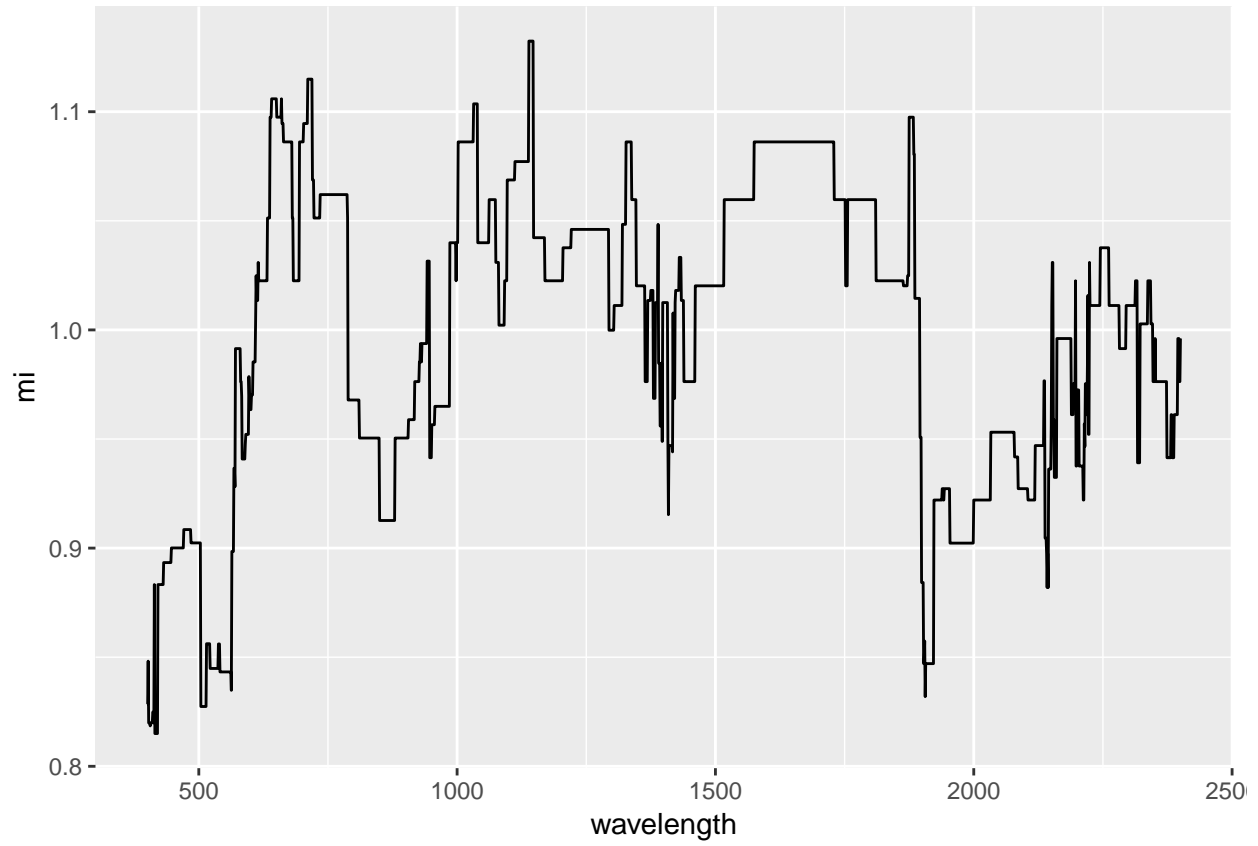
## Clustering (manual)

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).



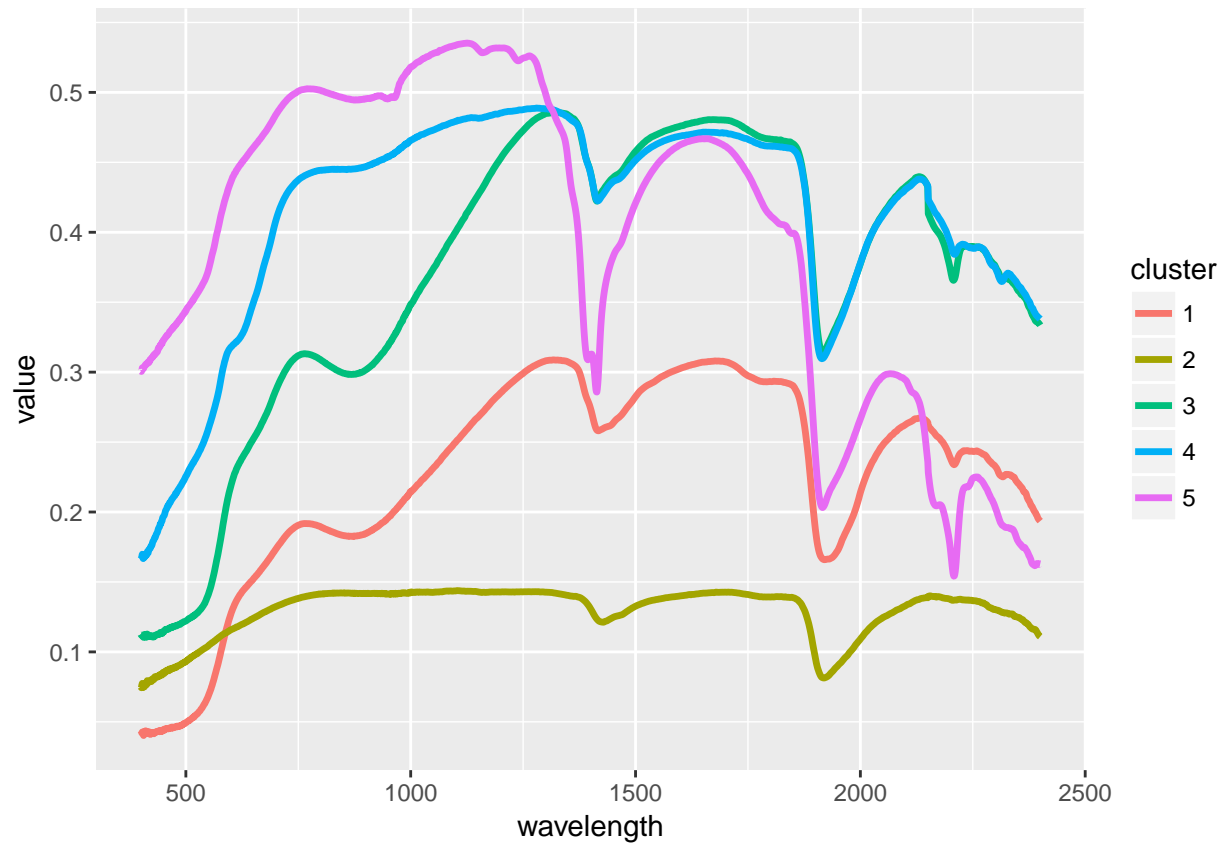
## Mutual Information

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.



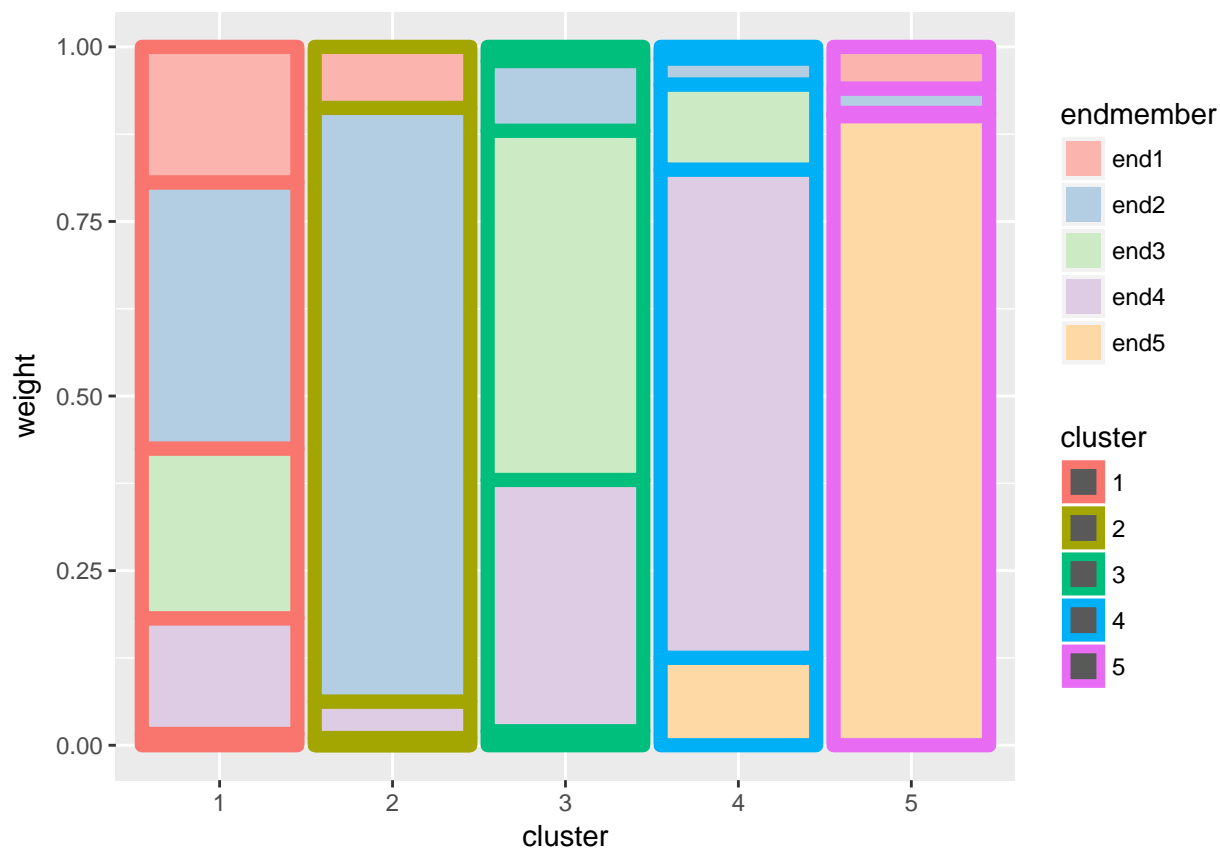
## Endmember classification

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.

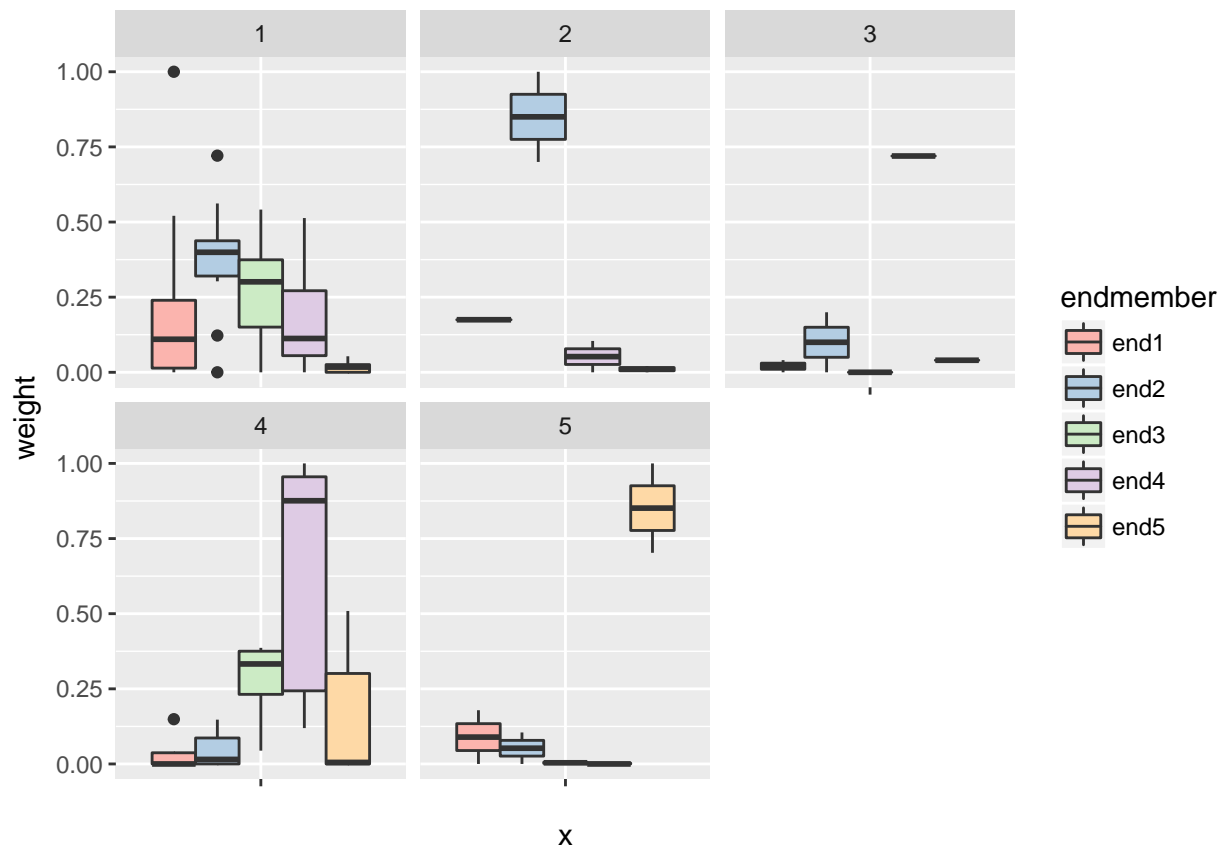


## Endmember weights by cluster

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.



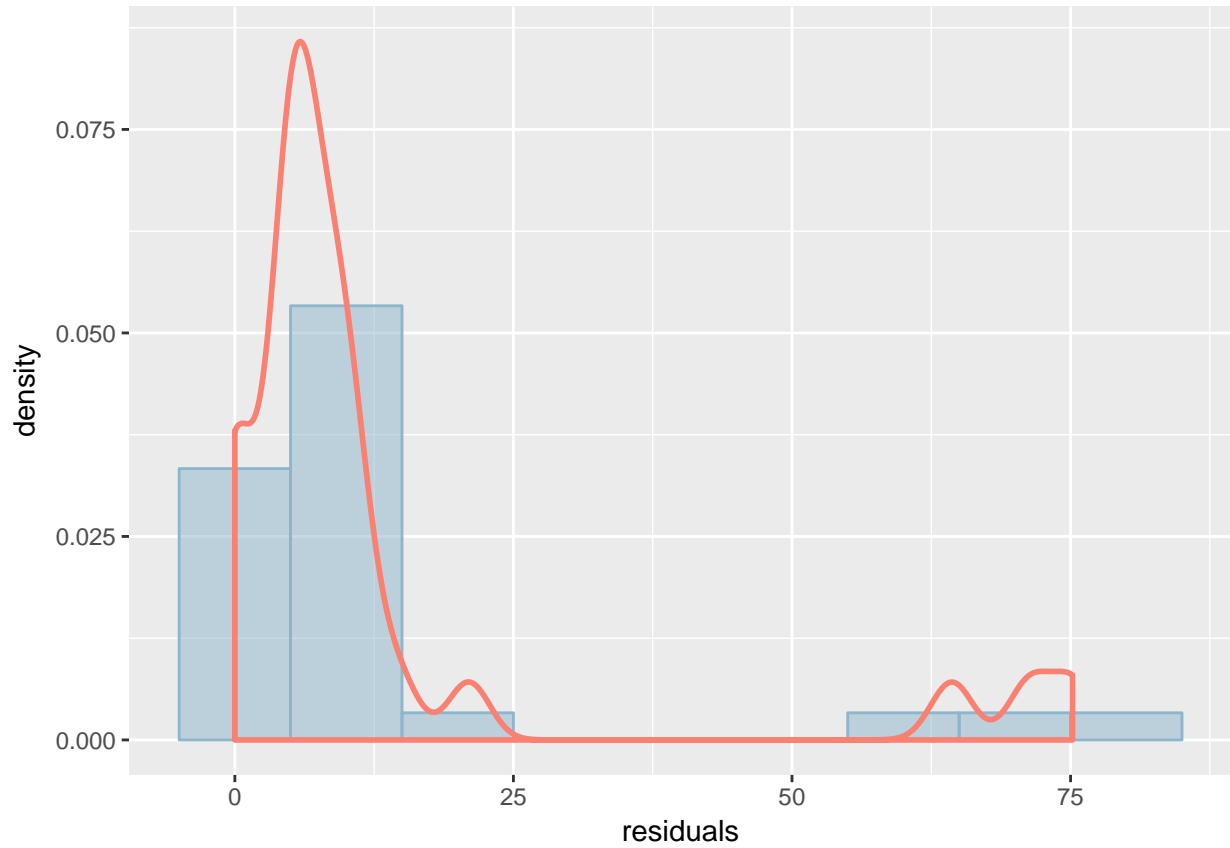




## Residual values

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	4.702646	6.648277	12.94562	10.19825	75.17348



## 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	0.2059807	0.3577925	0.3743773	0.0481644	0.0136852	5.013506
signature0001.asd	0.5207020	0.1224019	0.0955740	0.2079949	0.0533272	11.077582
signature0002.asd	0.1748380	0.6999927	0.0000000	0.1043628	0.0208064	9.849570
signature0003.asd	0.0000000	0.0000000	0.0000000	0.0000000	1.0000000	64.345940
signature0004.asd	0.0084852	0.7208605	0.1503794	0.1202748	0.0000000	4.701327
signature0005.asd	0.1099051	0.4432672	0.0260012	0.4208265	0.0000000	4.807969
signature0006.asd	0.0203824	0.3978284	0.1992262	0.3647158	0.0178472	5.267768
signature0007.asd	0.1788508	0.1047969	0.0077336	0.0059910	0.7026278	5.576330
signature0008.asd	1.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.000000
signature0009.asd	0.3860821	0.3094967	0.3010318	0.0033894	0.0000000	6.936976
signature0010.asd	0.0139419	0.4206904	0.0000000	0.5133246	0.0520431	4.076408
signature0011.asd	0.0000000	1.0000000	0.0000000	0.0000000	0.0000000	0.000000
signature0012.asd	0.0000000	0.0907326	0.0000000	0.8989911	0.0102763	11.417308
signature0013.asd	0.0000000	0.5617085	0.3179079	0.0919349	0.0284487	6.928739
signature0014.asd	0.0404752	0.1997640	0.0000000	0.7196347	0.0401262	4.706605
signature0015.asd	0.0000000	0.4008409	0.4866518	0.1125073	0.0000000	9.212014
signature0016.asd	0.0000000	0.0000000	0.3714972	0.1194098	0.5090930	20.986911
signature0017.asd	0.0000000	0.0000000	1.0000000	0.0000000	0.0000000	0.000000
signature0018.asd	0.0000000	0.0822504	0.3864008	0.2332364	0.2981123	6.367814
signature0019.asd	0.2396517	0.4125905	0.3477578	0.0000000	0.0000000	10.314483
signature0020.asd	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	71.337279
signature0021.asd	0.1775726	0.3027077	0.3905689	0.1089651	0.0201856	4.485678
signature0022.asd	0.0000000	0.0151459	0.0442744	0.9405797	0.0000000	8.771844
signature0023.asd	0.0000000	0.1473820	0.0000000	0.8526180	0.0000000	14.627890
signature0024.asd	0.0337398	0.3526407	0.5413955	0.0553573	0.0168668	8.666354
signature0025.asd	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	0.000000
signature0026.asd	0.1490147	0.0000000	0.2940925	0.2466939	0.3101990	5.995970
signature0027.asd	0.0000000	0.0000000	0.0000000	1.0000000	0.0000000	75.173478
signature0028.asd	0.0000000	0.5320009	0.1718085	0.2714424	0.0247482	7.722871
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 1.0.0.