

# Plot()-ing in R

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ZMT large seminar room F6

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# Data formats

## Wide data format

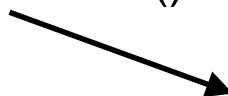
Original (excel) sheet:

SITE	Temp_C	pH_units
A	22.27	8.71
A	22.12	8.36
A	21.29	8.41
B	22.71	6.86
B	23.45	7.21
B	23.33	7.38

Mean per SITE:

SITE	Temp_C	pH_units
A	21.75	8.42
B	22.98	6.91

melt()



## Long data format

SITE	variable	value
A	Temp_C	22.27
A	Temp_C	22.12
A	Temp_C	21.29
B	Temp_C	22.71
B	Temp_C	23.45
B	Temp_C	23.33
A	pH_units	8.71
A	pH_units	8.36
A	pH_units	8.41
B	pH_units	6.86
B	pH_units	7.21
B	pH_units	7.38

cast()

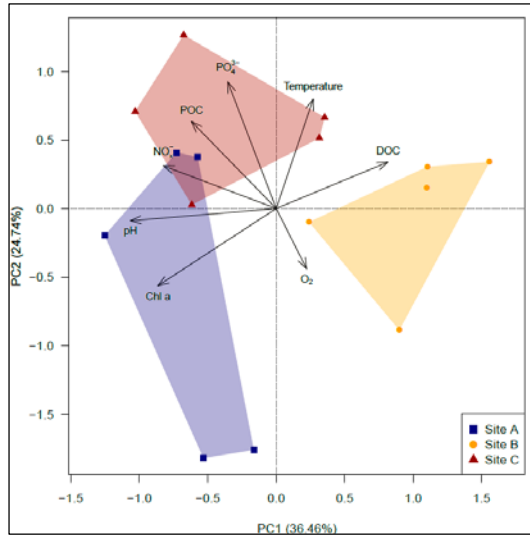


# R data and object types

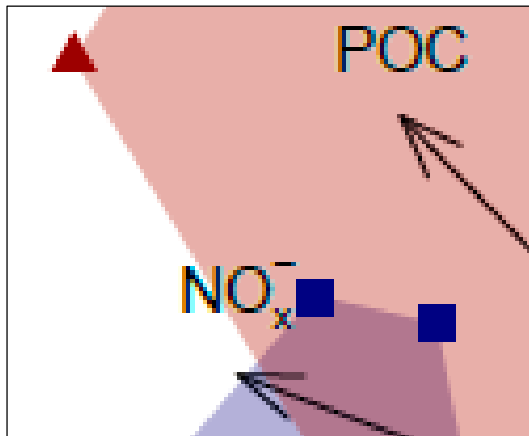
What you see	What R understands
Numerical data: <code>c(1, 3, 6, 2.5, 7)</code>	<code>1 3 6 2.5 7</code>
Character strings: <code>c("A", "B", "C")</code>	<code>"A" "B" "C"</code>
Factors: <code>as.factor(c("A", "B", "C"))</code> Levels: <code>"A" "B" "C"</code>	<code>1 2 3</code> <code>1 = "A"; 2 = "B"; 3 = "C"</code>

R object	Description
Vector	1-dimensional series of values
Matrix	2-dimensional, vector with line breaks, only 1 data type
Data.frame	List of vectors of the same length concatenated into a 2-dimensional table, different data types allowed in different columns
List	1-dimensional, vector of R objects

# Image/picture



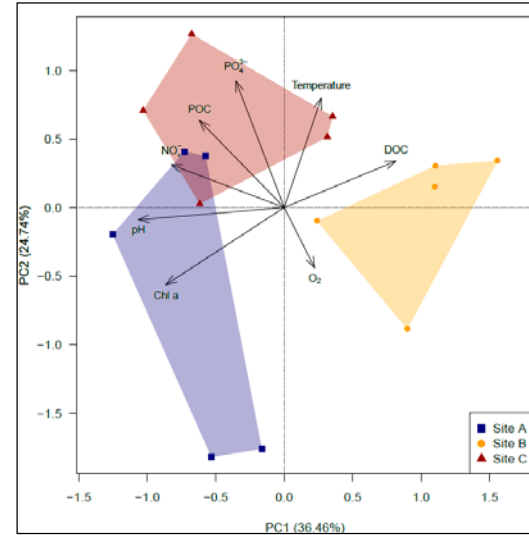
- Consisting of pixels
- Zoom blows up pixels and lowers resolution



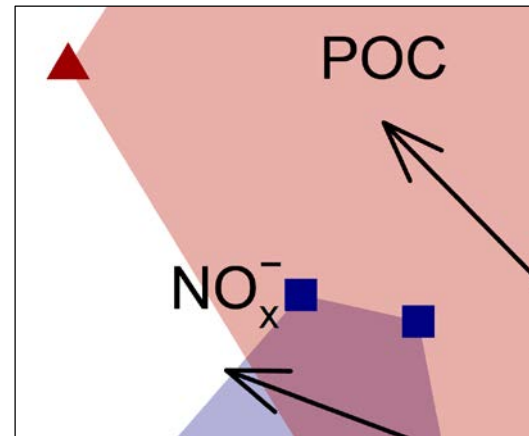
File types:

- jpg
- tiff
- bmp
- etc.

# Vector graphics



- Position of objects in plot known
- Zoom does not affect resolution



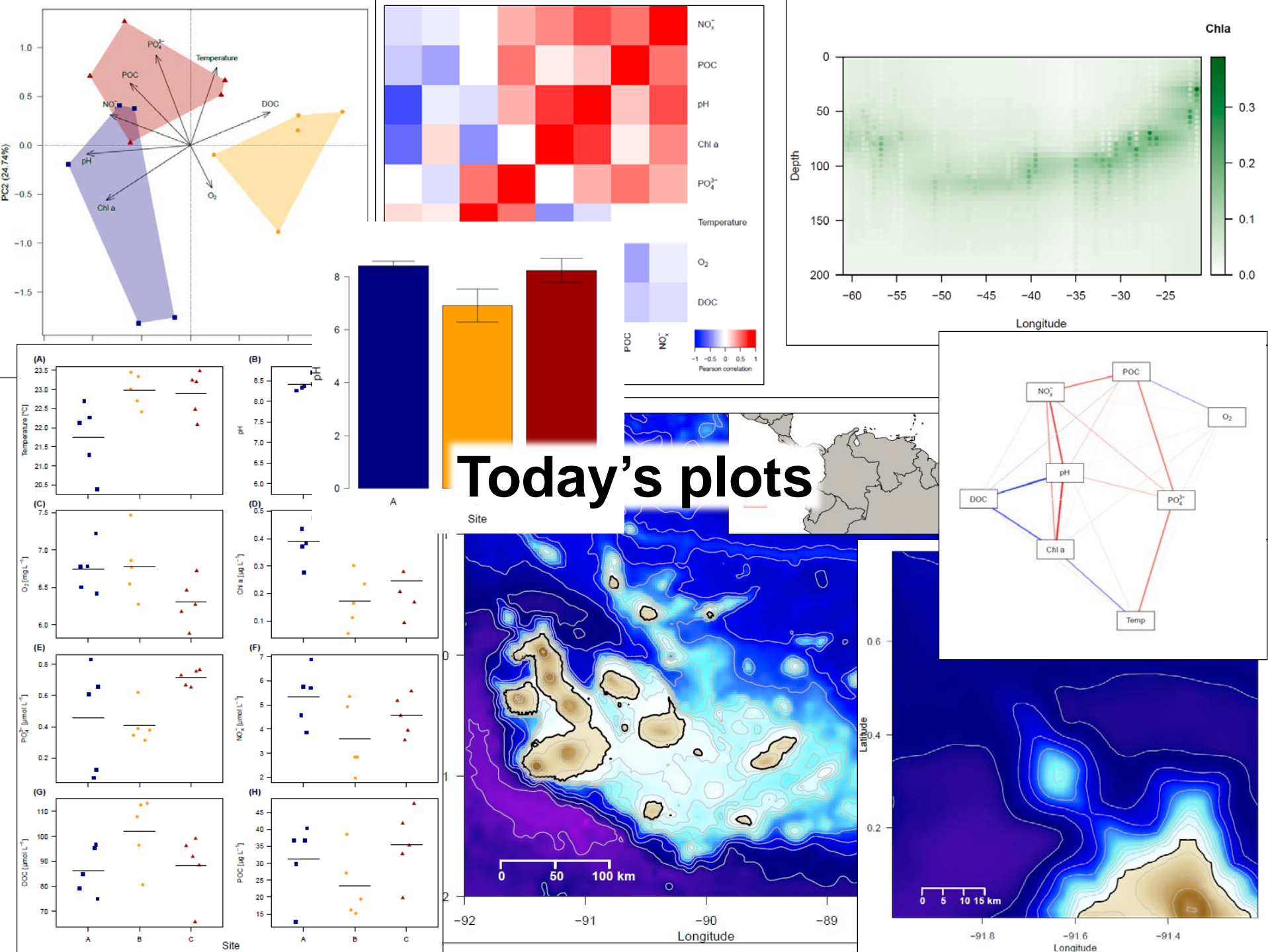
File types:

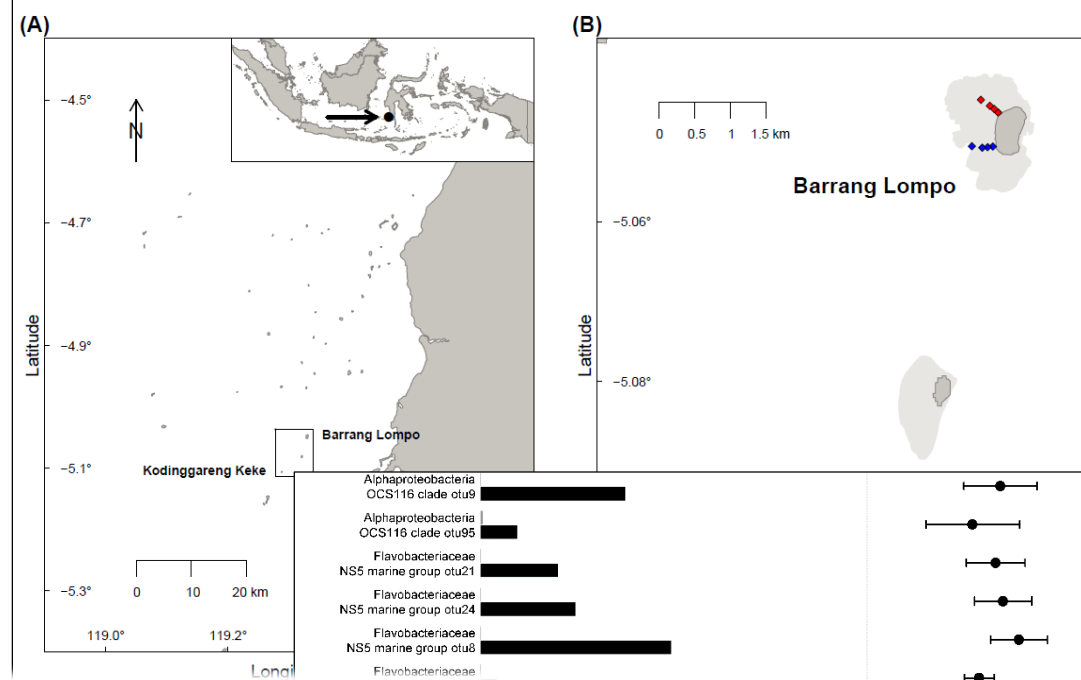
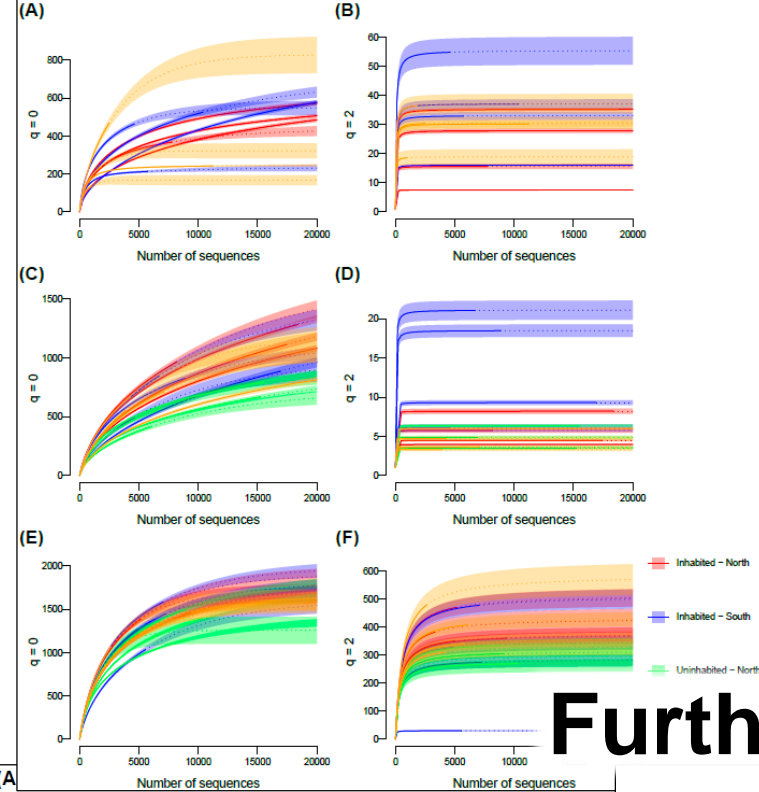
- pdf
- eps

- **PCA plot** with different colors and symbols for each observation
- Observations from the same site highlighted by partially transparent hull
- **Heatmap** of pairwise correlations of environmental parameters used in the PCA
- **Barplot** of mean pH  $\pm$  standard deviation at each site
- **Interpolated** chlorophyll a concentrations down to 200m along a longitudinal transect across the Atlantic

## Today's plots

- **Multipanel figure** with scatter plots of environmental parameters at each site
- Including panel number
- **Bathymetric map** of the Galapagos Islands
- Including overview map of middle and south America
- **Network** of pairwise correlations of environmental parameters used in the PCA
- Edge color and width defined by strength of correlation
- Zoomed in bathymetric map of the Galapagos Islands with a **higher depth resolution**





# Further applications

