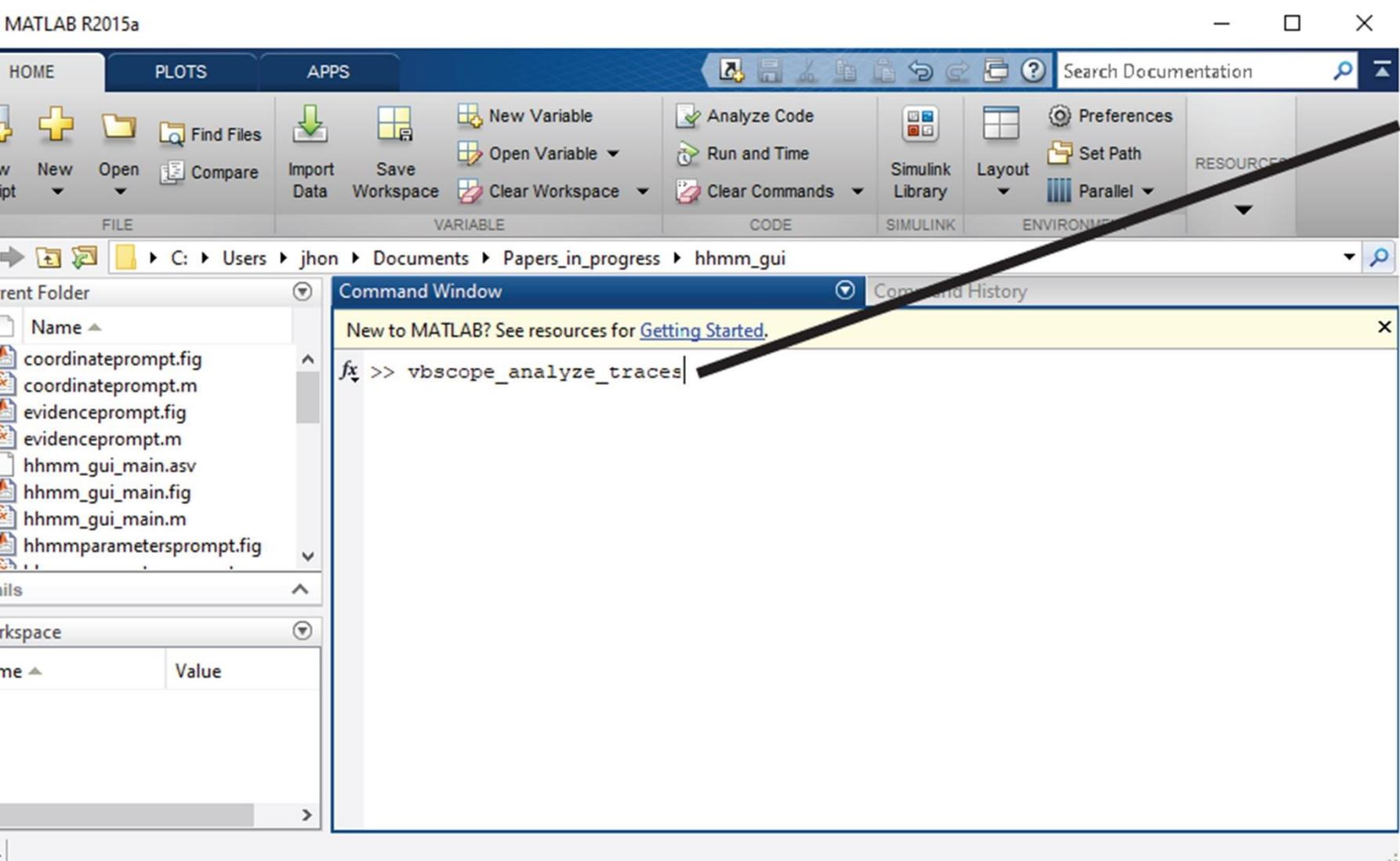
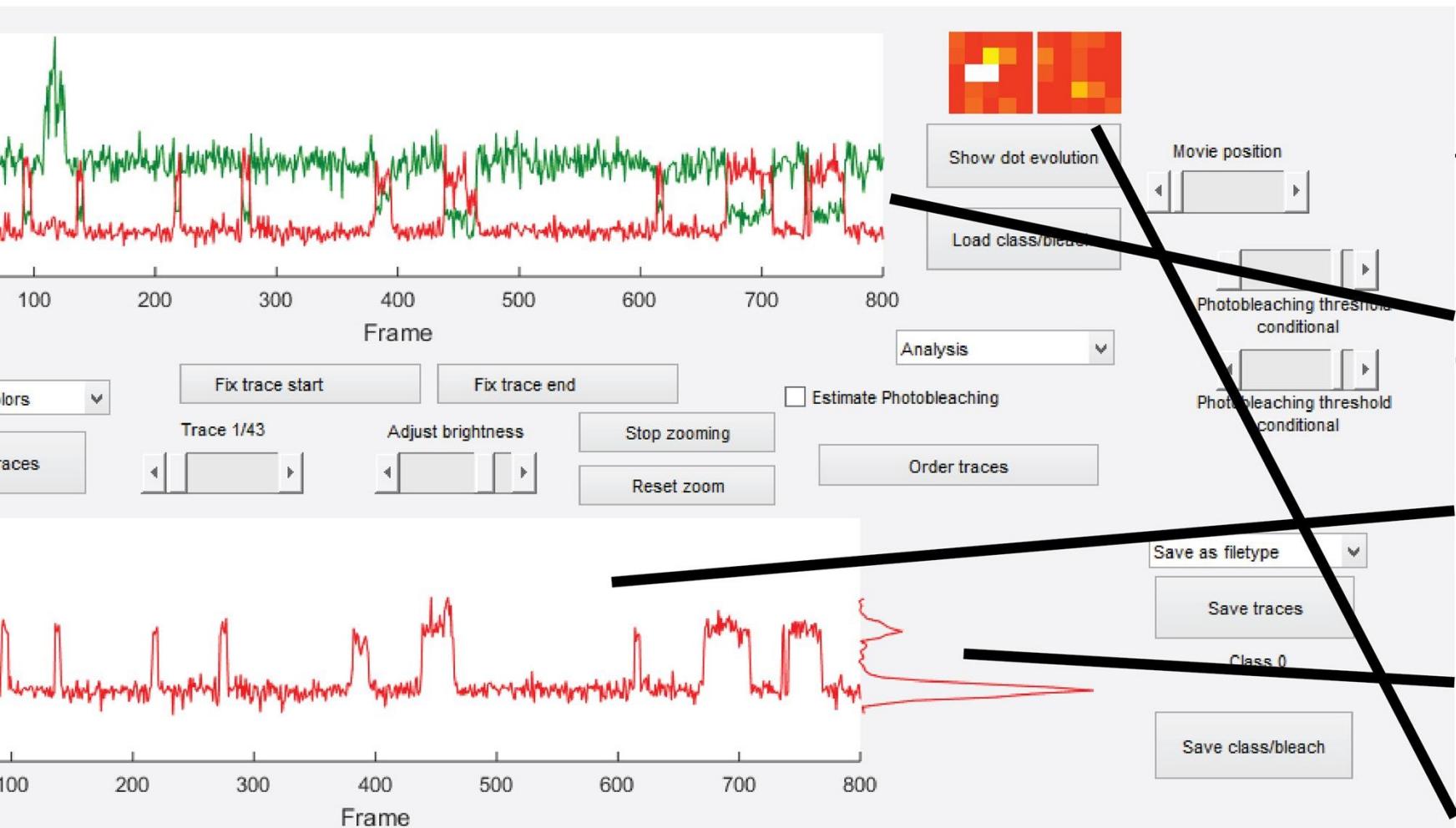


vbhhmm manual

Open the trace viewer gui by typing as shown and pressing "enter".





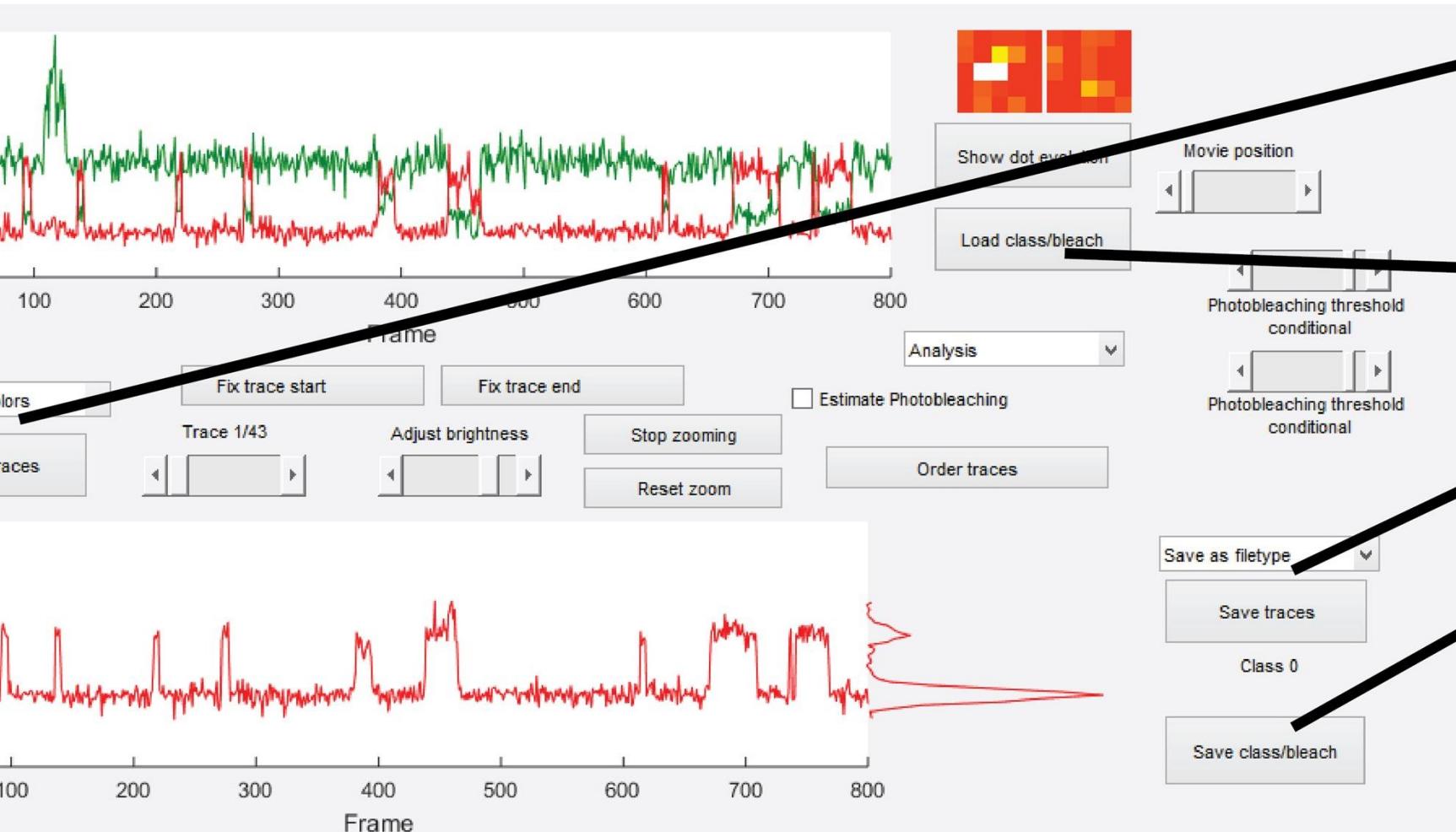
Estimate
bleaching/Clas-
traces

Intensities of e-
color

Fractional Inte-
(EFRET for two)

Histogram

Chromophore

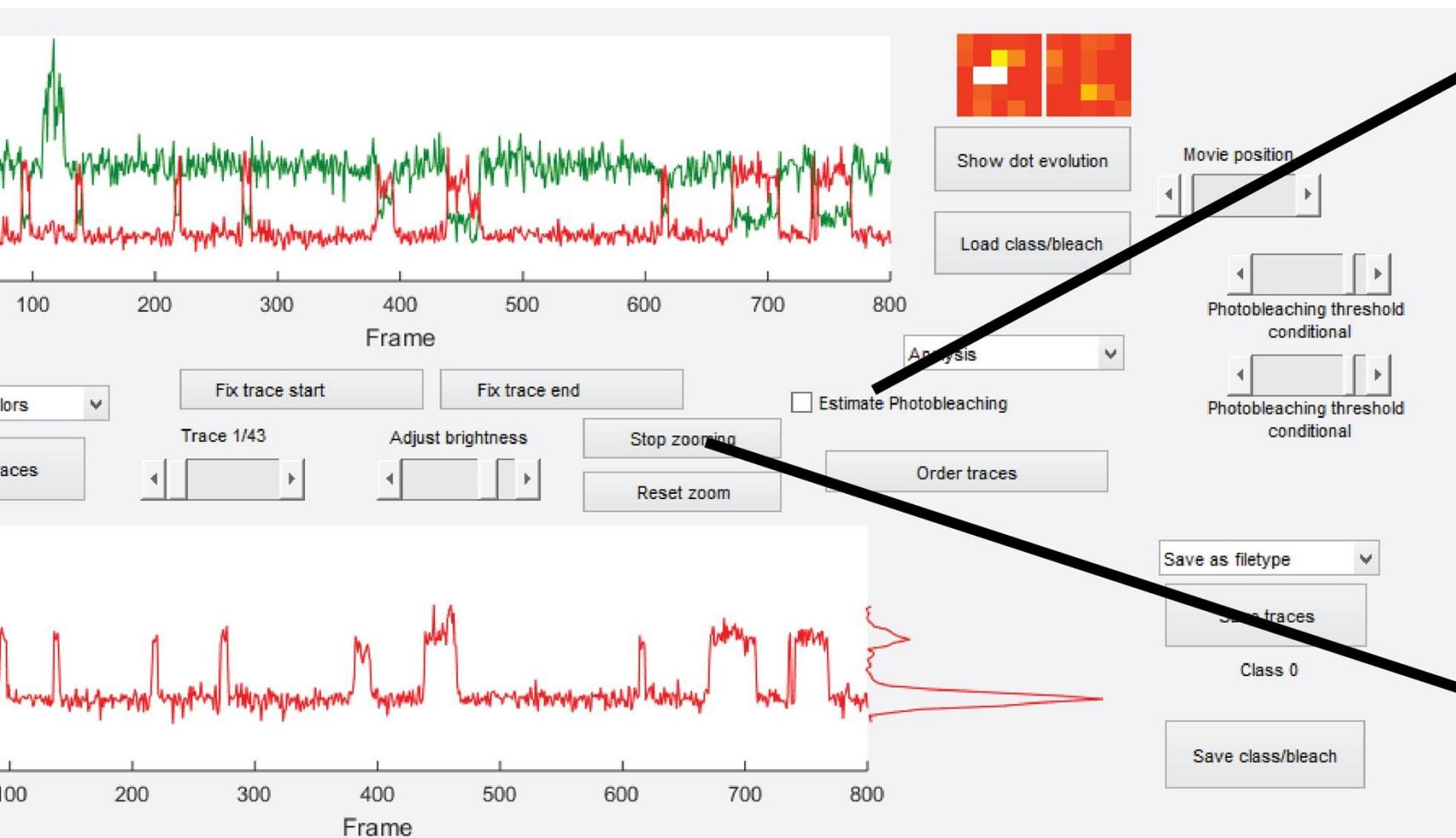


Load in data (multiple files)

Load in classifier
(can take multiple files)

Save trajectories
(just traces; vbs for everything.)

Save classification

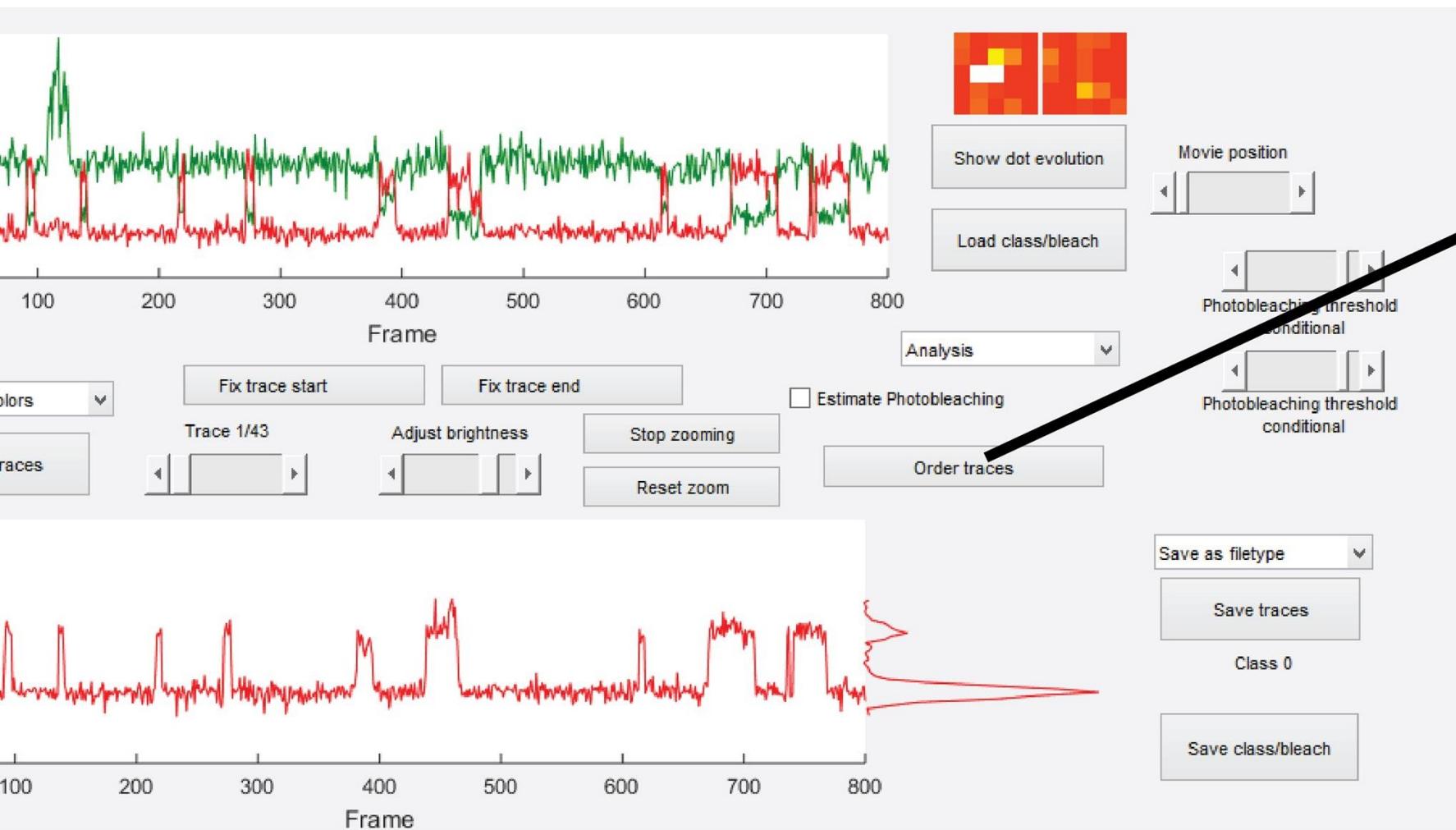


Enable photobleaching detection/correction

Keyboard shortkeys:
 s: fix start (then shift-click each frame)
 f: fix finish
 n: next trace
 b: back one trace
 z: zoom in. When you must hit "stop zooming" here

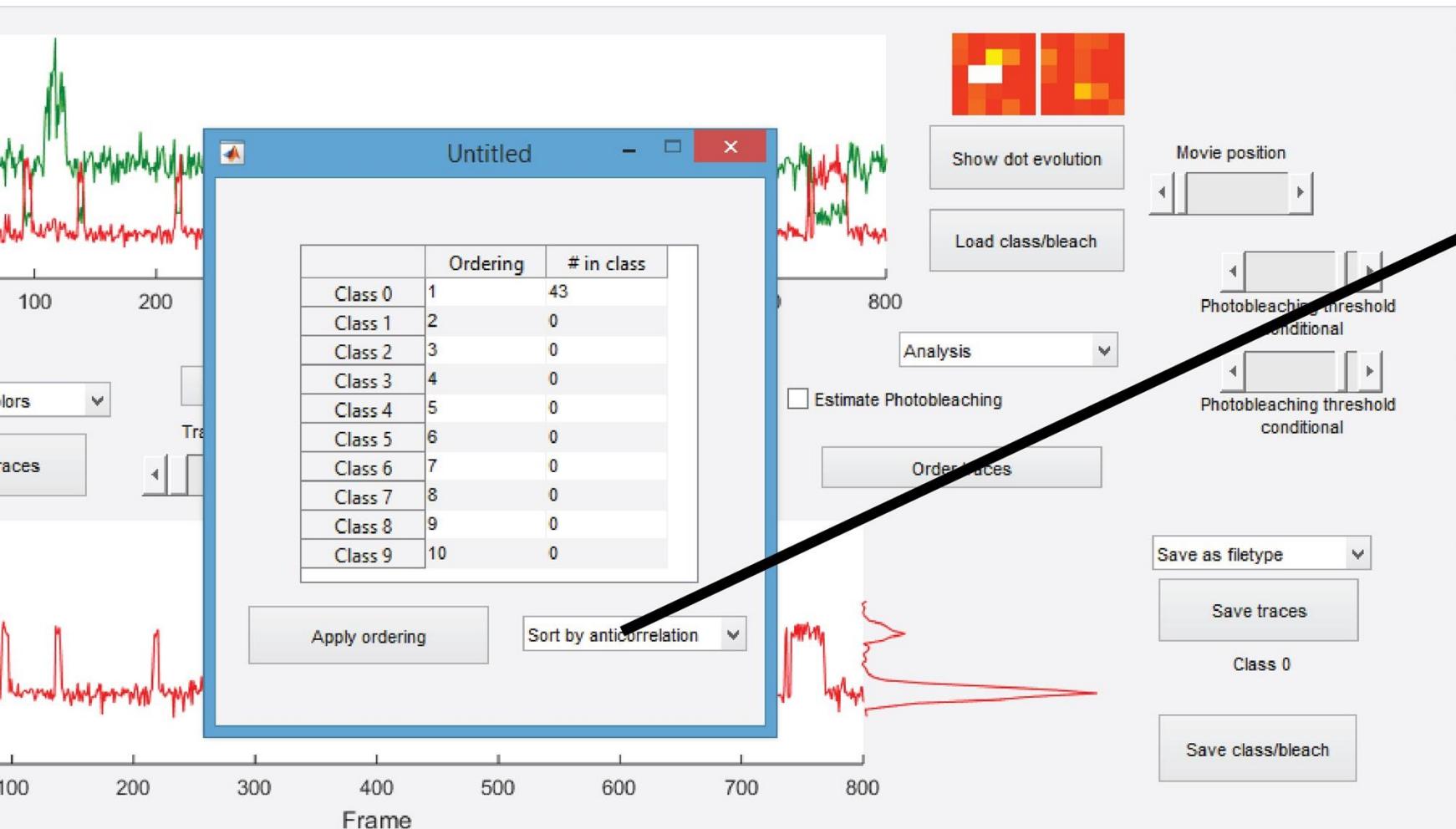
Sorting thro
traces

Automatic se



Sorting through traces

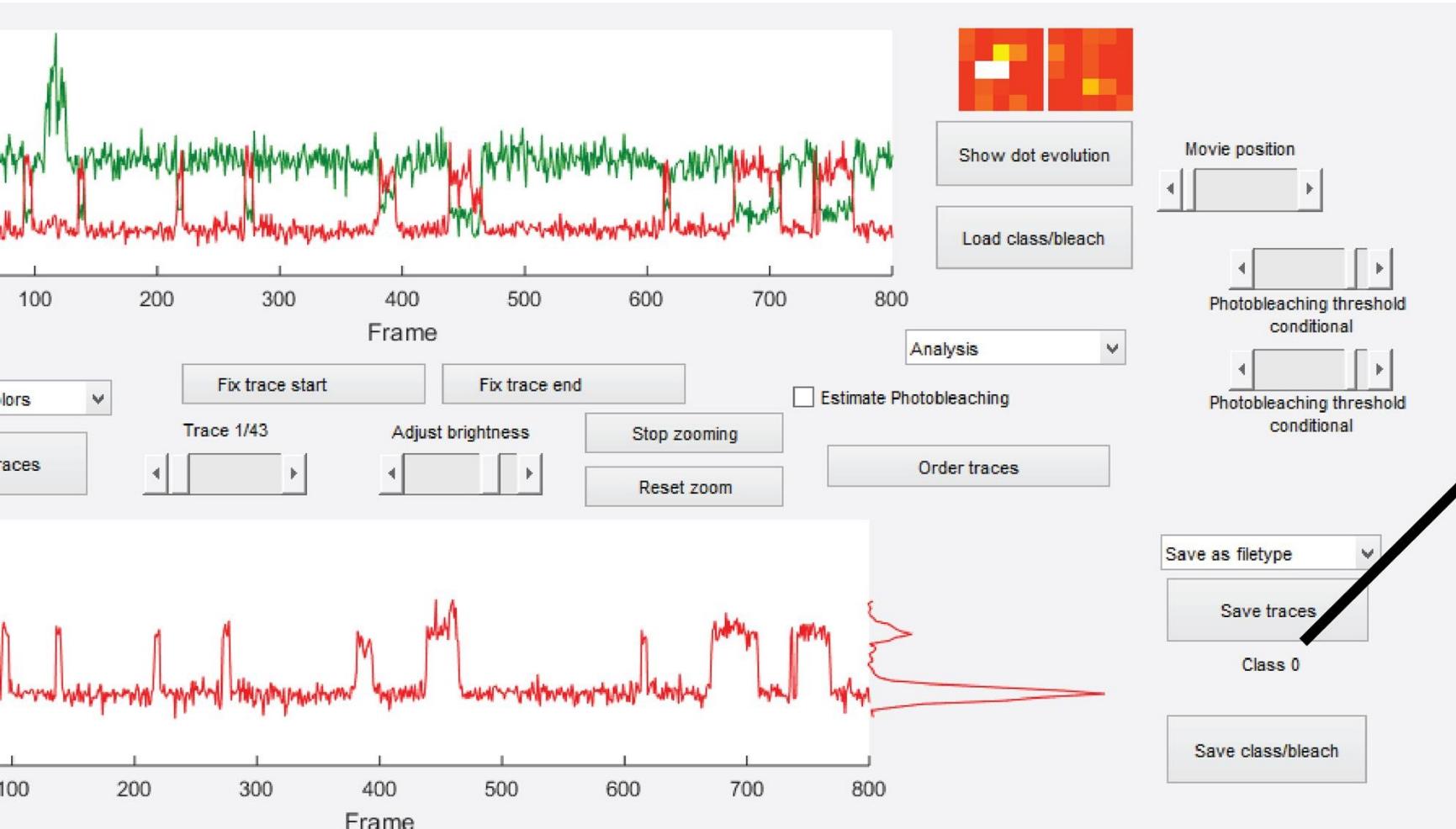
Calculates anticorrelation. Clicking 'ordering' places traces in order most to least anticorrelated.



Sorting through
traces

Manual sorting

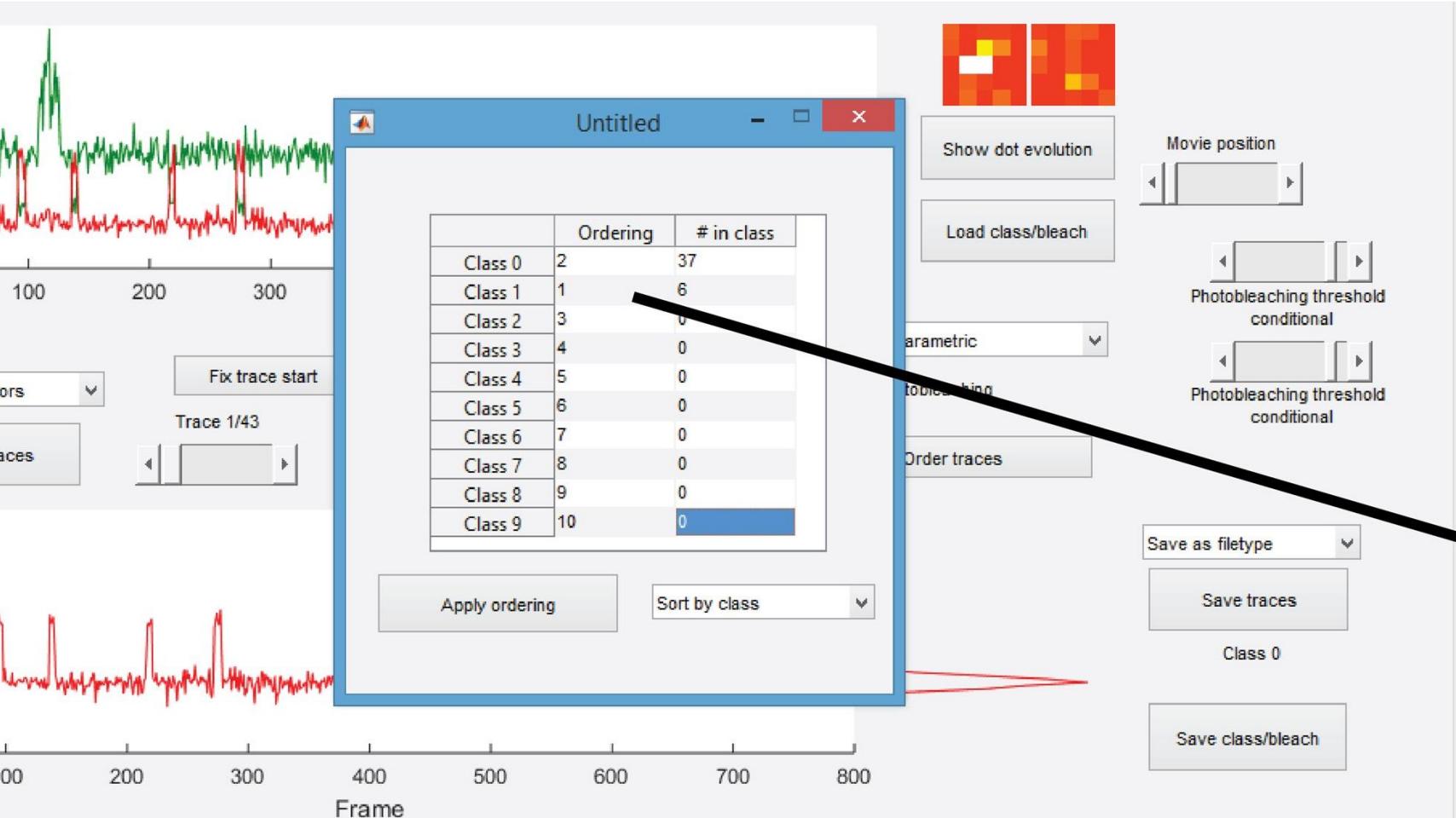
Click a number
between 0-9 after
ing a graph. T
is now in that
Readout is he

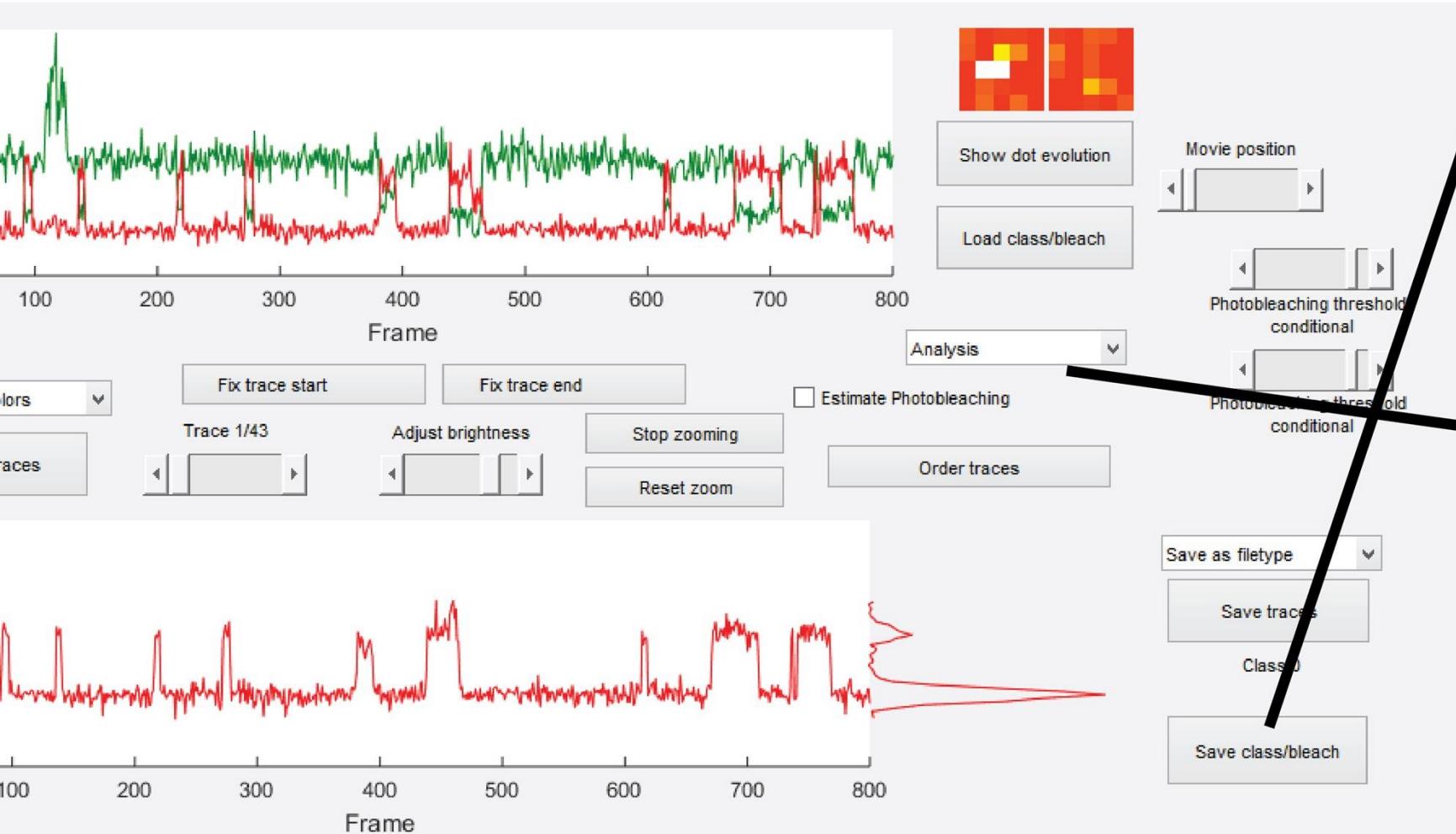


Sorting through traces

Manual sorting

Clicking “Ordering traces” again, the window appears. The “Ordering” column is clickable, and allows classes to be put in order from 1-10.

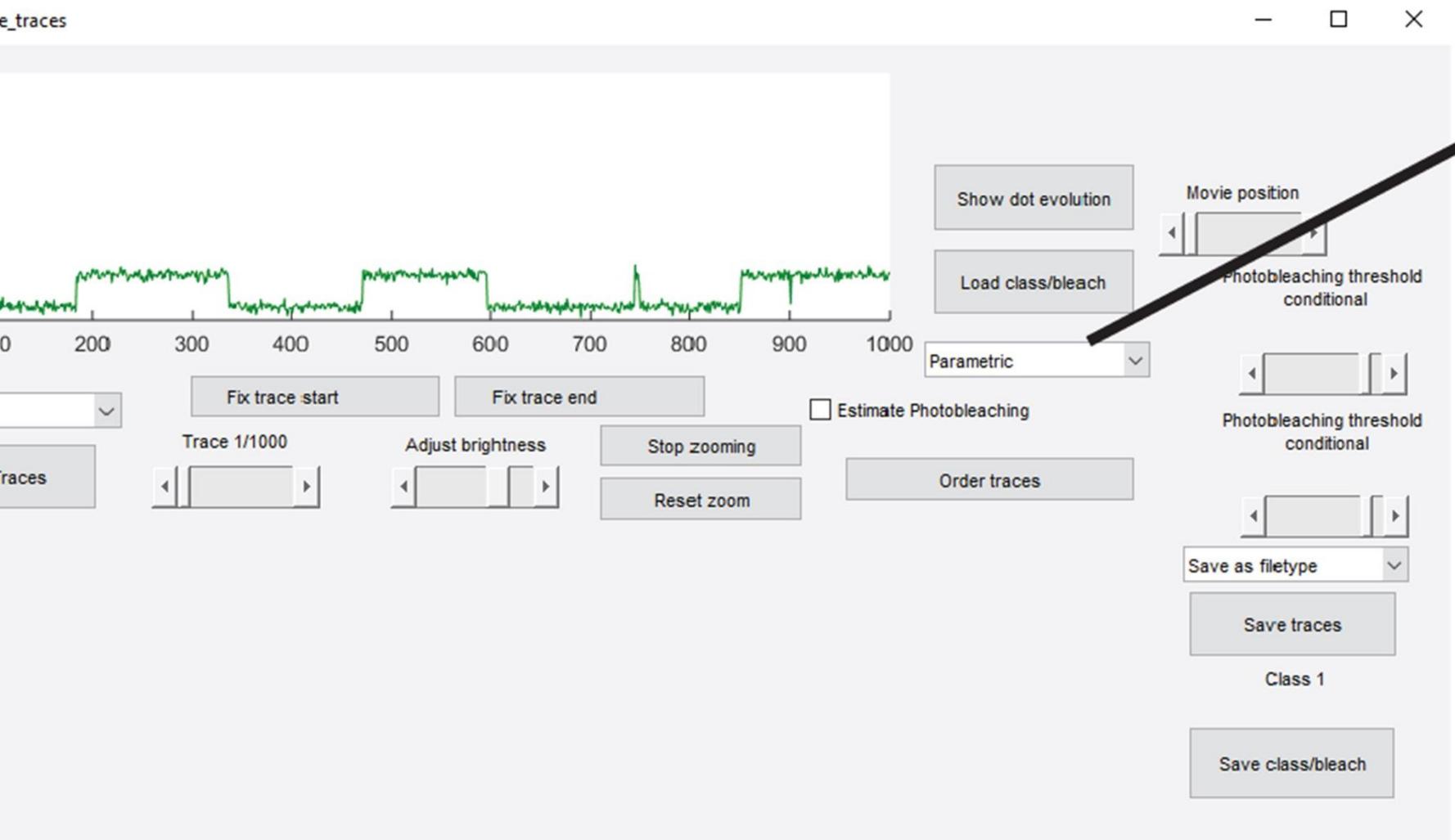




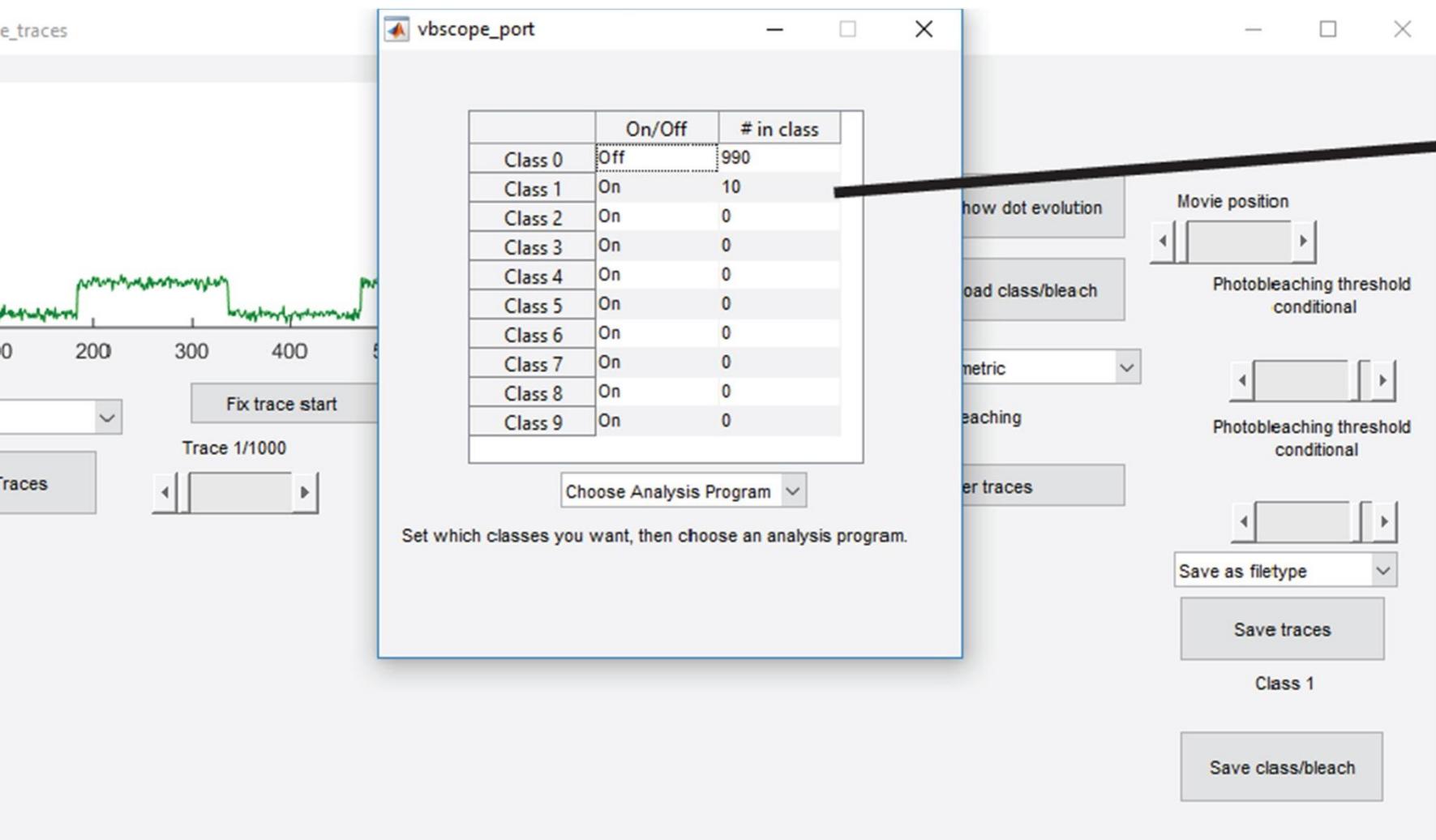
Once sorting/start/stop
tion is complete
class/bleach

Then open up
metric or a no
metric analysis

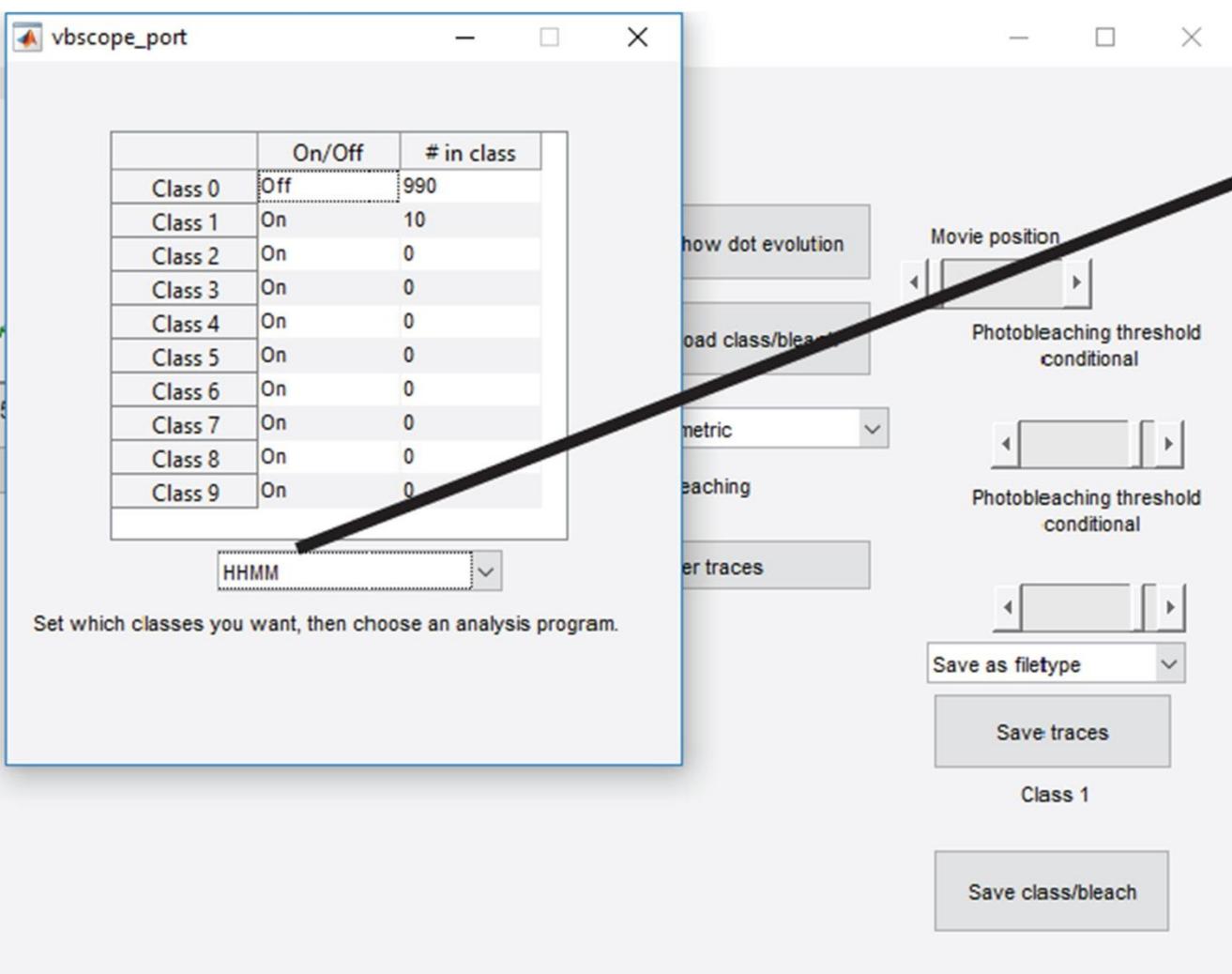
Change from
"Analysis" to
"Parametric"



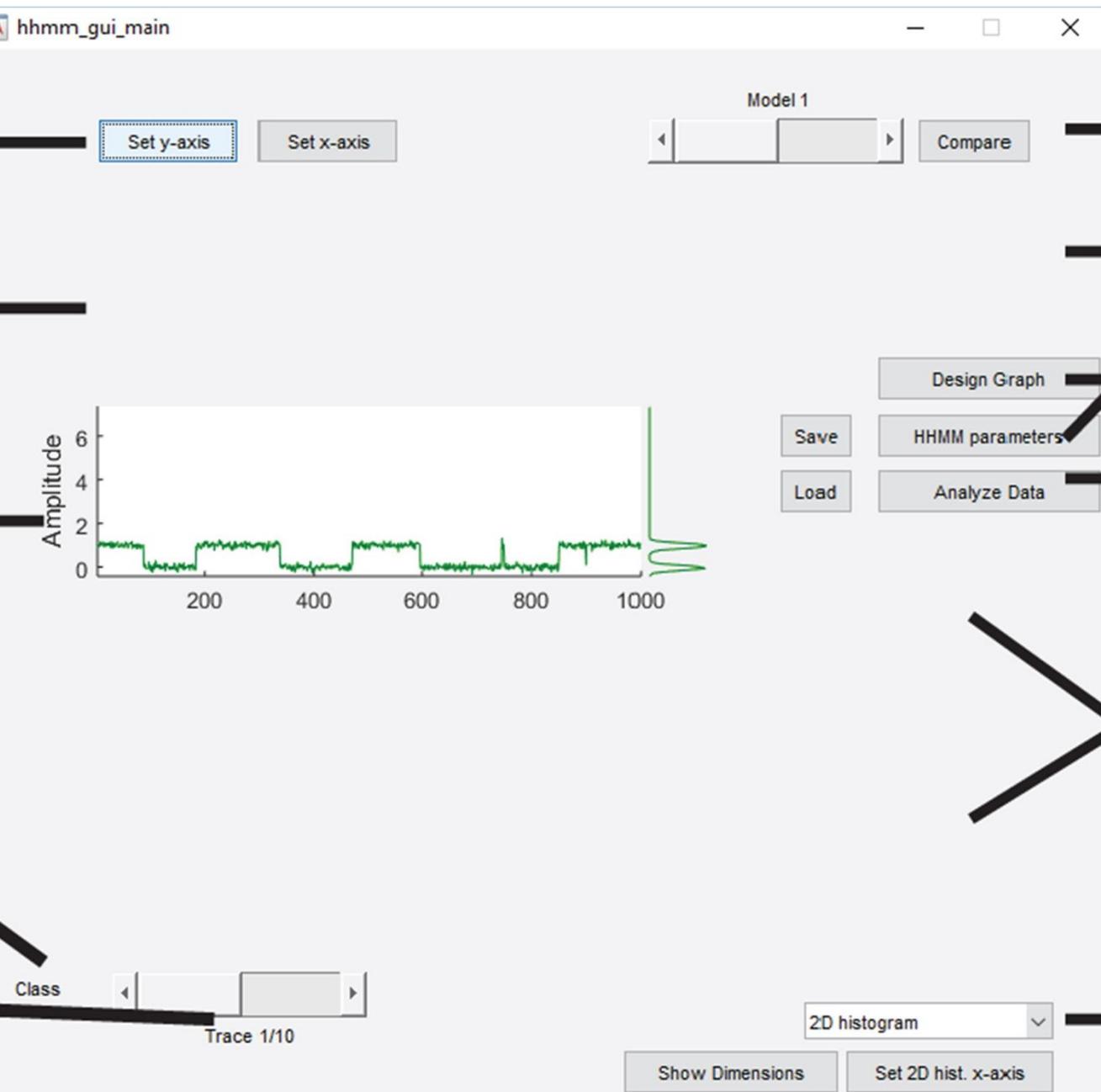
Choose which classes to process over by clicking on the table, toggling a class "on" or "off" by hitting the appropriate number on the keyboard



Choose "HHMM"



adjustments



trajectory (below, if

one dimension)

al

jectory (frac-
al units)

S

detected trajectory

Current Mo

Model Top

Model para

Begin anal

Population

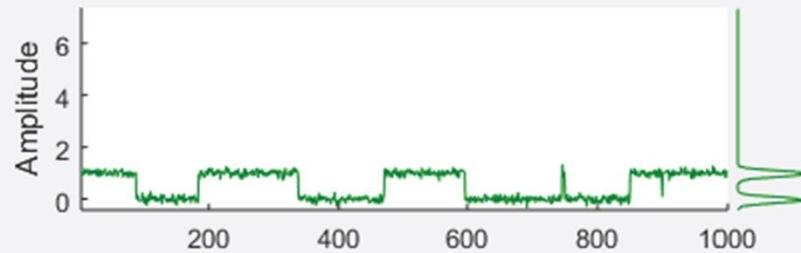
Population
parameter



prompt

- □ ×

Set min limit



Class

◀ ▶

Trace 1/10

2D histogram

Show Dimensions

Set 2D hist. x-axis

Model 1

Set y-axis

Set x-axis

▶

Compare

Design Graph

[Save](#)

HHMM parameters

Load

Analyze Data

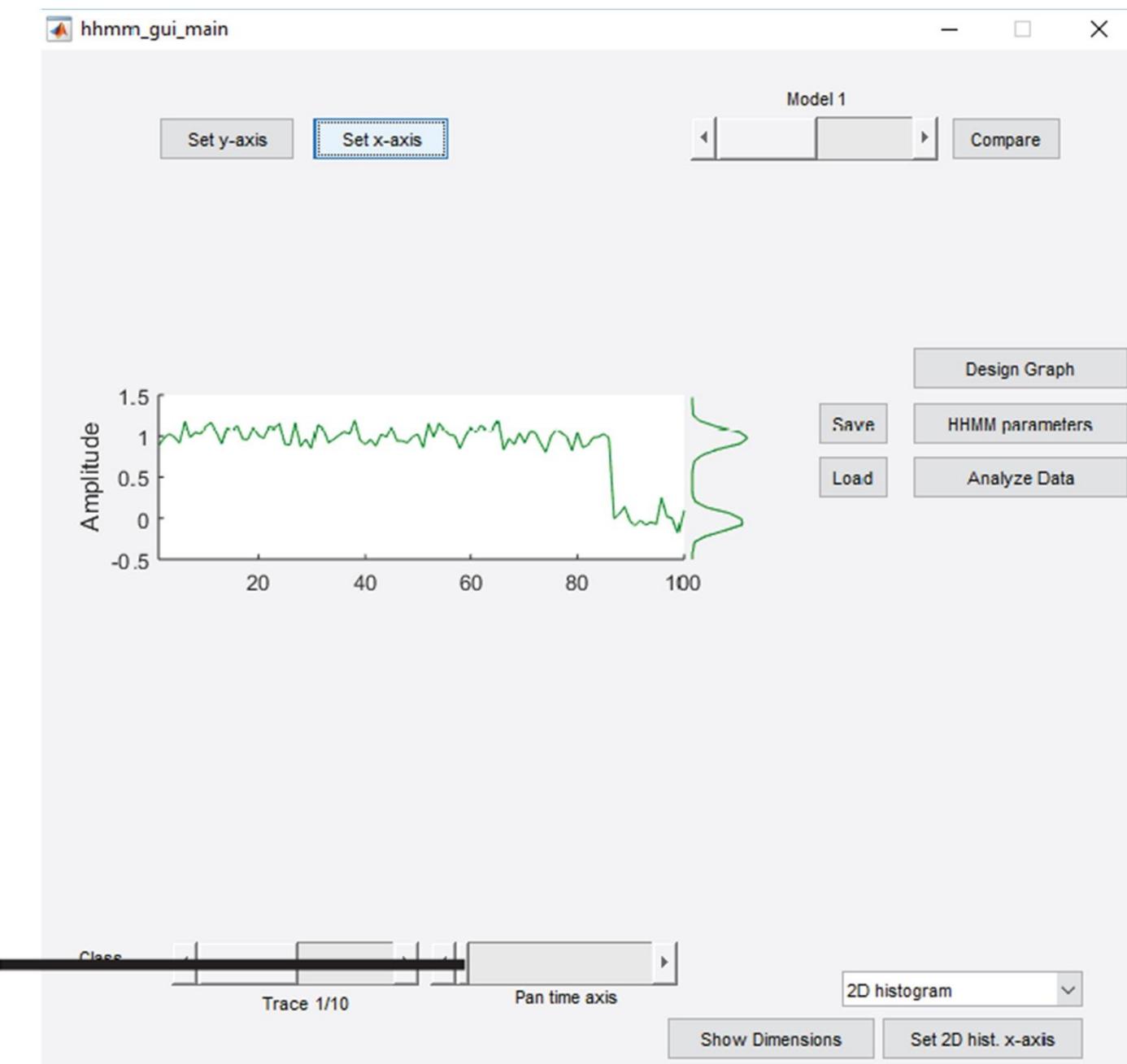
is adjustments.

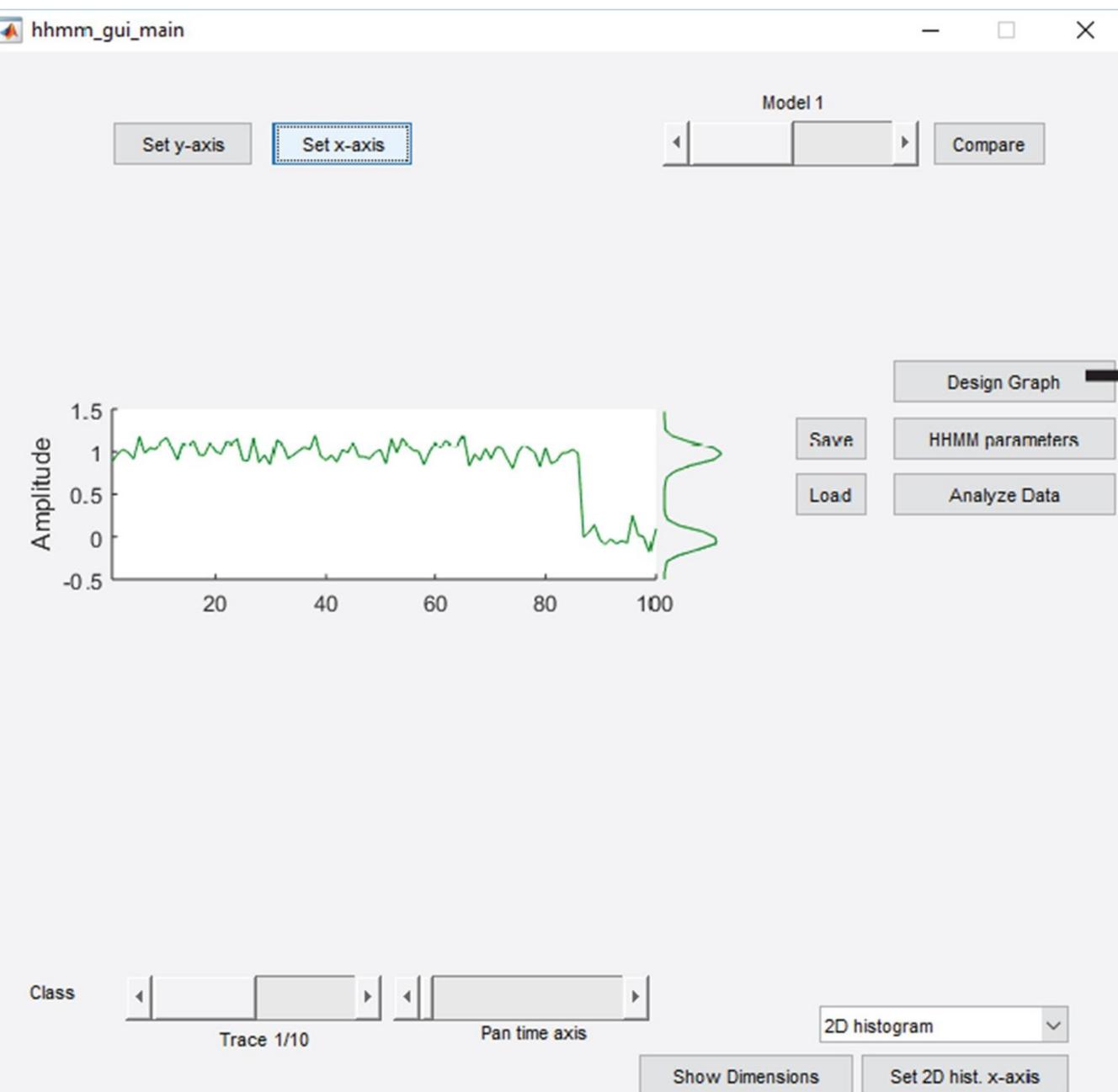
prompt

Set the max limit

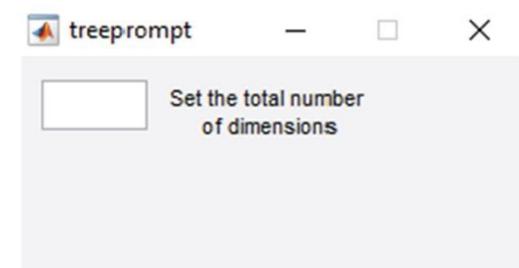


the axis slider
will appear, allowing
the trajectory to
be scanned



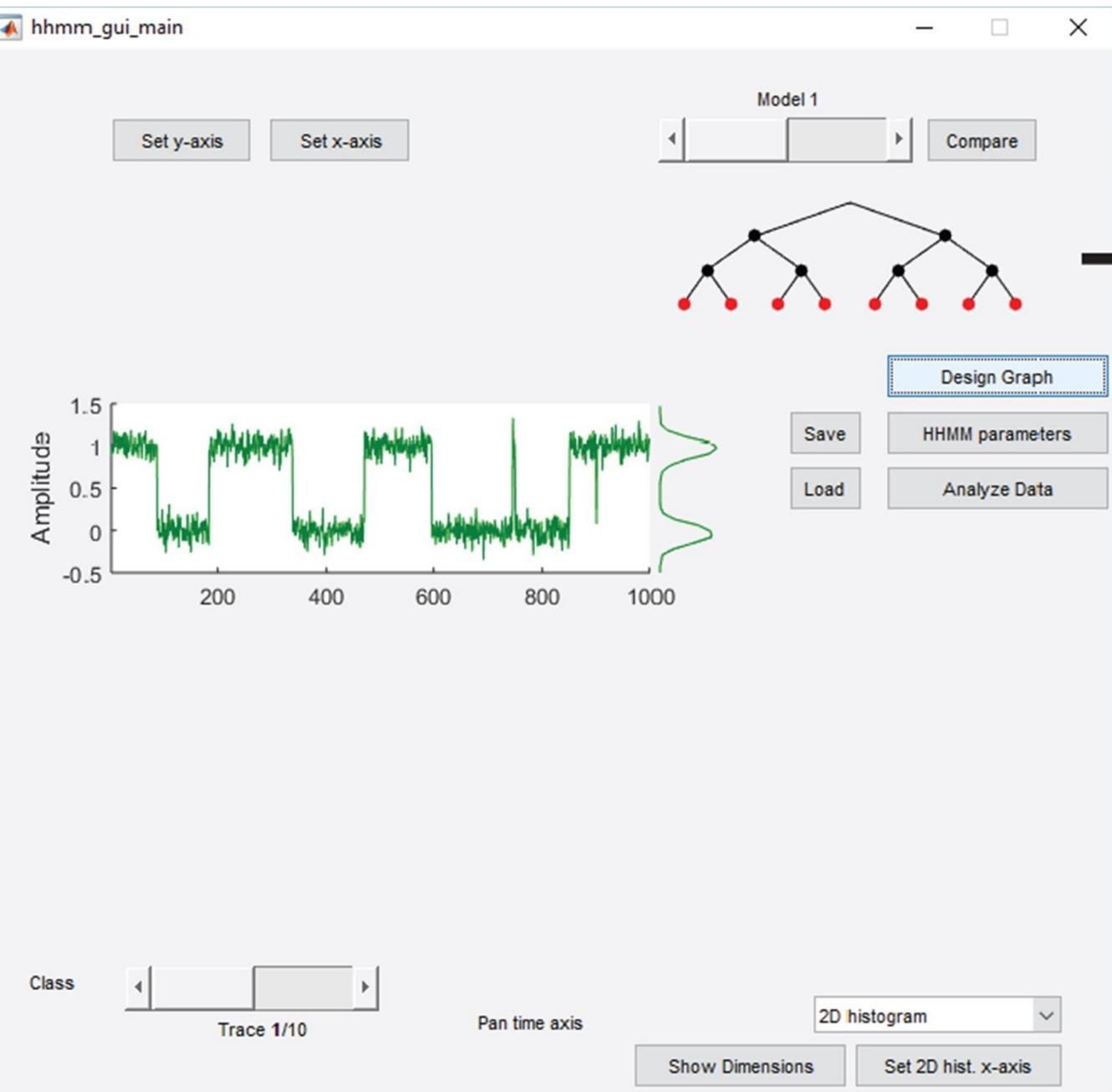


Design model topology

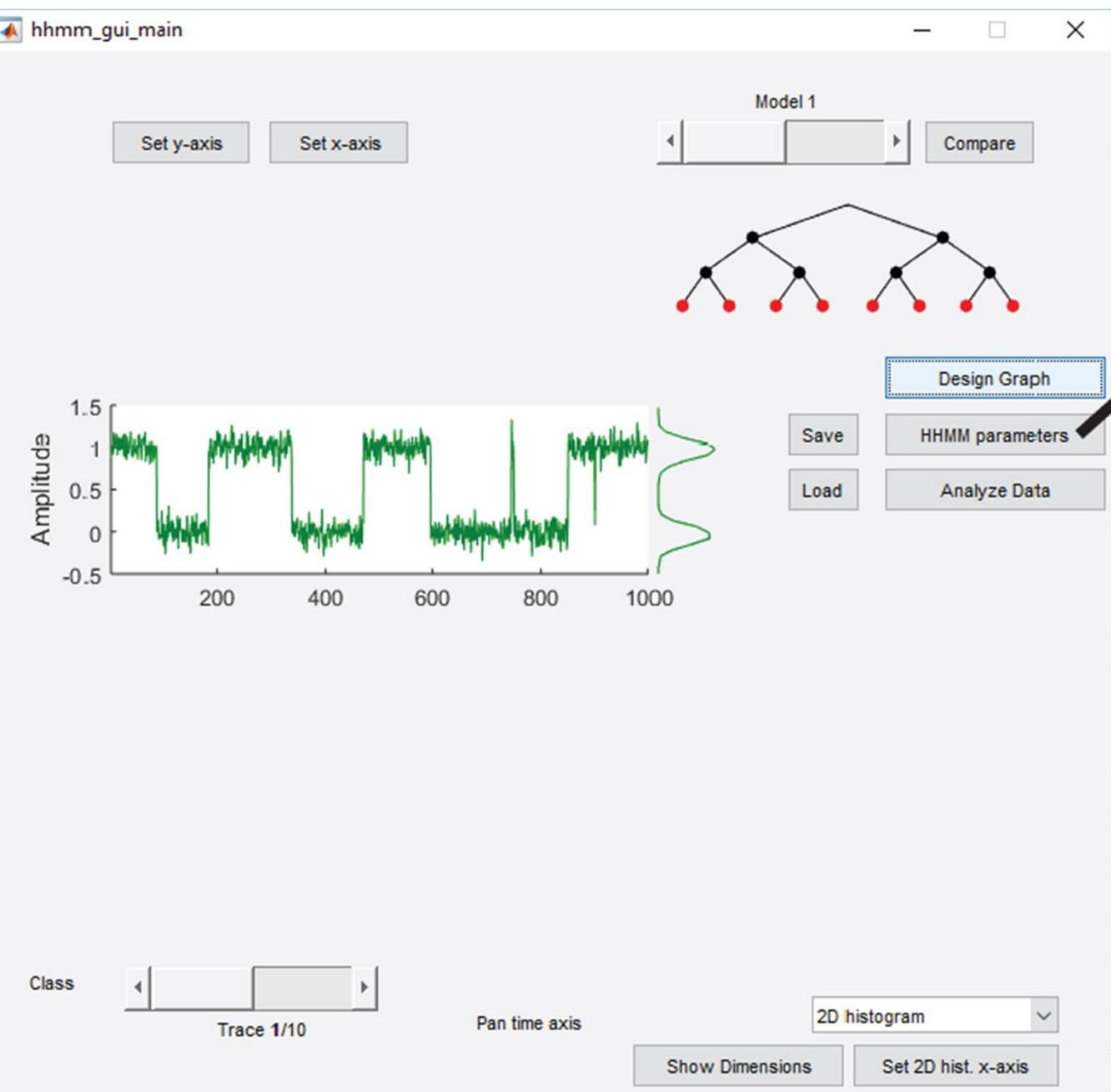


Prompts:

- (1) Total # of dimensions, D
- (2) # of distinct values at level $d > 1$
- (3) $d = 1$, # of distinct values of the direct dimension



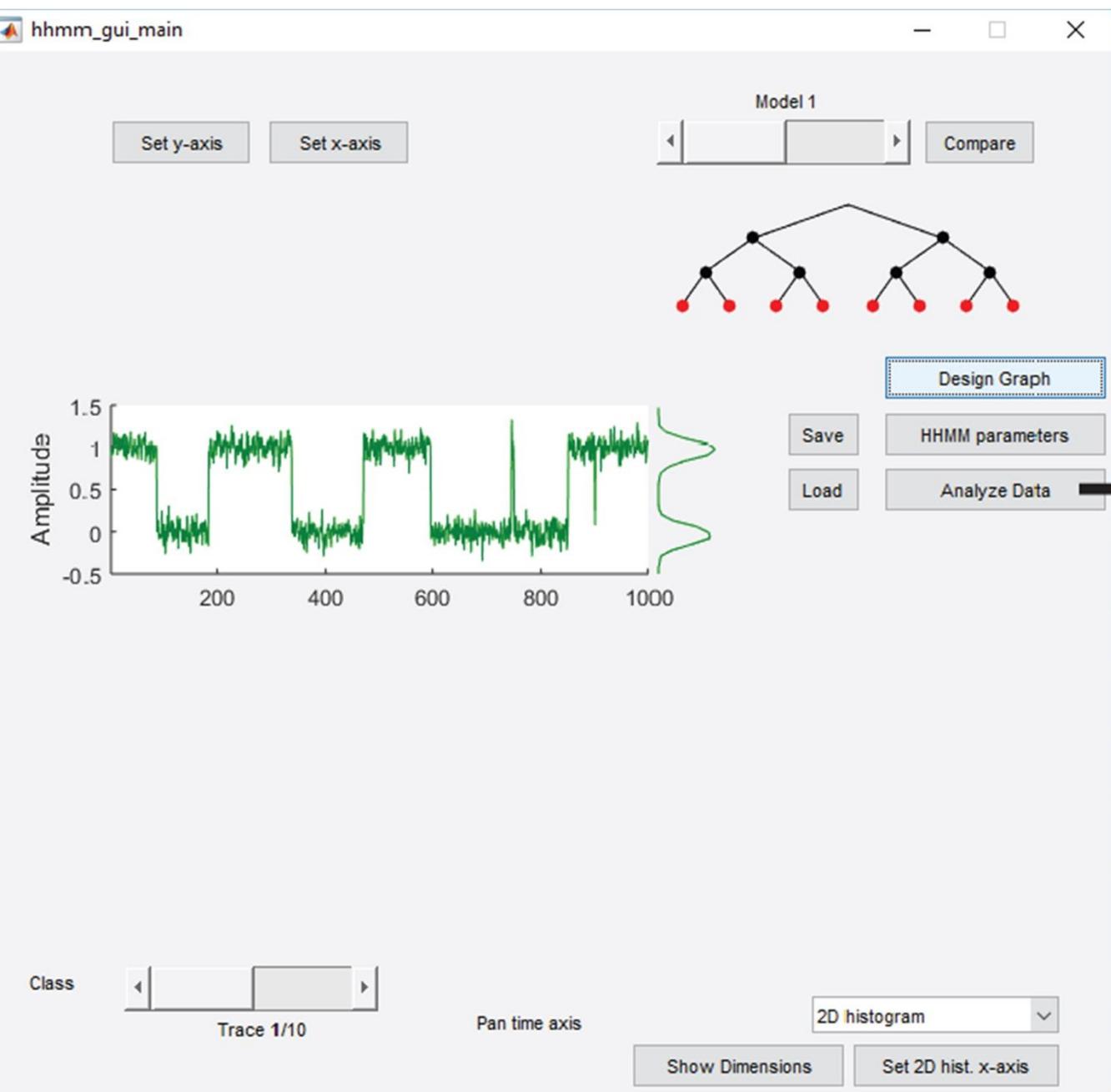
Model topology appears here. Shown: D = 3, # = 2 for all values of d



Set algorithm control parameters

Prompts:

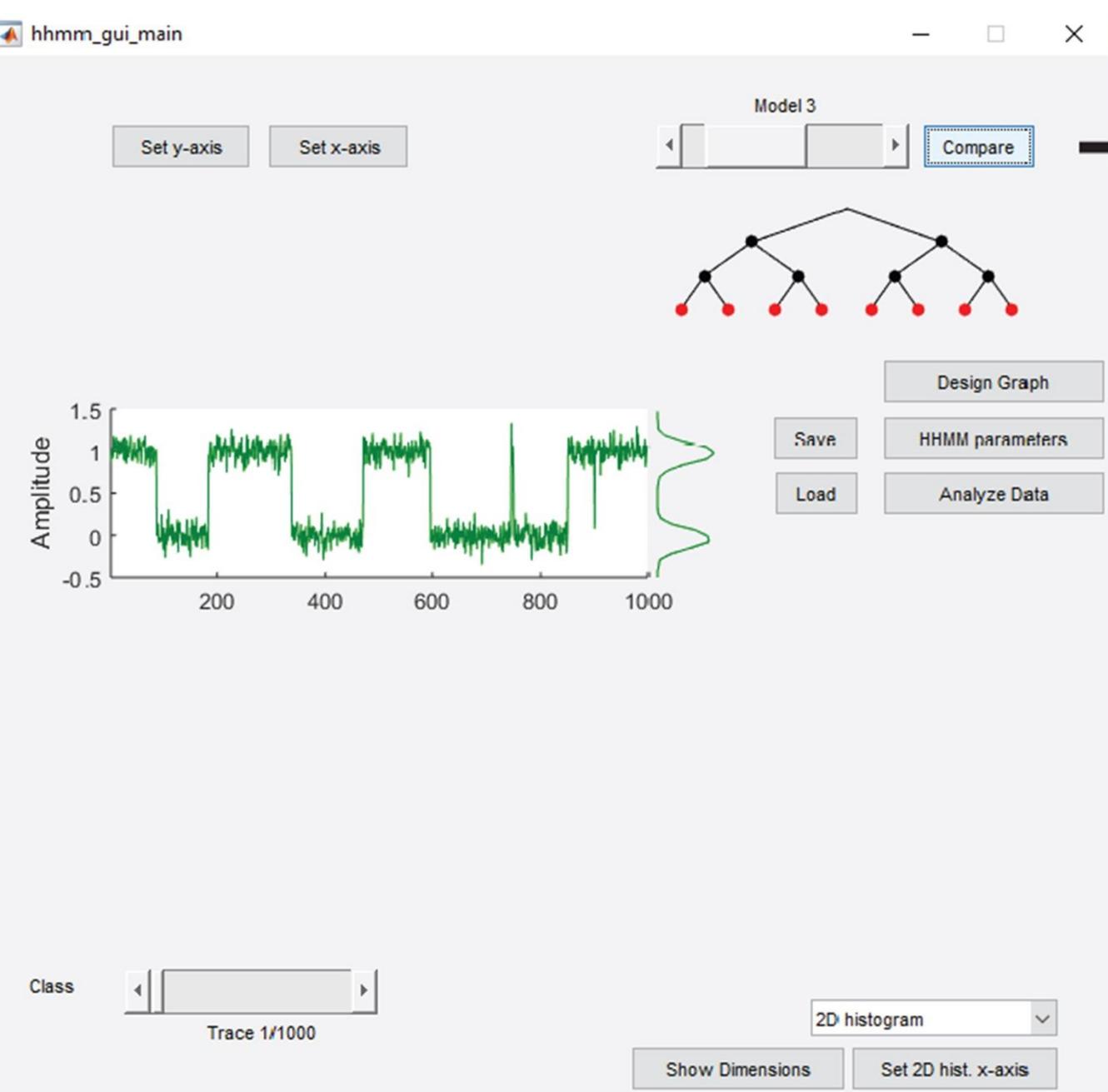
- (1) Maximum number of iterations
- (2) Number of restarts (kinetic parameters randomly drawn)
- (3) Whether each trajectory has the same emission distribution (type "y" or "n")
- (4) Automatic or manual entry of normal distribution means (if "n," entered next; here, [0 1] would do)
- (5) Analysis of amplitudes or fractional amplitudes (if "n," amplitude channel entered next; here, "1" would do)



Analyze data

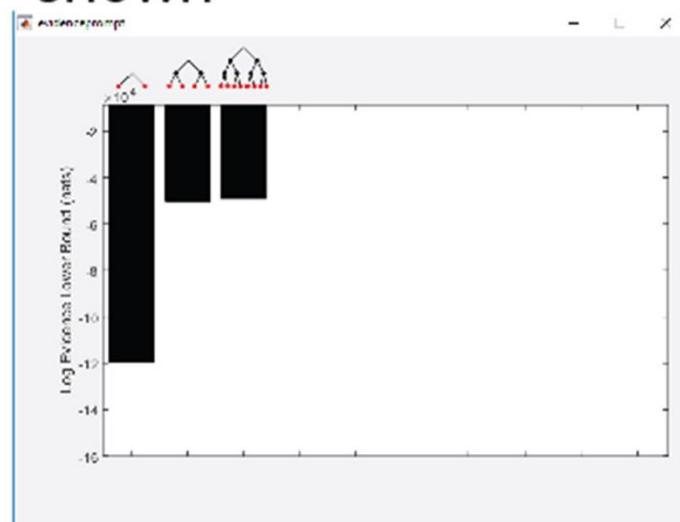
This can be very time consuming. Do not press other buttons while this occurs. A prompt in the command window will alert on completion.

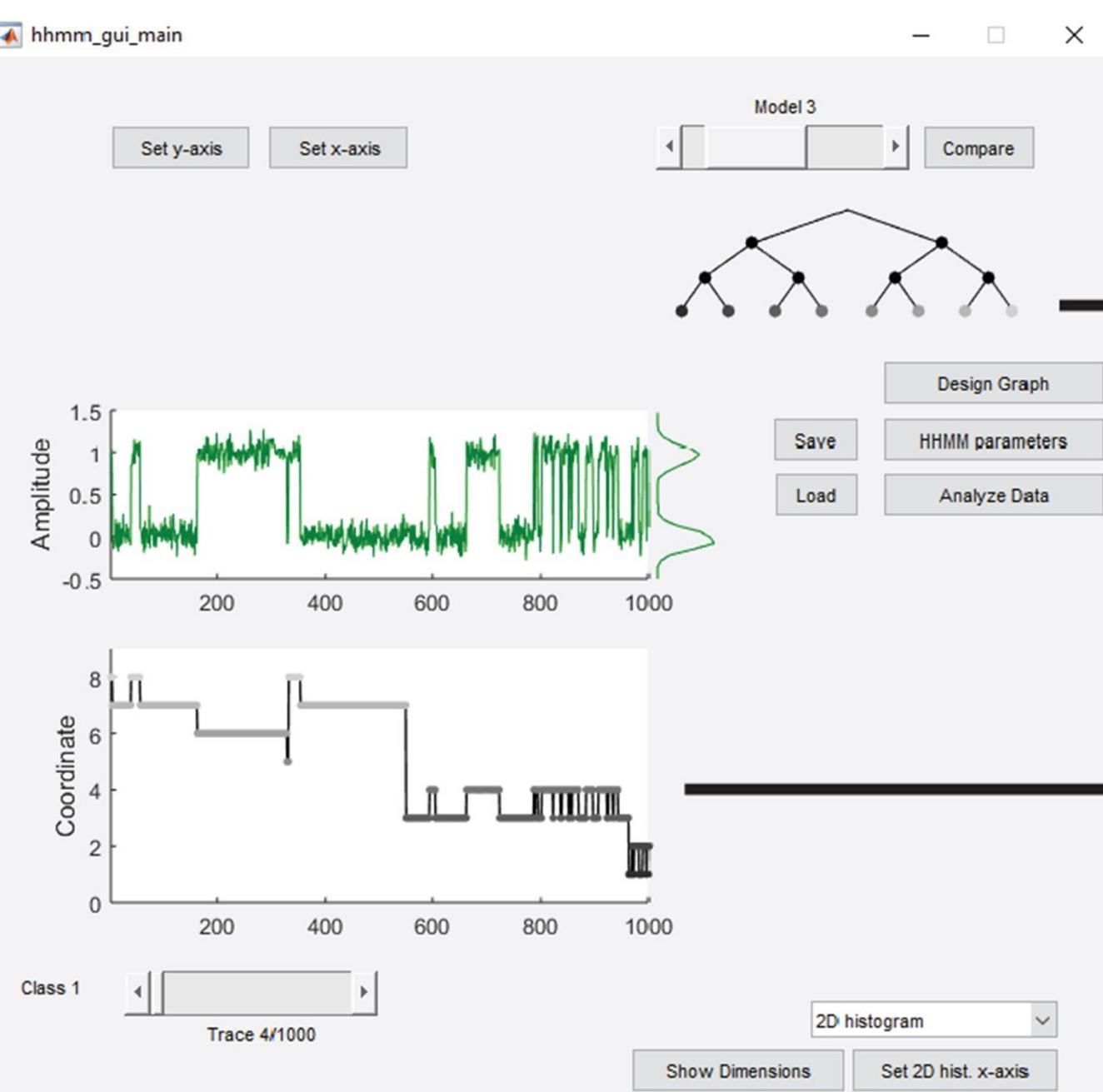
Shown model takes ~ 1 hr on 10^6 datapoints.



Can store up to 10 models in the gui session for comparison. Models are not stored until after analysis completes.

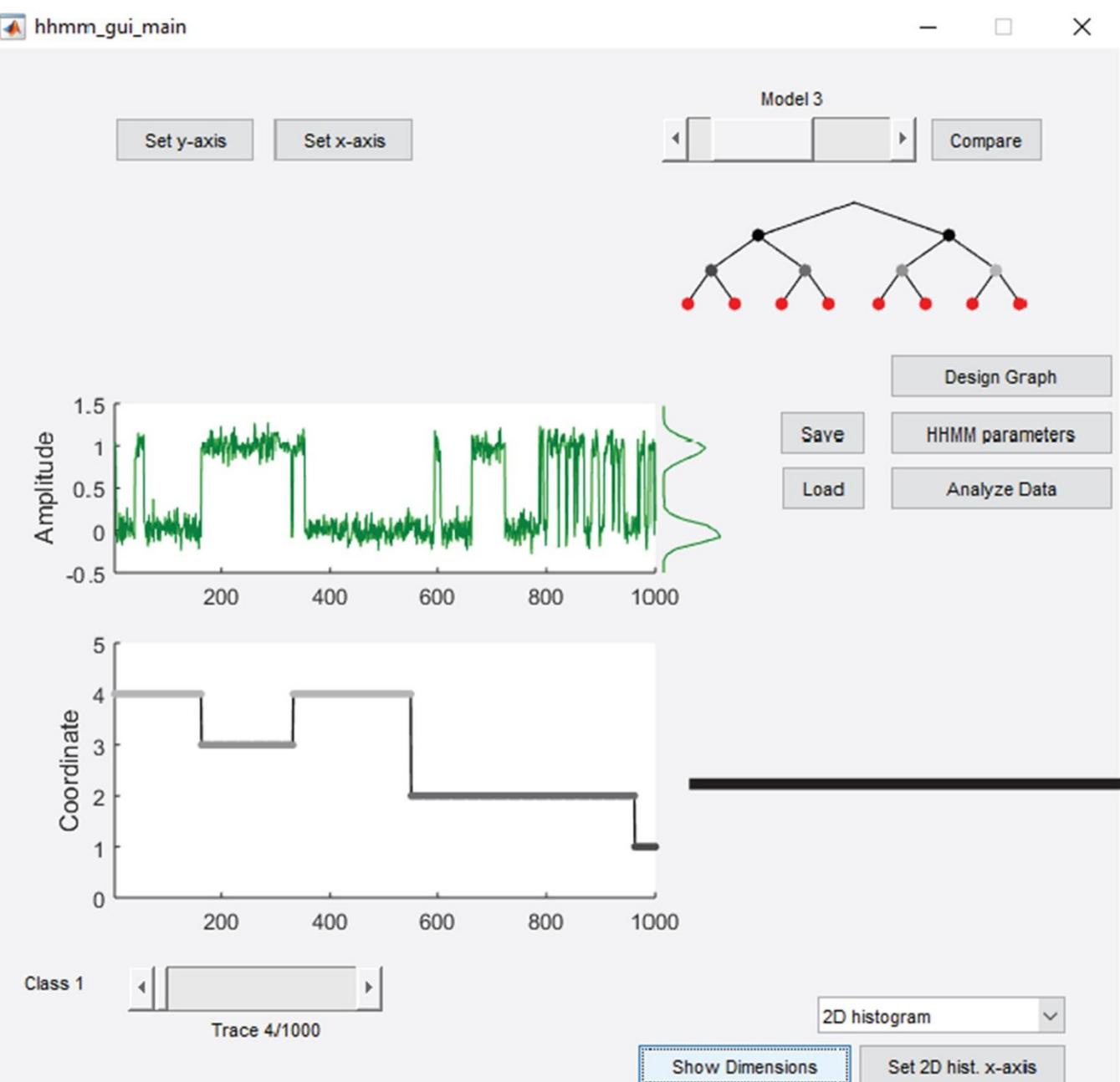
On pressing "Compare," evidence lower bounds of the stored models are shown



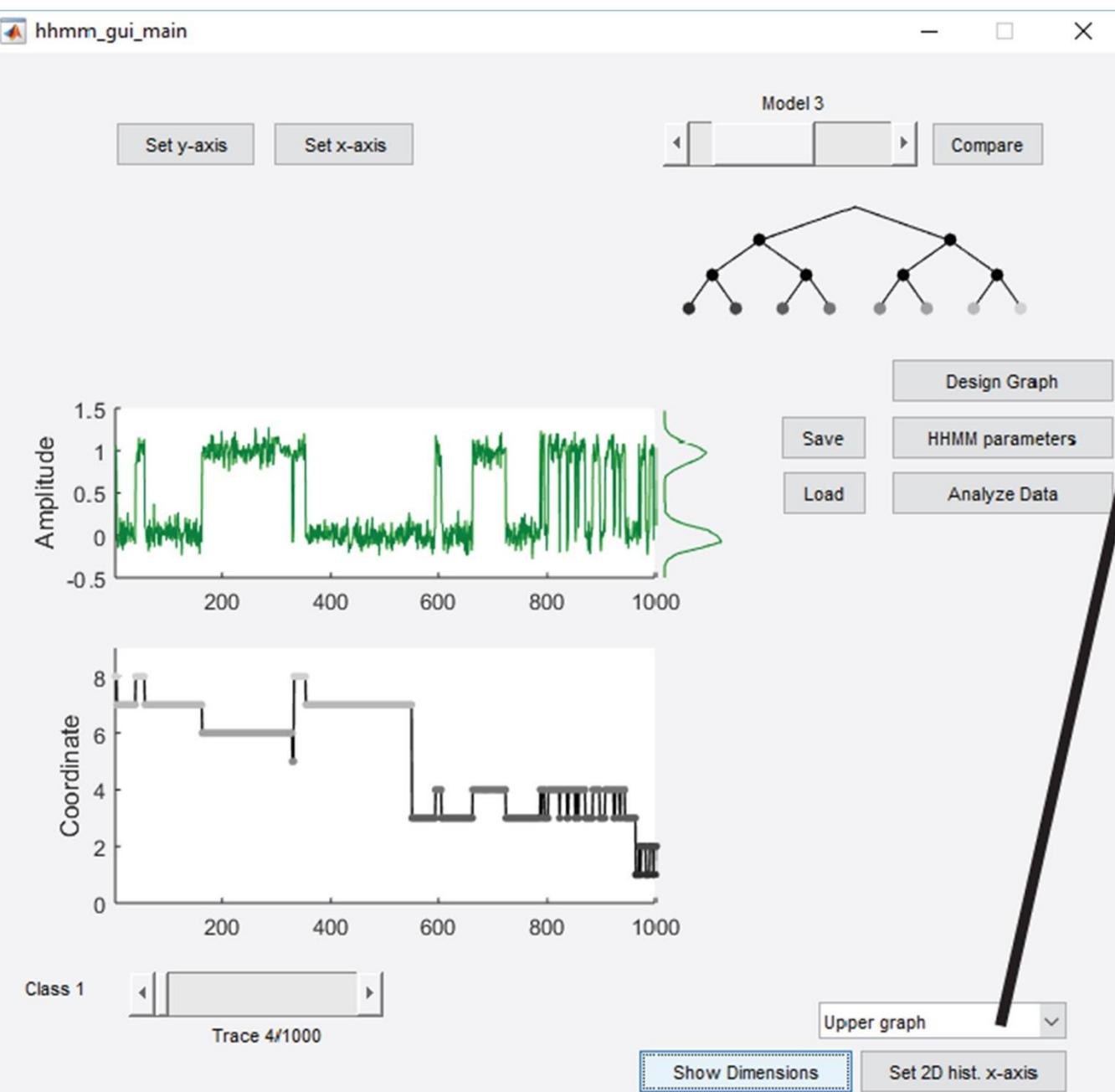


If a non-direct representation is chosen, the level is indicated here by a gradient of grayscale, here shown bottom level

Bottom level ($d=1$) shown. Values are both numbered (1-8) and color coded to correspond to the model topology diagram



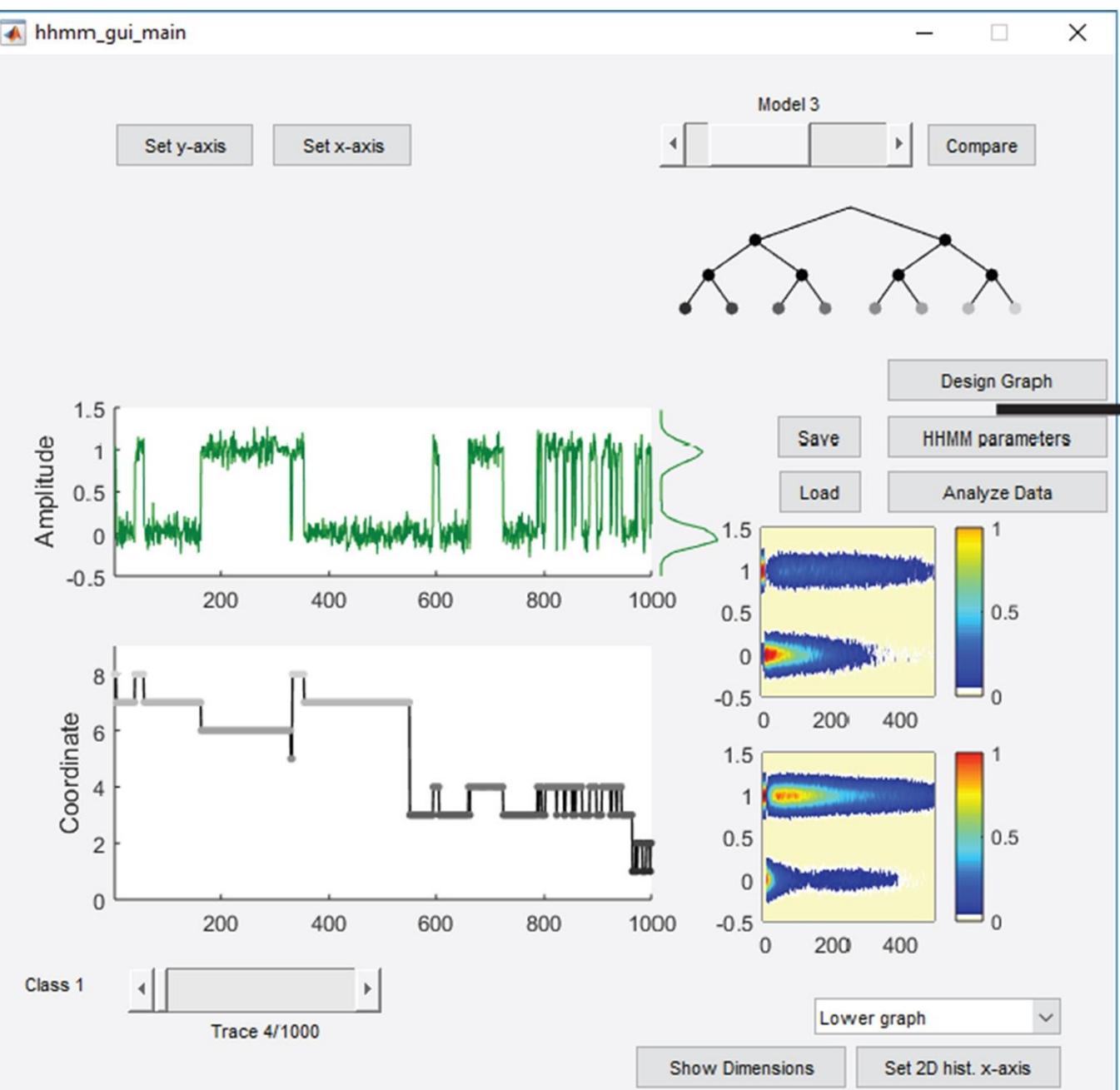
Intermediate level ($d=2$) shown. Values are both numbered (1-4) and color coded to correspond to the model topology diagram



For 2D histogram,
change to “Upper graph”
or to “Lower graph”



Enter the initiating and
then the terminating
state index. The index
always refers to the index
at the $d=1$ level.



2 graphs can be shown
(and need not be from
the same stored model.)

Here, the upper graph
initiates in "7" and termi-
nates in "8" while the
lower graph initiations in
"5" and terminates in "6."