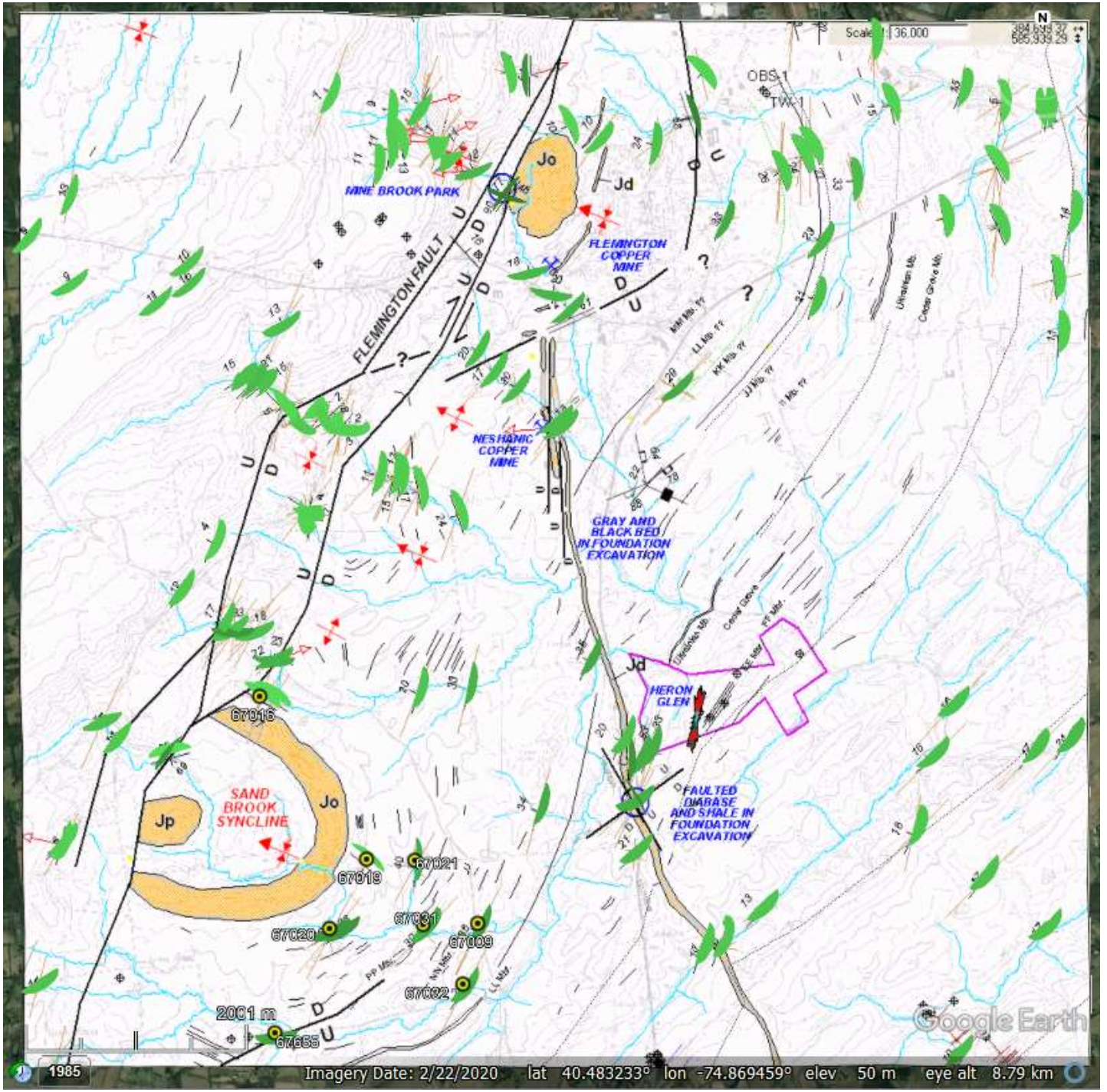
Sand Brook Syncline Exercise

Structural data for this exercise are from eight field stations in the syncline, highlighted on the map with field stations and labels. The structural data from these stations are summarized on the next page.

[Flemington2012a.KMZ]



ID	STATION		TYPE	STRIKE	DIP	DIR	DIP	DIPAZM
1	67009	JTRP	B	030	36	N	36	300
2	67016	JTRP	B	120	17	S	17	210
3	67019	JTRP	B	049	27	N	27	319
4	67020	JTRP	B	065	35	N	35	335
5	67021	JTRP	B	001	40	W	40	271
6	67031	JTRP	B	039	30	N	30	309
7	67032	JTRP	B	037	27	N	27	307
8	67655	TRL	B	085	27	N	27	355
ID	STATION	FORMATION	TYPE	STRIKE	DIP	DIR	DIP	DIPAZM
1	67009	JTRP	F	28	50	S	50	118
2	67009	JTRP	F	85	85	N	85	355
3	67016	JTRP	F	35	66	N	66	305
4	67016	JTRP	F	110	70	N	70	20
5	67016	JTRP	F	18	80	S	80	108
6	67019	JTRP	F	51	59	N	59	321
7	67020	JTRP	F	166	76	N	76	76
8	67020	JTRP	F	28	26	S	26	118
9	67020	JTRP	F	40	42	S	42	130
10	67020	JTRP	F	62	72	S	72	152
11	67021	JTRP	F	30	35	S	35	120
12	67021	JTRP	F	4	15	E	15	94
13	67021	JTRP	F	95	76	N	76	5
14	67021	JTRP	F	137	77	S	77	227
15	67031	JTRP	F	92	87	S	87	182
16	67031	JTRP	F	44	67	S	67	134
17	67031	JTRP	F	44	44	S	44	134
18	67031	JTRP	F	130	88	E	88	40
19	67032	JTRP	F	29	69	S	69	119
20	67032	JTRP	F	29	69	S	69	119
21	67055	TRL	F	72	83	N	83	342
22	67055	TRL	F	86	86	N	86	356
23	67055	TRL	F	5	87	E	87	95
24	67055	TRL	F	9	77	W	77	279

There are 8 bedding readings and 24 fracture readings in this tabular data set.

Copy and past the DIP and DIPAZM data into Notepad if you using windows or a text editor using a Mac. Save the files for input into a separate text file to open in the stereonet software .

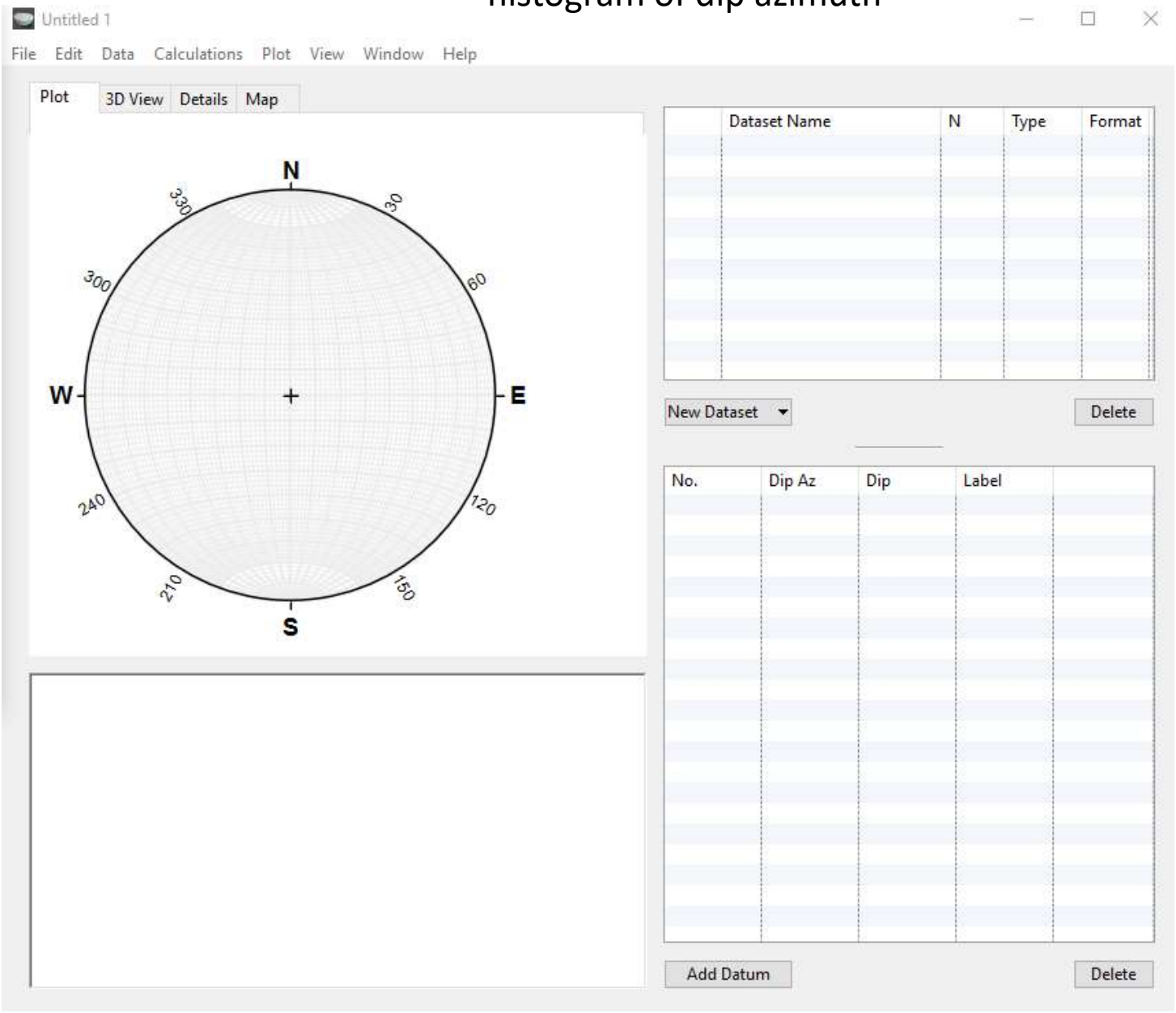
The goal is to generate graphic images of the bedding and fracture statistics and fold axes using circular histograms and equal-area stereonet projections.

Variations in plot style include cyclographic and circular-histogram plots of the bedding and fractures as demonstrated on the following pages.

Sand Brook Syncline Beds

Showing cyclographic plot and circular histogram of dip azimuth

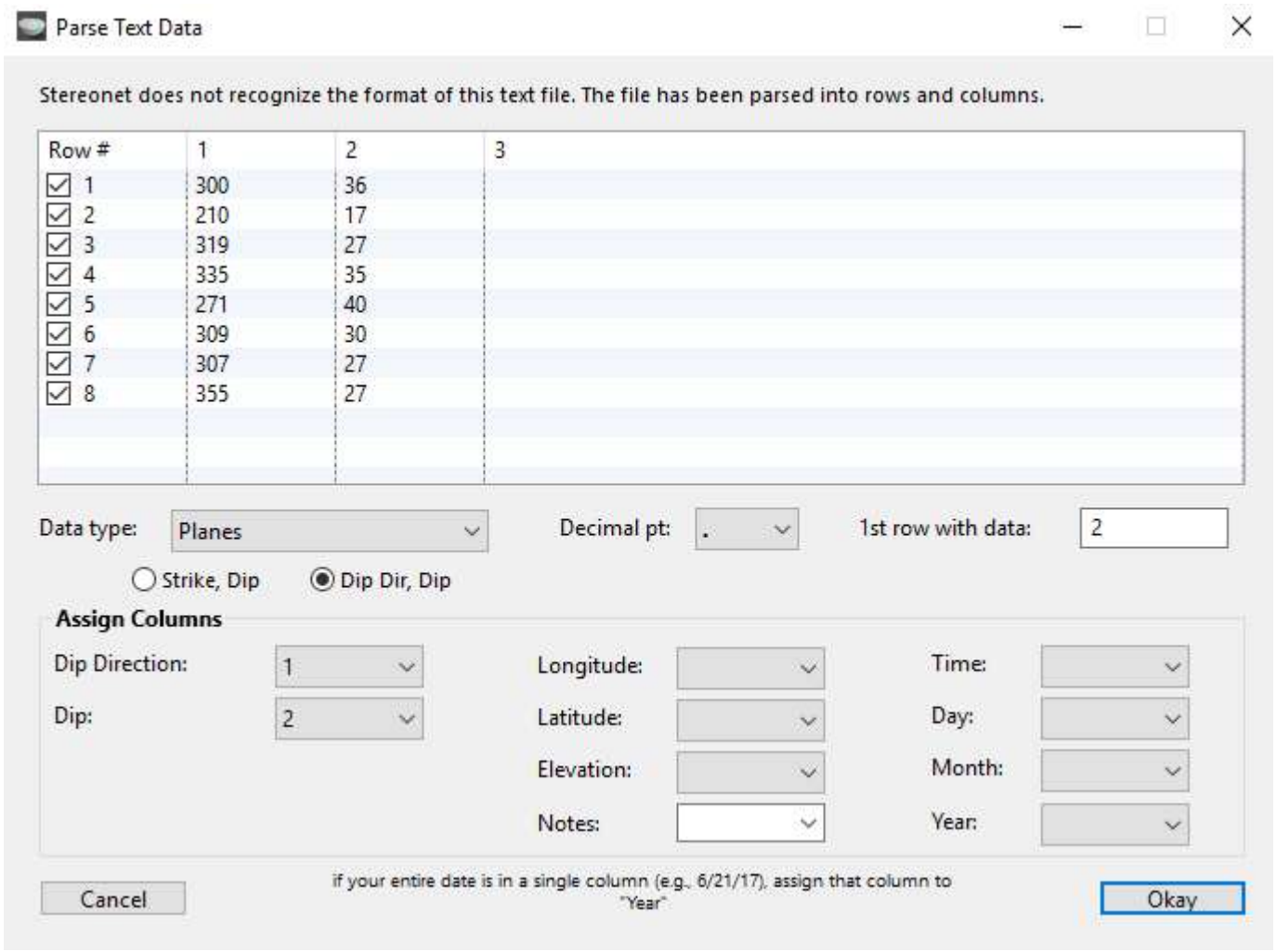
1) Start with a blank plot.
2) <File><Import Text File>



Sand Brook Syncline Beds

Showing cyclographic plot and circular histogram of dip azimuth

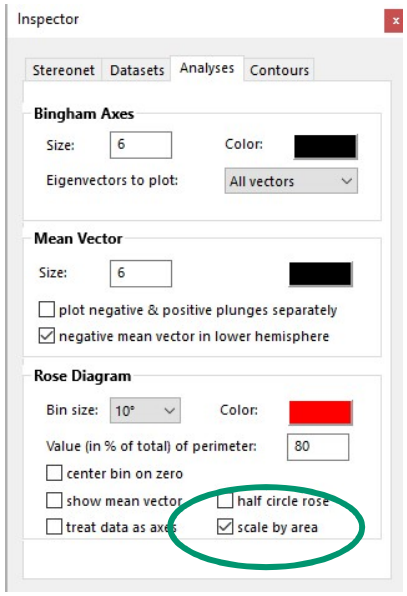
1) Start with a blank plot.
2) <File><Import Text File>
3) Parse Text Data for <Planes> and <Assign Columns> for Dip Dir (1) and Dip (2). And Press <Okay>.

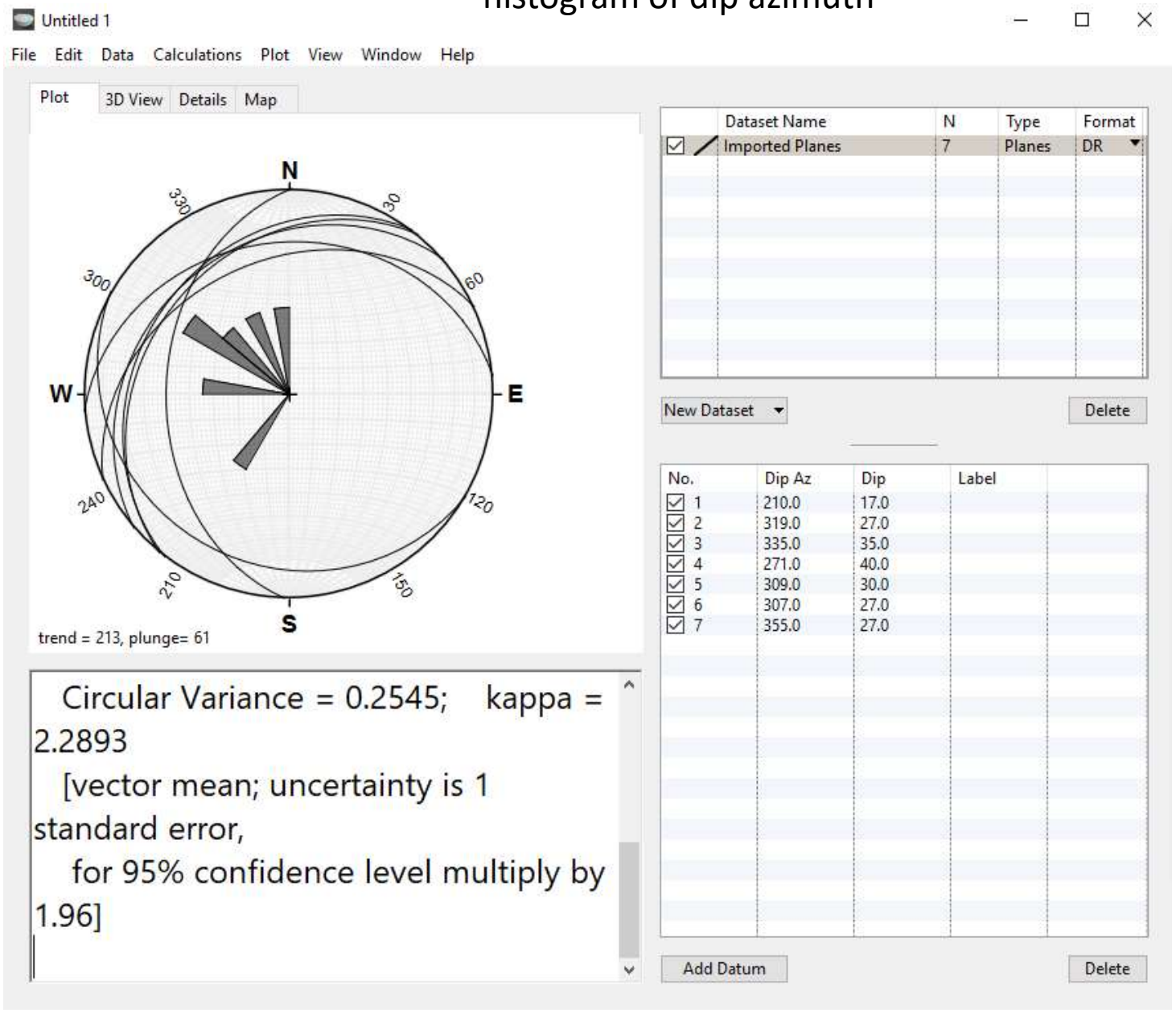


Sand Brook Syncline Beds

Showing cyclographic plot and circular histogram of dip azimuth

1) Start with a blank plot.
2) <File><Import Text File>
3) Parse Text Data for <Planes> and <Assign Columns> for Dip Dir (1) and Dip (2). And Press <Okay>.
4) <Plot> <Rose Diagram> <imported Planes>
5) Enlarge the historgram bins by checking <scale by area> in the <View> <Inspector>

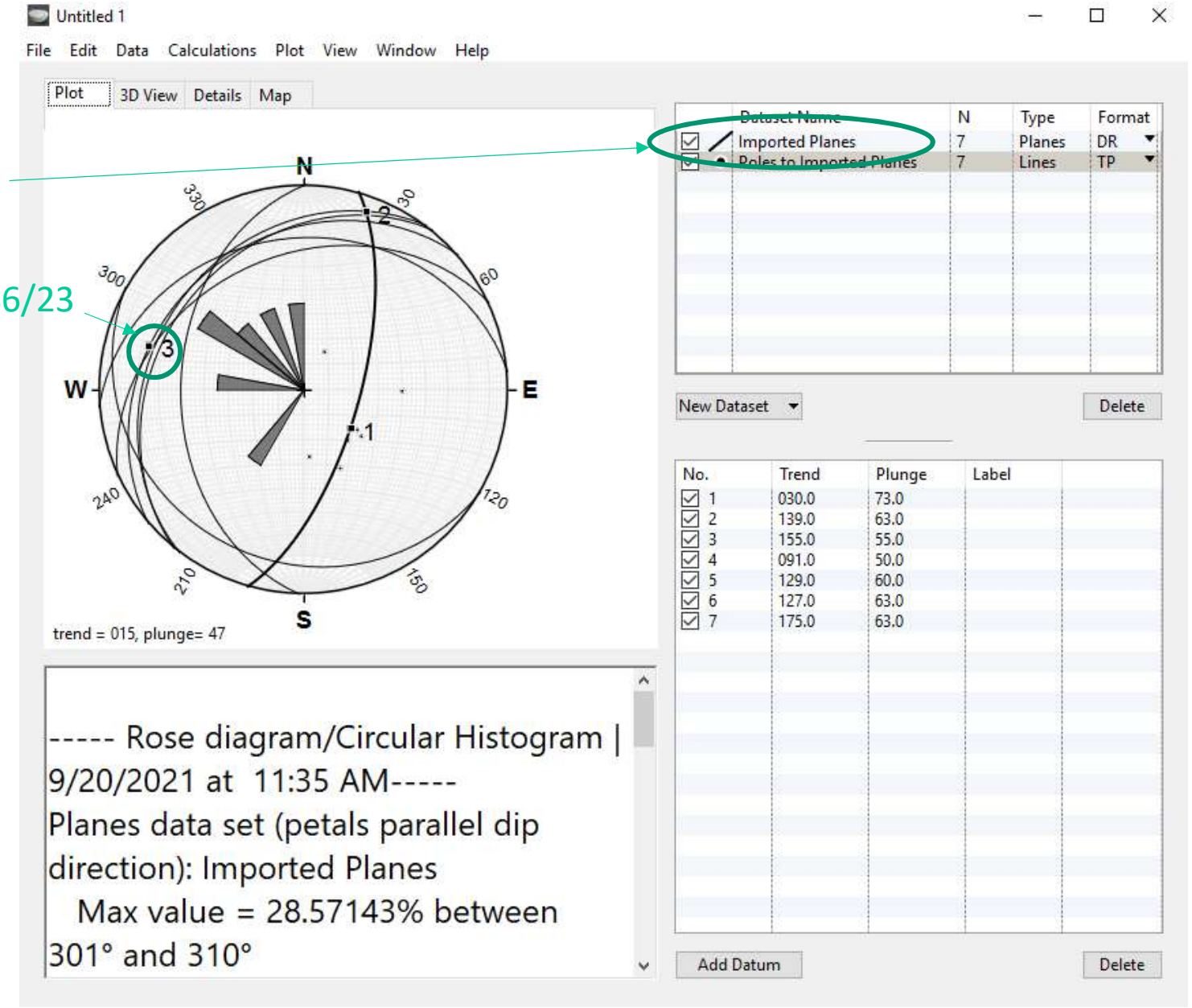




Sand Brook Syncline Beds

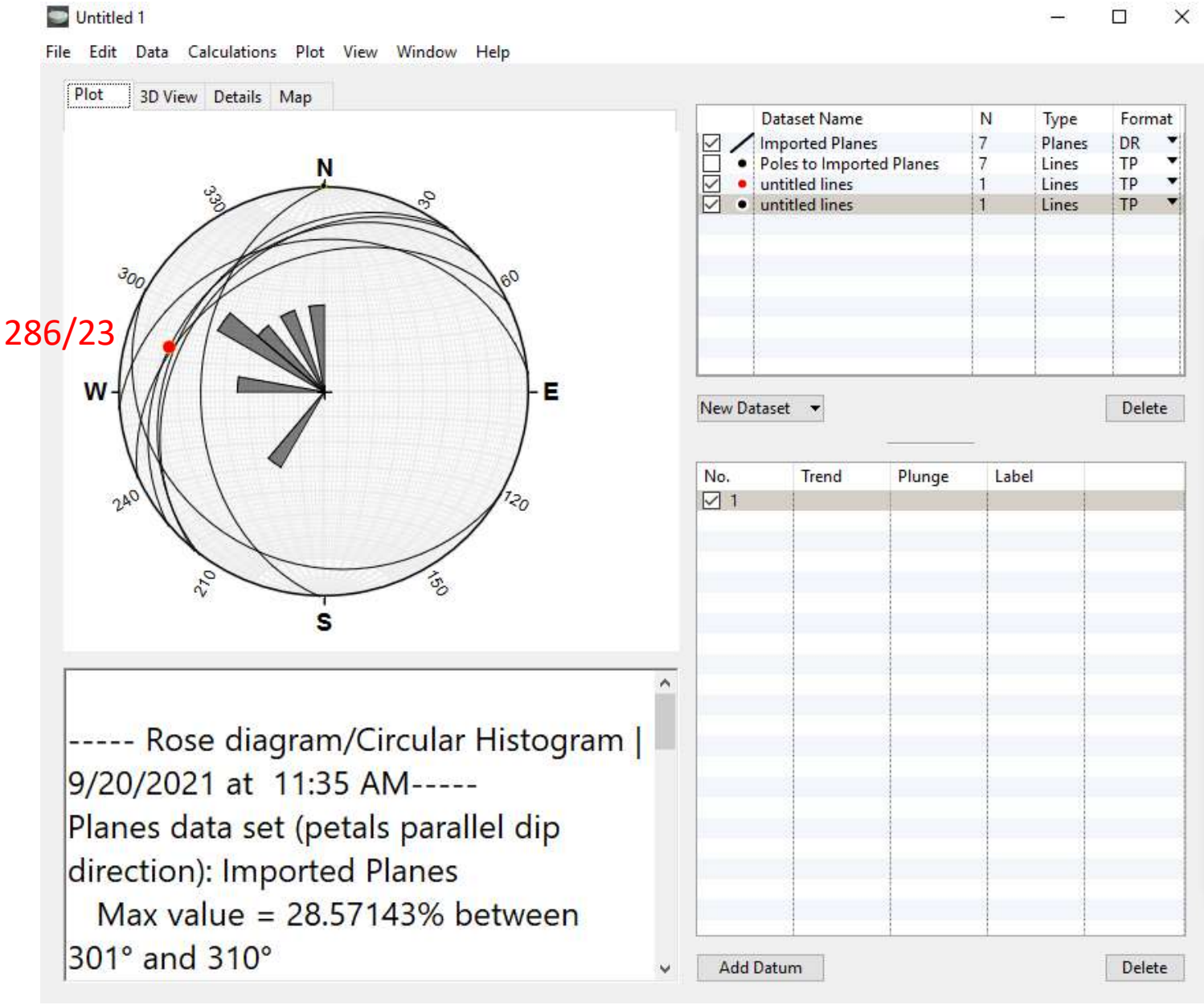
Showing a fold-axis solution .

1) To derive a fold-axis solution, first <Calculations> <Poles> making sure that the Imported Planes Dataset is selected and highlighted.
2) Next, find a solution to the fold axis with <Calculations> <Axial Plane Finder...>. Make sure that the Poles to Imported Planes Dataset is active and highlighted.
3) Turn off (uncheck) the Poles Dataset
4) Add the Fold axis by itself to unclutter the plot: <Data> <New Dataset> <Lines> <New Datum Entry> and type in the value 286/23.
5) Use the <View> <Inspector> to change the size and color of the point.



Sand Brook Syncline Beds

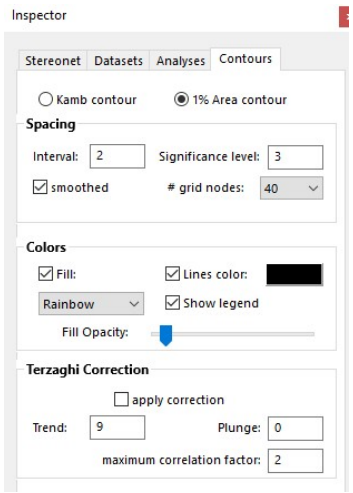
Showing a ‘cleaned-up’ fold-axis solution

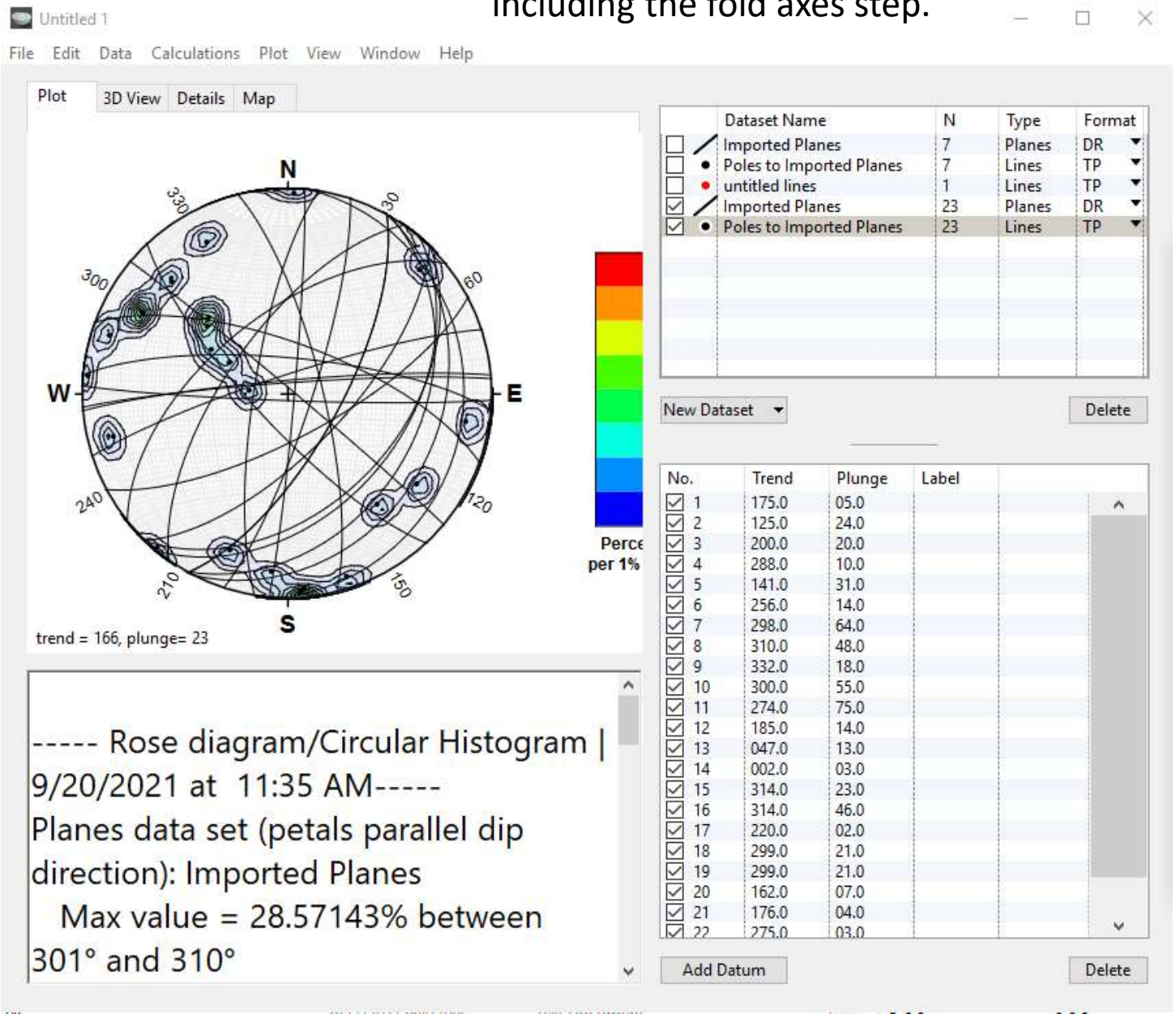


Sand Brook Syncline Fractures

Repeat the process for fractures, but not including the fold axes step.

1) Repeat first to generate the cyclographic plot and the poles to the planes.
2) Derive maximum contours and manually pick out the three most common planes having the highest-percentage contours: <Plot> <Contours> <Poles to imported planes>
3) Make sure that within the <View> <Inspector> <Contours> Tab that the <1% Area contours> radio button is chosen.

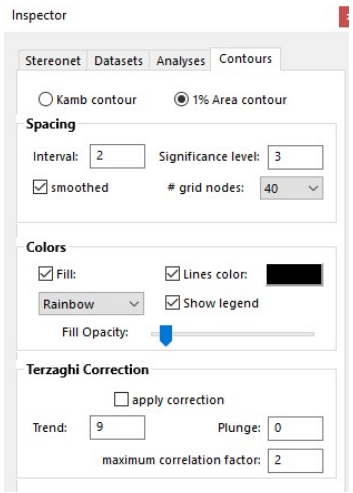


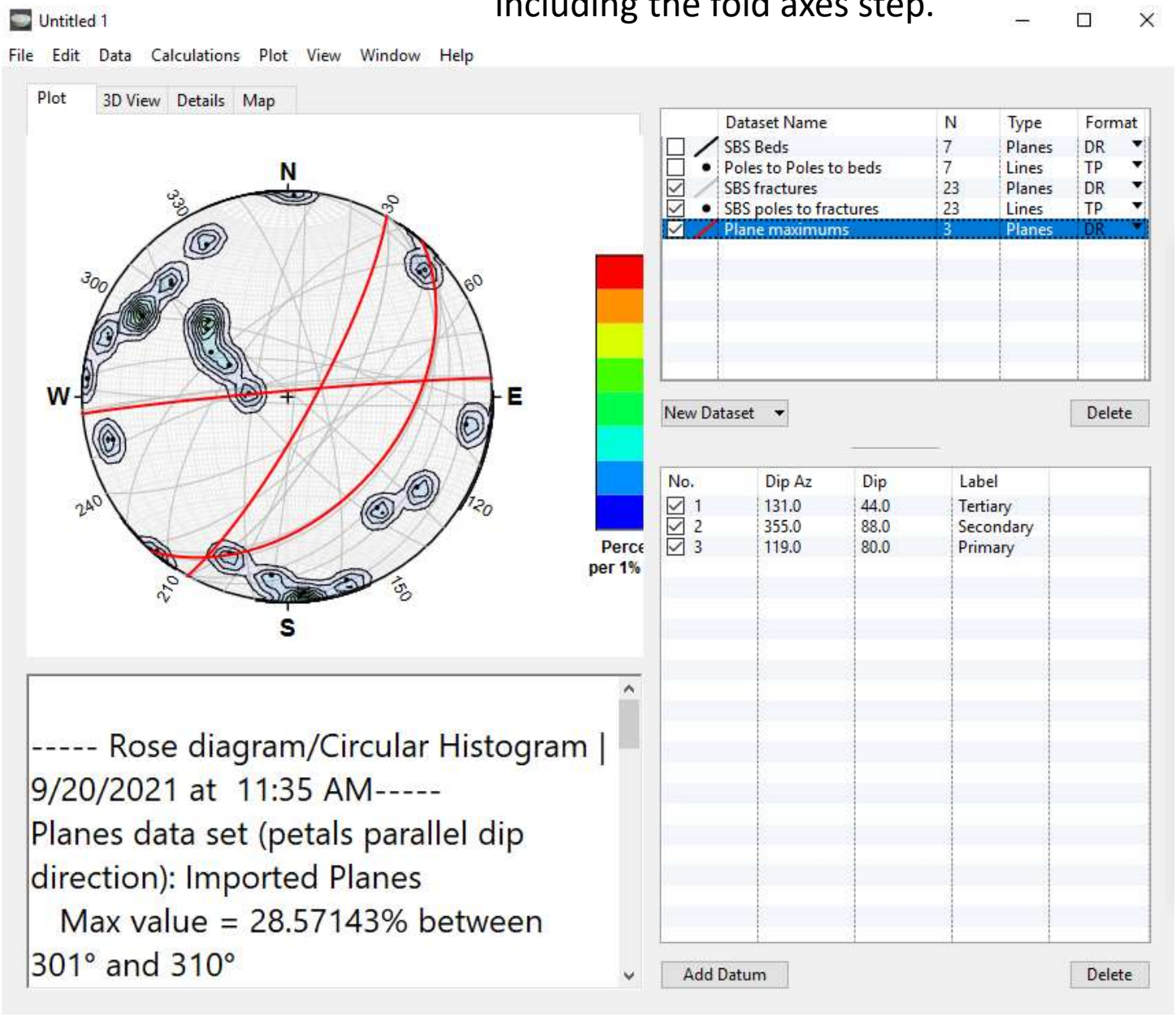


Sand Brook Syncline Fractures

Repeat the process for fractures, but not including the fold axes step.

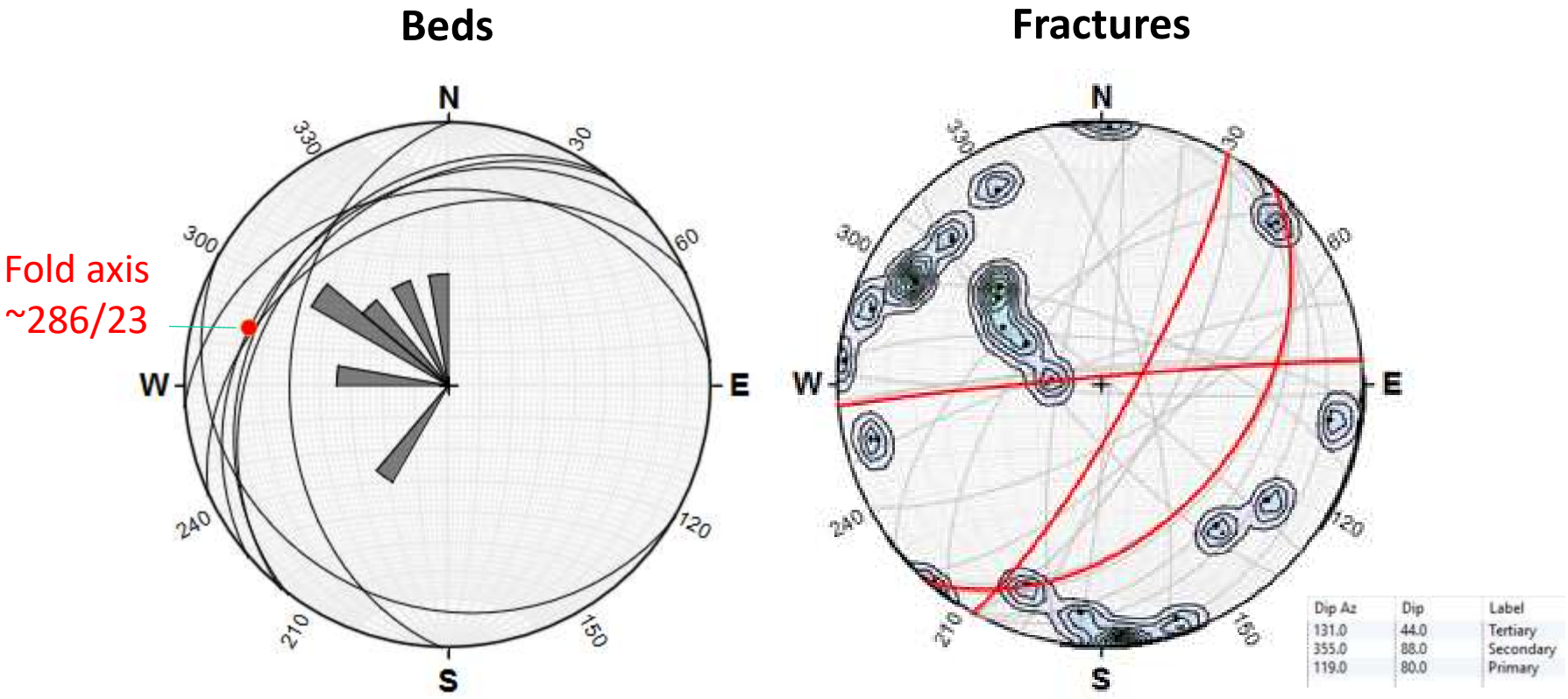
1) Use the <Inspector> to change the cyclographic plot to light gray and then extract three of the most common, representative planes determined using the contours.
2) Remember that the center of each contour cluster is the pole to the plane, and therefore you must take the supplement to the extracted plunge (xxx-180 < 360) and the compliment of the dip (xx – 90 > 90)





- This is a representative final graphic with annotation added using MSPP

Some Sand Brook Syncline Beds and Fractures



Lower-hemisphere, equal area plots