

HALO 3.2 ANNOTATION MEASUREMENT UPDATE NOTICE

This document serves as a notice that the method of calculating annotation measurements has changed in HALO 3.2.

In HALO 3.1 and prior versions of HALO, the implementation used integer instead of floating point division. Exporting the annotation and manually calculating the area from the vertices showed minor inaccuracies.

In HALO 3.2 the area calculations are more accurate. Once the update is in place, the newer calculation will be used for all annotations, not just newly drawn ones. The .annotations files exported from HALO do not contain area or perimeter data. These calculations are done in HALO. To save annotation measurements using the previous method, follow the steps below. *This must be done prior to updating.*

- From the studies tab, select all images you wish to export annotations for by holding down the CTRL key and left clicking.
- Right-click the selected image(s) and choose **Export** from the menu.
- Choose **Annotations Measurements**.
- Select which layers' measurements to export by selecting all results, results by layer name, or results by index.
- Then click **Export**. Name the file and select a destination. A csv file will be created with columns indicating the image location, image name, resolution, layer name, region index, and perimeter and area calculations.

The following table shows a comparison of the same .annotations file on the same image in HALO 3.1 vs. HALO 3.2 for a sample of 35 regions. The perimeter calculations are unchanged. The Area calculations differ on average by .06%.

Region ID	Perimeter (μm) HALO 3.2	Perimeter (μm) HALO 3.1	Area (μm^2) HALO 3.2	Area (μm^2) HALO 3.1	Percent change (%)
1	19088.97	19088.97	18295579	18295579	0
2	213.224	213.224	1805.2	1804.33	0.048194
3	344.752	344.752	4005.96	4005.84	0.002996
4	184.659	184.659	1662.07	1662.07	0
5	8.463	8.463	4.48	4.48	0
6	184.735	184.735	1582.86	1582.99	-0.00821
7	276.25	276.25	3913.82	3914.07	-0.00639
8	217.373	217.373	2110.73	2110.98	-0.01184
9	743.298	743.298	22834.3	22834.05	0.001095
10	16.2	16.2	17.41	17.41	0
11	322.72	322.72	3703.42	3703.42	0
12	187.955	187.955	1668.04	1668.29	-0.01499
13	186.852	186.852	1483.88	1484	-0.00809
14	431.797	431.797	3562.65	3562.4	0.007017
15	184.373	184.373	1475.67	1475.3	0.025073

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Region ID	Perimeter (μm) HALO 3.2	Perimeter (μm) HALO 3.1	Area (μm^2) HALO 3.2	Area (μm^2) HALO 3.1	Percent change (%)
16	1259.728	1259.728	38206.67	38207.54	-0.00228
17	179.361	179.361	1336.77	1337.02	-0.0187
18	9.219	9.219	5.22	5.22	0
19	414.8	414.8	3717.1	3717.34	-0.00646
20	2890.142	2890.142	123129.1	123129.5	-0.00032
21	19701.82	19701.82	2410530	2410531	-4.1E-05
22	4240.603	4240.603	290088.4	290089.4	-0.00034
23	541.905	541.905	14040.21	14040.45	-0.00171
24	15.203	15.203	14.18	14.18	0
25	267.385	267.385	2861.19	2861.56	-0.01293
26	9.924	9.924	6.09	6.22	-2.13465
27	336.077	336.077	5108.95	5109.08	-0.00254
28	807.544	807.544	11698.31	11698.68	-0.00316
29	699.405	699.405	14459.39	14459.52	-0.0009
30	195.283	195.283	1360.03	1359.9	0.009559
31	270.331	270.331	2734.23	2734.72	-0.01792
32	612.535	612.535	6447.84	6448.59	-0.01163
33	315.233	315.233	2692.32	2692.94	-0.02303
34	406.669	406.669	4358.12	4358	0.002753
35	8.463	8.463	4.48	4.48	0

For additional information or questions contact support@indicalab.com.

With every HALO release, new features are added and modules updated. These improvements may result in slight discrepancies when comparing analysis results run with different versions of HALO.