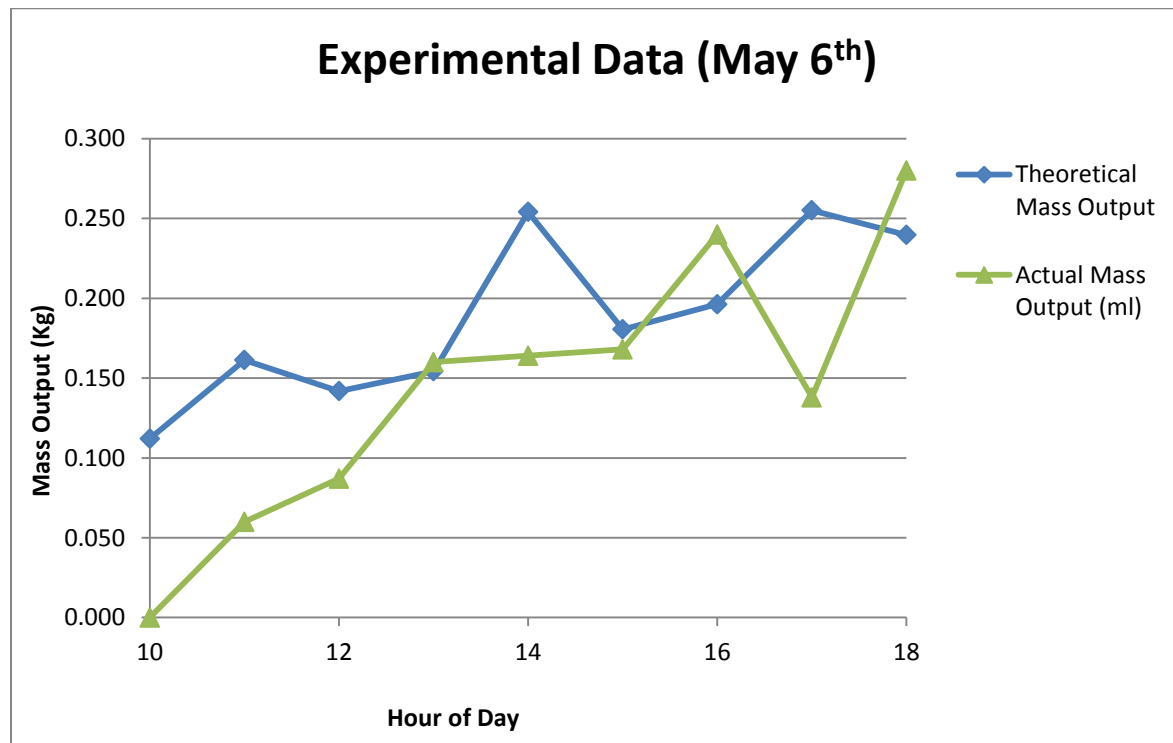


Experimental Results

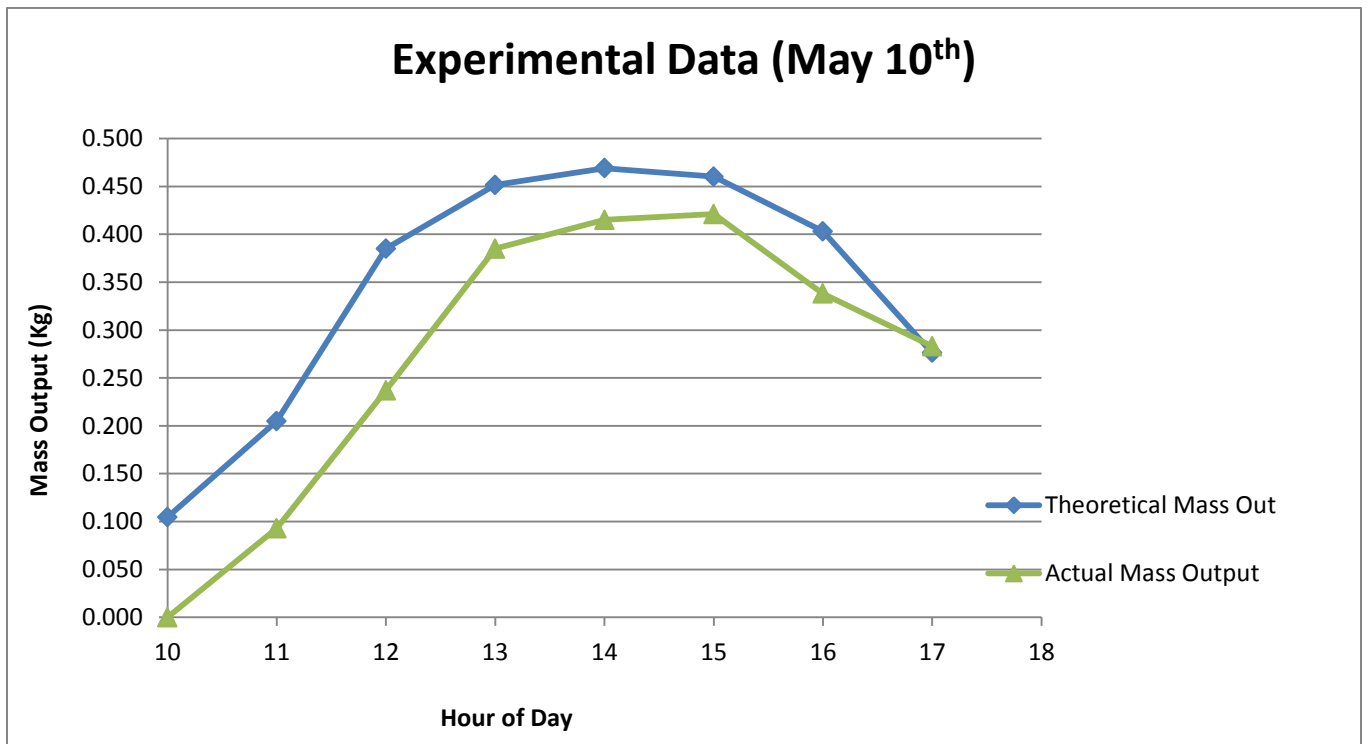
May 6th, 2011

Hr	Average Solar	Water Temp (K)	Glass Temp (K)	Ambient Temp (K)	Wind Speed (m/s)	Theoretical Mass Output	Actual Mass Output (ml)	Percent Difference
10	381.0	298.4	310.7	285.8	5.68	0.112	0.000	100%
11	546.6	303.0	310.9	286.9	6.71	0.161	0.060	63%
12	390.4	300.7	311.4	286.9	7.20	0.142	0.087	39%
13	638.4	306.1	313.0	289.1	4.65	0.154	0.160	-4%
14	592.4	310.1	328.9	289.1	4.65	0.254	0.164	35%
15	691.4	308.9	321.3	290.2	3.62	0.181	0.168	7%
16	503.6	309.2	321.8	290.2	4.11	0.196	0.240	-22%
17	718.8	313.6	322.9	291.3	4.65	0.255	0.138	46%
18	570.6	313.5	325.0	290.8	3.62	0.240	0.280	-17%
TOTAL						1.456	1.297	11%



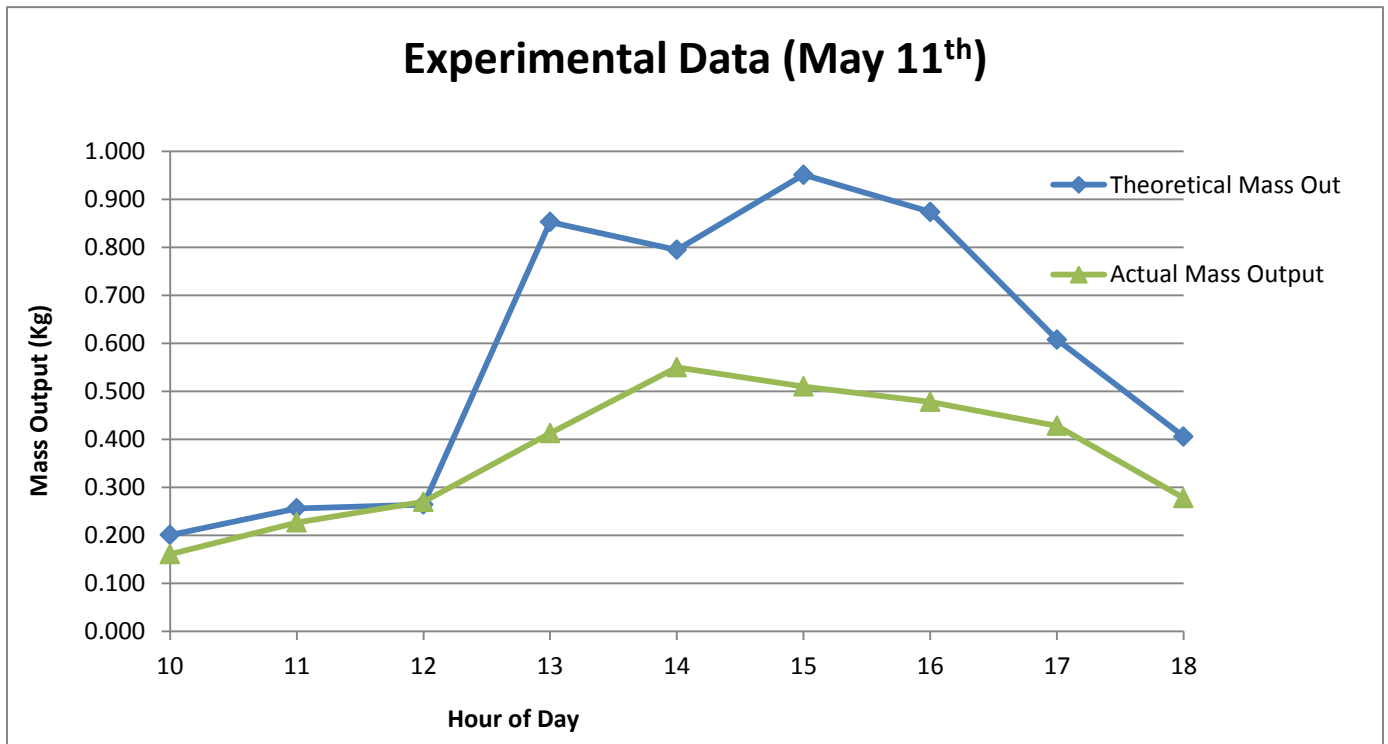
May 10th, 2011

Hr	Average Solar	Water Temp (K)	Glass Temp (K)	Ambient Temp (K)	Wind Speed (m/s)	Theoretical Mass Output	Actual Mass Output (ml)	Percent Difference
10	715.25	306.7	308.9	288.2	2.08	0.105	0.000	100%
11	812.27	316.6	318.0	288.8	2.08	0.205	0.093	55%
12	917.96	328.4	325.8	289.3	2.76	0.385	0.237	38%
13	931.51	335.9	329.8	289.3	2.08	0.451	0.385	15%
14	869.79	338.8	333.1	288.8	1.62	0.469	0.415	12%
15	689.05	336.5	327.9	288.2	2.08	0.460	0.421	9%
16	603.71	331.7	323.6	287.5	2.30	0.403	0.338	16%
17	317.05	325.8	314.9	287.5	1.84	0.276	0.283	-2%
TOTAL						2.754	2.172	21%



May 11th, 2011

Hr	Average Solar	Water Temp (K)	Glass Temp (K)	Ambient Temp (K)	Wind Speed (m/s)	Theoretical Mass Output	Actual Mass Output (ml)	Percent Difference
9	448.09	313.3	306.2	287.0	2.59	0.177	0.152	14%
10	619.79	313.3	308.7	289.3	4.11	0.201	0.161	20%
11	714.57	315.8	318.8	290.9	4.11	0.256	0.227	11%
12	823.26	320.3	323.9	292.5	2.59	0.264	0.270	-2%
13	843.49	343.5	326.5	292.0	6.17	0.853	0.413	52%
14	924.18	342.3	328.9	293.2	5.68	0.795	0.550	31%
15	904.31	343.2	329.5	292.0	7.20	0.951	0.510	46%
16	810.70	341.4	327.9	291.2	6.71	0.874	0.478	45%
17	696.08	337.2	324.1	292.0	4.65	0.608	0.428	30%
18	496.21	330.0	319.5	292.5	3.62	0.406	0.278	31%
19	275.73	321.5	312.8	291.4	4.65	0.307	0.184	40%
TOTAL						5.692	3.651	36%



Likely Sources of Error

- The theoretical model assumes the system is already primed, meaning that it was operating prior to the first data point.
 - This is very obvious in the mass output graph for May 10th, where the first 3 hours are spent getting the system completely primed. If this time frame is ignored, the system output is within 15% of the theoretical predictions
- Many of the assumed values may be within 10-15% of the actual values, causing some discrepancy between the predicted and recorded values.
- The theoretical model assumes the system is completely sealed and there are no losses on through the sides of the still
 - The sealing of the glass on top of the system has been somewhat problematic, and the acrylic sides do allow for heat loss. This would cause the model to overestimate the output because the losses are neglected.
- The theoretical model assumes **all** evaporate water is collected
 - Through observation, the team has determined that the water droplets become too large and drop of the glass as they travel down. This does not always happen, and happens much less in the glass used on May 10th and May 11th. This could also be why the data does not match the theoretical prediction for May 6th.