Salt Front Data Set Activity

On the chart provided on page #3 of this activity the Salt Front is noted by Hudson River Mile (RM) for a one-year period (Oct. 2004-Sept. 2005). In the **first column** the number listed is the **date for each month**. In each of the **next columns** the numbers listed represent the **River Mile of the Salt Front**. For example, the number in the first box under 4-Oct (2004-Oct.) is #32. This number represents RM 32, which is the location of the salt front on the 1st day of October in 2004.

Using this chart complete any of the following activities:

Compute Highs & Lows -
In the box at the base of each column:

1. Locate and record the highest RM location of the salt front for each month on the chart.
2. Locate and record the lowest RM location of the salt front for each month on the chart.
3. Calculate and record the range of the salt front for each month on the chart.
   a. Alternate activity: Using graph paper set up a hand plot of the monthly high values (red pen) and monthly low values (blue pen) and connect the points. [*Note the X axis will be the month and the Y axis will be River Miles. Given the range for your Y axis determine the most effective scale to use for data display.*] The high values will represent how far up the river the salt front has traveled each month. The low values will represent how far down the river the salt front has traveled each month.
   b. Look at the two plots graphed – are they similar in shape? If yes, why would you expect they would be similar. If no, what would account for the differences?
4. Examining your data and/or your chart, determine in which month there is the least range in the salt front data, and in which month is there the greatest range in the salt front data. To what do you attribute this difference in ranges? Where could you look to validate your hypothesis?

Modal Range

5. Now that you have looked at the range, let's determine the mode (most common answer **or in this case most common location for the salt front**) for each month. Since the data points can vary by as little as one RM we will look at mode as a 'modal range' rather than a single number. The modal ranges we will use are:

<1	_____		36-40	_____
1-5	_____		41-45	_____
6-10	_____		46-50	_____
11-15	_____		51-55	_____
16-20	_____		56-60	_____
21-25	_____		61-65	_____
26-30	_____		66-70	_____
31-35	_____		71-75	_____

Determine the modal range for each month. (Suggested method – use different color highlighters to mark different modal ranges on the chart OR use hatch mark tallies on a chart like the one provided above)

a. Once you determine the modal range for each month, does this give you useful information on the impacts on the river system and the salt front?

b. The two modal range answers computed on the attached sheet appear to be very similar. Looking at these modal ranges would you expect that the daily location of salt front had been very similar during the months of November and February? Now complete the modal computation for these two months. Does the salt front activity appear to have been the same for the two months?

c. Based on your answers to "b" what would you say are two benefits and two deficiencies in using modal range as a way of looking at salt front data?

LOCATION OF HUDSON RIVER SALT FRONT 10/1/04-9/30/05
PROVIDED IN RIVER MILES

MONTH DAY	4-Oct	4-Nov	4-Dec	5-Jan	5-Feb	5-Mar	5-Apr	5-May	5-Jun	5-Jul	5-Aug	5-Sep
1	32	58	44	39	58	62	28	34	62	44	62	70
2	31	60	32	44	55	55	25	34	61	43	62	70
3	31	57	31	44	59	51	22	34	61	43	63	69
4	33	59	31	45	55	54	15	34	61	47	64	69
5	34	55	31	47	59	56	12	35	61	54	66	69
6	39	59	39	54	61	53	8	37	61	58	66	68
7	39	62	51	47	62	54	5	39	61	59	67	69
8	46	63	46	52	61	53	2	40	60	61	68	68
9	47	63	45	51	60	47	-1	43	61	56	68	68
10	57	64	54	50	59	51	-2	43	61	53	68	68
11	60	64	50	44	50	57	-2	42	60	59	67	69
12	64	62	41	46	47	55	16	41	60	61	67	69
13	66	62	36	43	45	55	30	41	59	62	68	70
14	67	62	32	38	46	49	37	40	60	61	68	73
15	67	61	31	30	46	45	37	49	61	61	69	73
16	66	61	31	22	43	49	37	51	63	61	71	73
17	64	61	29	22	39	56	38	48	62	62	71	73
18	62	60	31	29	37	54	38	56	62	62	71	71
19	62	59	38	34	41	59	46	61	62	62	71	71
20	62	58	35	33	45	58	57	64	62	61	72	68
21	61	58	42	38	62	62	60	66	62	61	71	67
22	59	57	45	49	60	65	63	67	60	61	70	70
23	61	57	52	54	55	66	63	67	60	61	70	70
24	63	58	44	59	60	68	63	68	60	61	69	70
25	63	59	41	61	62	68	58	67	42	61	69	71
26	63	54	40	64	62	66	49	67	57	61	69	71
27	62	57	42	63	59	66	45	66	57	61	70	69
28	62	53	38	63	58	64	41	65	55	60	70	71
29	62	46	39	62		58	38	64	54	60	69	71
30	61	45	43	61		38	36	63	42	60	70	71
31	61		43	60		31		63		60	73	
HIGH		64		64								
LOW		45		22								
RANGE (H-L)		19		42								
MODAL RANGE		56-60		61-65								

SNAPSHOT DAY ACTIVITY
(data obtained from the USGS website)