

**GROUP 1**

Amount of pagbo per thrist, in sotes (sts)	
<b>Thrist</b>	<b>Pagbo</b>
hayn	57 sts
inu	74 sts
gatch	82 sts
rith	89 sts
loth	99 sts
nor	89 sts
voof	90 sts
vanni	66 sts
belet	84 sts
thui	79 sts

Discussion Part A

Please answer the following questions. Use your data to support your answers.

- 1) How much pagbo was there at vanni?
- 2) Which thrist has the most pagbo?
- 3) How many sotes does pagbo vary by between the highest and the lowest thrist?
- 4) Between belet and thui, does pagbo increase or decrease? By how much?

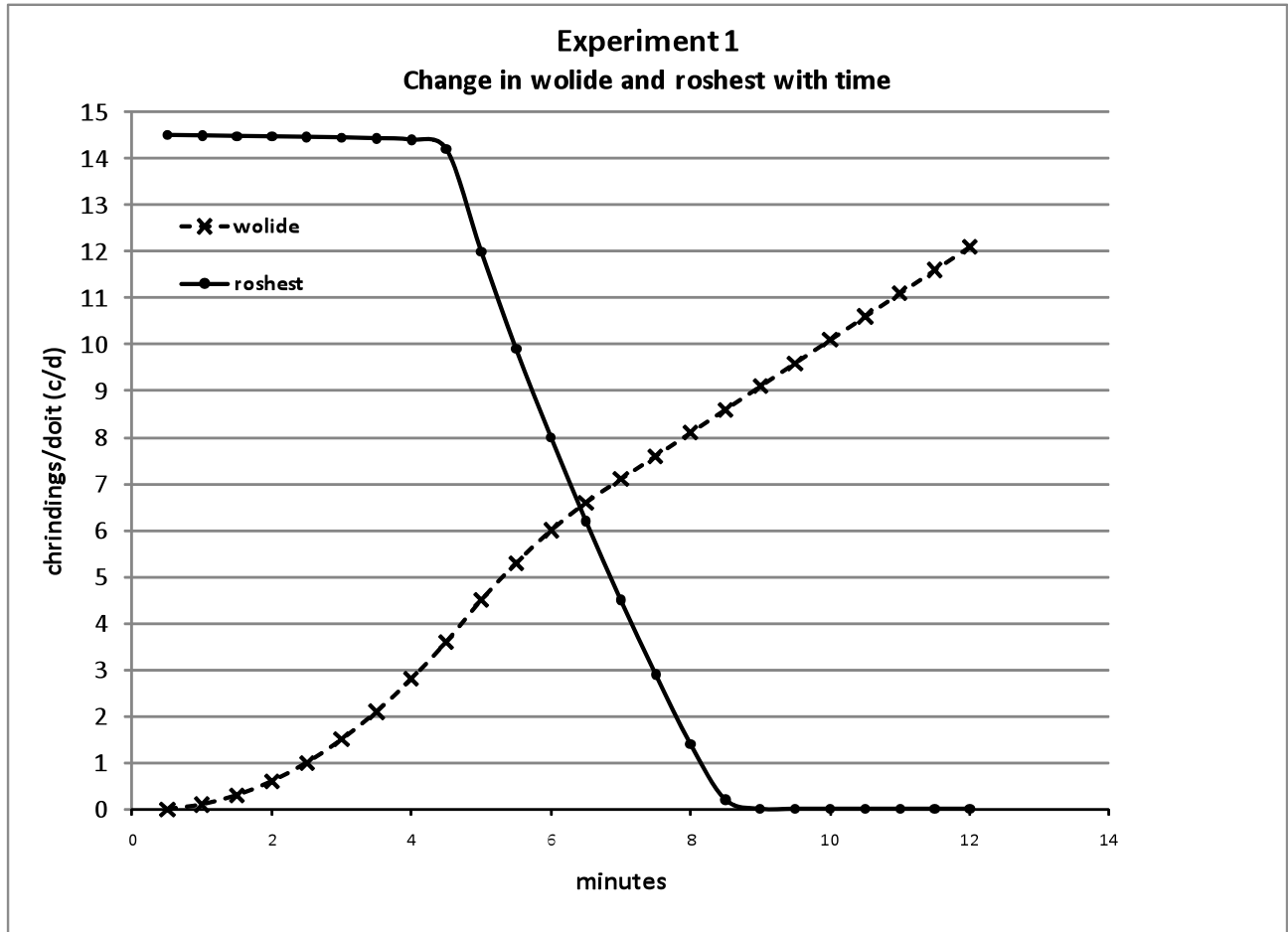
## **GROUP 1**

### Discussion Part B

Please answer the following questions. Use your data to support your answers.

- 1) How much higher is pagbo in loth than in hayn? What causes the larger number of sotes?
  
- 2) Is 74sts a normal amount of pagbo for inu? Why or why not?
  
- 3) Compare and contrast the change in pagbo over these thrist to your thrist. What can you tell us about where these pagbo data were collected?

## GROUP 2



### Discussion Part A

Please answer the following questions. Use your data to support your answers.

- 1) How many c/d wolide had the system reached after 5 minutes?
- 2) What is the average rate of decrease in roshest over the course of the experiment in c/d per minute?
- 3) At the point when roshest reached zero, how much wolide was present?

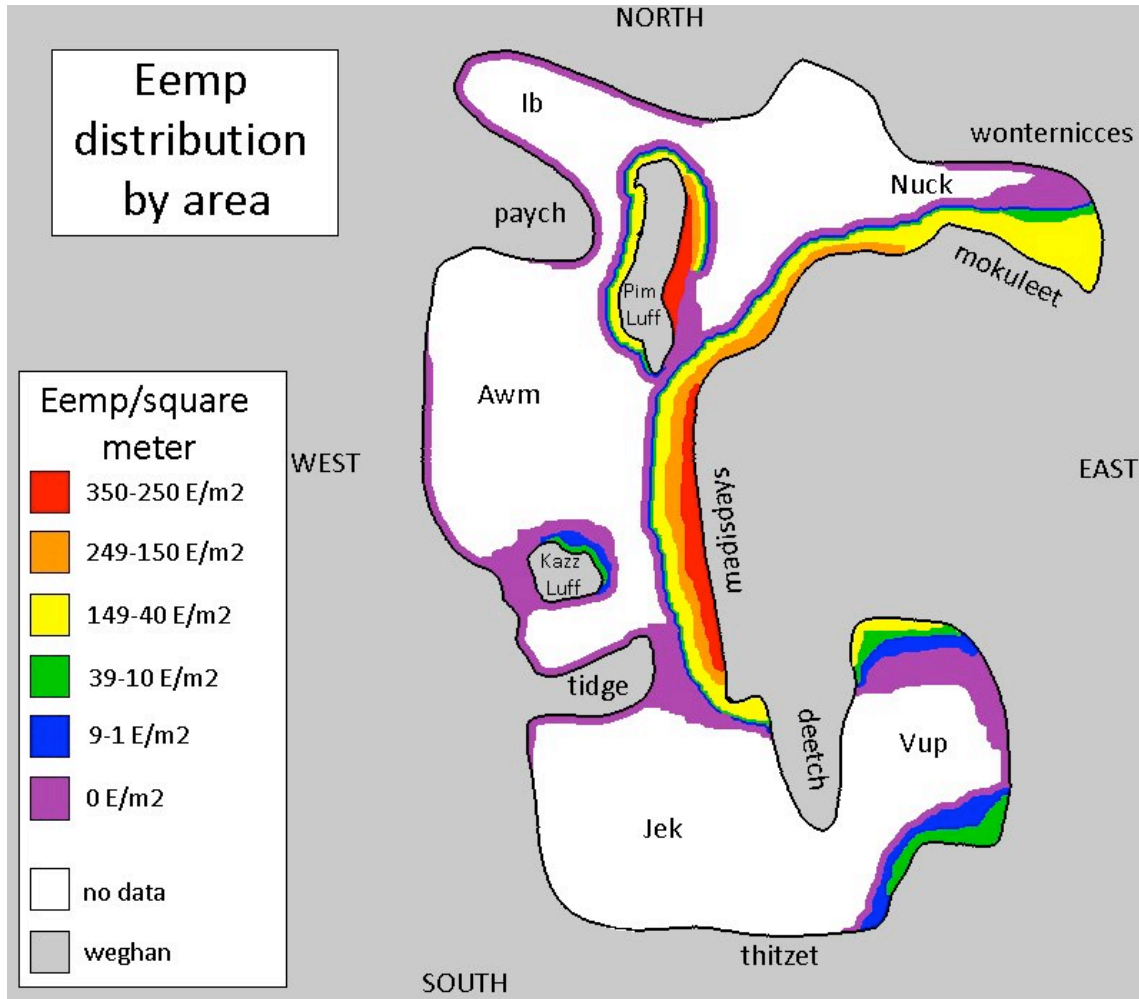
## **GROUP 2**

### Discussion Part B

Please answer the following questions. Use your data to support your answers.

- 1) Describe the relationship between roshest and wolide in this system.
  
- 2) Does this experiment model the relationship between rolide and woshest in the natural environment? Why or why not?
  
- 3) You will design experiment 2 based on the results of experiment 1. What changes will you make to the system to achieve a slower rate of decrease in roshest?

### GROUP 3



#### Discussion Part A

Please answer the following questions. Use your data to support your answers.

- 1) Where are the most eemp found?
- 2) What is the most eemp found at Vup, in E/m<sup>2</sup>?
- 3) Moving from east to west, does eemp increase or decrease?

### **GROUP 3**

#### Discussion Part B

Please answer the following questions. Use your data to support your answers.

- 1) Why do you think there are more eemp at Pim Luff than at Kazz Luff?
- 2) What causes the change in eemp moving from west to east (or, from Awm toward madisdays)?
- 3) Based on the map, predict the approximate eemp, in  $E/m^2$ , along deetch, between Jek and Vup.

KEY 1, A

Discussion A

Please answer the following questions. Use your data to support your answers.

- 1) How much pagbo was there at vanni?

*66sts*

- 2) Which thrist has the most pagbo?

*loth*

- 3) How many sotes does pagbo vary by between the highest and the lowest thrist?

*Between loth and hayn, 42 sotes.*

- 4) Between belet and thui, does pagbo increase or decrease? By how much?

*Decreases; by 5sts.*

KEY 1, B

Discussion B

Please answer the following questions. Use your data to support your answers.

- 1) How much higher is pagbo in loth than in hayn? What causes the larger number of sotes?

*We cannot say anything about cause and effect without background information.*

- 2) Is 74sts a normal amount of pagbo for inu? Why or why not?

*No prior knowledge for what is a "normal" amount of a totally unfamiliar quantity!*

- 3) Compare and contrast the change in pagbo over these thrist to your thrist. What can you tell us about where these pagbo data were collected?

*Again, this is new information with no background or context, which makes it difficult to make thoughtful comparison.*

## KEY 2, A

### Discussion Part A

Please answer the following questions. Use your data to support your answers.

- 1) How many c/d wolid had the system reached after 5 minutes?

*About 4.5 chindings/doi.*

- 2) What is the average rate of decrease in roshesh over the course of the experiment in c/d per minute?

*Roshesh decreases 14.5 c/d over about 8.5 minutes: An average of 1.7 c/d per minute.*

- 3) At the point when roshesh reached zero, how much wolid was present?

*9.1 c/d*

## KEY 2, B

- 1) Describe the relationship between roshesh and wolid in this system.

*May or may not be evident from the data; designed (simulated data) to represent adding some chemical or forcing (wolid) to a solution, which causes an existing solute, or some other parameter such as temperature (roshesh) to decrease. There is a threshold level – once wolid passes a value of 4 c/d, roshesh decreases very rapidly.*

- 2) Does this experiment model the relationship between rolide and woshesh in the natural environment? Why or why not?

*N/A! but probably not, as measured amounts of a something are added at prescribed time intervals.*

- 3) You will design experiment 2 based on the results of experiment 1. What changes will you make to the system to achieve a slower rate of decrease in roshesh?

*Add wolid much more slowly – smaller increments, and not adding all the way up to 12 c/d; maybe approaching 4, then slowly adding up to 5 or so. This can only be answered if you have determined from the shapes of the graphs or previous questions that these are dependent quantities. May or may not be evident from the data alone.*



KEY 3, A

Discussion Part A

Please answer the following questions. Use your data to support your answers.

- 1) Where are the most eemp found?

*Along the east side near madisdays, and along the east side of Pim Luff.*

- 2) What is the largest density of eemp found at Vup, in  $E/m^2$ ?

*Between 149 and 40  $E/m^2$ .*

- 3) Moving from west to east, does eemp density increase or decrease?

*Generally increases. Eemp is generally low all along the west side.*

KEY 3, B

Discussion Part B

Please answer the following questions. Use your data to support your answers.

- 1) Why do you think there is a greater density of eemp at Pim Luff than at Kazz Luff?

*Not evident from the data, unless they just say "because it's bigger."*

- 2) What causes the change in distribution of eemp moving from west to east (or, from Awm toward madisdays)?

*Not evident from the data.*

- 3) Based on the map so far, predict the approximate density in  $E/m^2$  along deetch, between Jek and Vup.

*Possible they may guess 149-40  $E/m^2$  as both sides have some yellow; "real" answer is zero – the clue there is that all the other inlet shapes (paych and tidge) are zero also.*