

Passage 3 - Data passage on cloud cover (physics or earth science?)

Introduction:

- cloud cover MAY increase because of cosmic ray flux (this is the question the passage's data will answer)
- low clouds are at altitude 0 to 3.2km
- low clouds vary with the cosmic ray flux
- middle clouds (3.2 to 6.0km)
- high clouds (6 to 16km)
- RCRF stands for 'relative cosmic ray flux' and is a measurement relative to the value recorded in 1965

Table 1:

- as cosmic ray flux increases, the cover of **low** clouds increases. This is a direct correlation.

Figure 1:

- there is one x-axis (the years) and two y-axes (average **high** clouds and RCRF [relative cosmic ray flux in the introduction])
- there are two lines; the solid line is the relative cosmic ray flux and the dotted one is high clouds
- the lines do not vary together; therefore, there is no relationship between RCRF and cover of high clouds
- the scale of the y-axis is different in all three graphs for % cloud cover
- the plot of the RCRF is exactly the same in all three graphs
- the % cover of high clouds is the lowest of the 3 at about 13.5 on average

Figure 2:

- the **middle** clouds do not vary with the relative cosmic ray flux

Figure 3:

- the **low** clouds vary directly with the relative cosmic ray flux.
- the % cover of low clouds is the highest of the 3 at about 28.5% on average

Notes:

- if all the graphs appear to be of the same thing, look harder for what's different. It's usually in one of the axes.
- generally when there are multiple lines on a single graph, look to see if they vary directly (as one increases, the other increases) or vary inversely (as one increases, the other decreases) or do not vary together. **Science is about trends, patterns, relationships.**
- Relationships between lines should be very clear in order to meet ACT standards. There will not be a 'kind of' direct relationship.
- always check the y-axes on graphs that appear to be showing the same thing. Make sure they are the same, and take note if the numbers are different