**Homework Assignment**

**(Global Precipitation Measurements Webinar)**

1. Satellite remote sensing observations are sufficient to provide precipitation estimation. There is no need for any in situ, surface measurements.

a) True b) False

1. Which electromagnetic frequencies are used for indirect estimates of precipitation?
2. Infrared and Microwave
3. Visible and Infrared
4. Microwave and Visible
5. A microwave frequency of 85 GHz is used for remote sensing of liquid water.

a) True b) False

1. Name the sensors flying on the GPM core satellite:
2. TMI and GMI are active remote sensors.

a) True b) False

1. Which of the following is true?
2. TRMM is in a low earth inclination orbit and GPM is in a polar orbit
3. TRMM and GPM are both in polar orbits
4. TRMM and GPM are both in non-polar orbits
5. GPM provides observations with spatial coverage between
6. 65°S – 65°N
7. 35°S – 35°N
8. 90°S – 90°N
9. GPM is the first satellite to carry radar in space.

a) True b) False

1. Level-2 precipitation products from TRMM and GPM provide
2. Uniformly Gridded Data
3. Orbital Swath Data
4. These sensors have better light rain detection capability:
5. VIRS and TMI
6. TMI and PR
7. GMI and DPR
8. GPM Precipitation data product 2A-CMB is derived from
9. GMI and DPR
10. GMI and Constellation Satellite Microwave Measurements
11. GMI alone
12. What are the spatial and temporal resolutions of the IMERG Precipitation data product?
13. Which sensor would be more useful to measure snow fall rate over northern Europe in January?
14. TMI
15. PR
16. DPR
17. This data access tool does not provide data visualization capability:
18. Giovanni-4
19. Mirador
20. STORM
21. This tool allows users to get area-averaged time series of precipitation:
22. Giovanni-4
23. Mirador
24. STORM
25. This tool allows users to get GeoTIFF image of precipitation data:
26. Giovanni-4
27. Mirador
28. STORM
29. This tool allows GPM data visualization by using Tool for High

Resolution Observation Review (THOR):

1. Giovanni-4
2. Mirador
3. STORM
4. Which of the following precipitation products has the higher spatial resolution?

a) TMPA

b) IMERG

1. Which GPM Level-3 product would you use to track a tropical storm? Why?
2. List at least one advantage and one limitation of using remote sensing for precipitation observations: