

REMOTE SENSING TEST!!

This is a really ugly cover page I'm sorry.



Name _____

Score _____ / 100

Directions: (idk if I need to put this???) You have 50 minutes to take this test. You may use a cheatsheet (2 pages), a non-graphing calculator, a ruler, and a protractor. Good luck!

Matching

2. Match the terms in the left column with the definitions in the right column.

- | | |
|---------------------------|-----------------------------|
| a. Specular reflection | j. Diffuse reflection |
| b. Spatial resolution | k. Push broom |
| c. Aerosol optical depth | l. Non-selective scattering |
| d. Beam attenuation | m. Geosynchronous |
| e. Radiometric resolution | n. Whisk broom |
| f. Geostationary | o. Semi-synchronous |
| g. Spectral resolution | p. Rayleigh scattering |
| h. Mie scattering | q. Sun-synchronous |
| i. Temporal resolution | r. Scatterometer |

1. _____ Incident radiation is reflected equally in all directions
2. _____ Nonimaging radar device that quantitatively records backscatter of terrain as a function of incidence angle
3. _____ A measure of the extinction of the solar beam by dust and haze
4. _____ Makes the sky appear blue
5. _____ An orbit where a satellite passes over a section of the Earth at the same time each day
6. _____ Satellite system that uses linear arrays
7. _____ The orbit typically used by GPS satellites
8. _____ Incident radiation is reflected in one direction
9. _____ The precision of a measurement with respect to time
10. _____ Inversely proportional to resolving power
11. _____ Occurs when atmospheric particles are much larger than the incoming radiation wavelength
12. _____ The ability of an imaging system to discriminate very slight differences in energy
13. _____ Until Landsat 8, all sensors aboard the Landsat series of satellites used this type of scanner
14. _____ The smallest discernible detail in an image
15. _____ Occurs when atmospheric particles are much smaller than the incoming radiation wavelength

Acronyms

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16. TIROS:

17. VISSR:

18. SONAR:

19. TRMM:

20. NDVI:

21. CALIPSO:

Multiple Choice

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22. What color do living plants appear as on false-colour infrared images?

- a. Green
- b. Red
- c. Black
- d. Blue

23. What do negative values of NDVI (approaching -1) indicate?

- a. Water
- b. Barren areas of rock, sand, or snow
- c. Shrub and grassland
- d. Temperate and tropical forests

24. A satellite with an orbital period of three hours has what type of orbit?

- a. Low Earth orbit
- b. Medium Earth orbit
- c. High Earth orbit
- d. Geosynchronous orbit

25. How many satellites are in the GPS system?

- a. 6
- b. 12
- c. 18
- d. 24

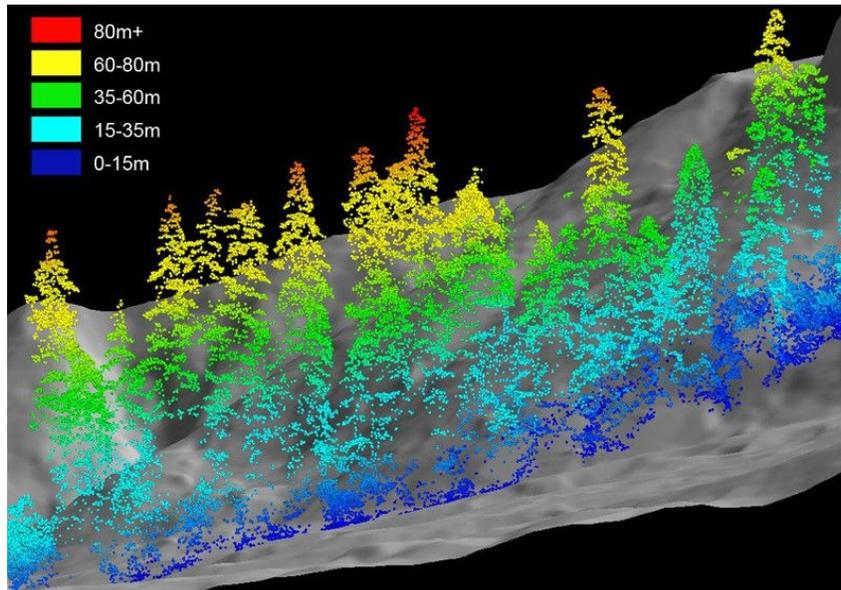
26. What is the order of the A-train satellites as they appear over the equator each day?
- GCOM-Q1, Aqua, CALIPSO, OCO-2, Aura, CloudSat
 - OCO-2, GCOM-W1, Aqua, CloudSat, CALIPSO, Aura
 - Aqua, OCO-2, GCOM-W1, CloudSat, Aura, CALIPSO
 - CALIPSO, CloudSat, Aqua, Aura, GCOM-W1, OCO-2
27. What does the term “climate noise” refer to?
- aerosol production
 - sounds in the atmosphere
 - lack of predictability
 - anthropogenic factors
28. What is the dominant scattering mechanism in the upper atmosphere?
- Mie scattering
 - Nonselective scattering
 - Rayleigh scattering
 - Volume scattering
29. Which of the following are variants of false color?
- Pseudocolor
 - Density slicing
 - Choropleth
 - Two of the above
 - All of the above
30. What percentage of aerosols are anthropogenic?
- 5%
 - 10%
 - 15%
 - 20%
31. Which science question(s) does the Aura mission seek to answer? Choose all that apply.
- Is the stratospheric ozone layer recovering?
 - What are the processes controlling air quality?
 - How is Earth's climate changing?
 - How is the global Earth system changing?
32. What is the wavelength range for far-infrared?
- 1-15 μm
 - 10-100 μm
 - 50-500 μm
 - 15-1000 μm

38. Calculate the total energy radiated by a black body per unit surface area at a temperature of 5000°C in watts. (6 pts)

39. Calculate the equilibrium temperature (apparent effective average temperature) of Earth in Kelvin to the nearest integer. (6 pts)

Image Interpretation

ByZ {aZ'lk MZ'UZjn,, {n'Mly, Zxw\ Zy{bnl yYÜ'YÜP'



40. What instrument was used to make this image? (2 pts)

41. What does the acronym of the instrument stand for? (1 pt)

42. What data can be collected from this image? (1 pt)

43. What does each dot in the image represent? (1 pt)

ByZ{aZ`1MIXMlPtk MZUZjn,, {nMly,, ZxwZy{bnl yYŶ'YBª'



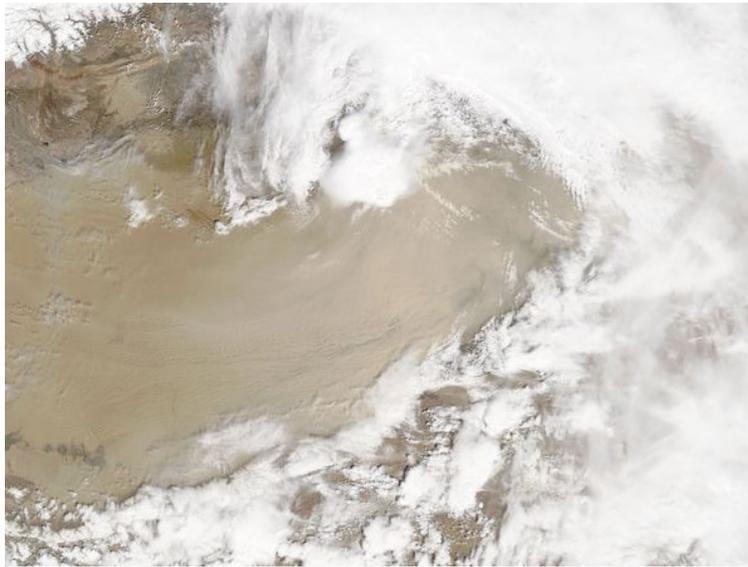
44. What is the diagonal white line at the top right of the image? (2 pts)

45. Was Landsat 5 a low, medium, or high Earth orbit satellite? (2 pts)

46. What sensors did Landsat 5 have? (2 pts)

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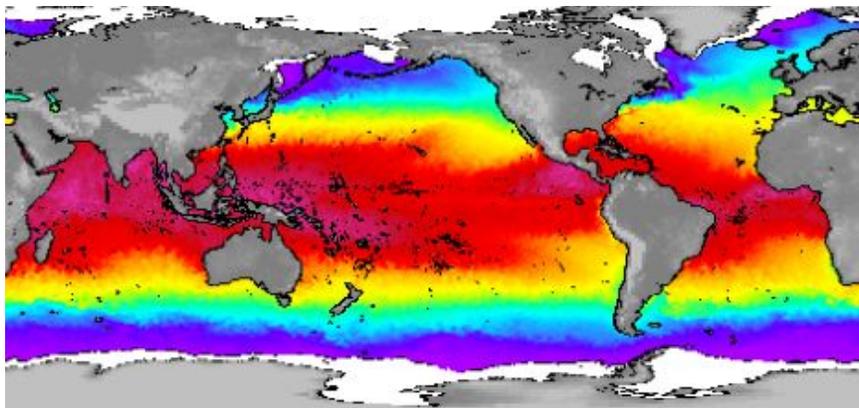
47. What instrument acquired this image? Write out the full name (not just the acronym). (2 pts)

48. What is happening in this image? In what season does this occur particularly often? (2 pts)

49. How does the event happening in this image (answer to question 48) affect Earth's climate? (2 pts)

50. Prevailing low-altitude winds almost always blow from what direction? (2 pts)

ByZ {aZ tk MZUZjn, S{MIZI Ut° 2 @'1" S{n'Mly, Zxwł Zy{bnl y'pŮ'pŮP'



51. What satellite is AMSR-E on? (1 pt)

