

Name: \_\_\_\_\_

GLYL100 Lab Final – Spring 2021. Good luck!

1. Using equal amounts of energy, \_\_\_\_\_ produces the most pollutants.

- A. Natural Gas
- B. Petroleum Products
- C. Coal
- D. Nuclear

2. \_\_\_\_\_ is tied with 2020 for the hottest year on record.

- A. 2016
- B. 2019
- C. 2005
- D. 2010

3. The \_\_\_\_\_ is the layer of the atmosphere where weather occurs.

- A. Stratosphere
- B. Troposphere
- C. Mesosphere
- D. Thermosphere



4. What type of cloud is this?

- A. Cumulus
- B. Cirrus
- C. Cumulonimbus
- D. Stratocumulus

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5. Umbrella species \_\_\_\_\_.

- A. Are critical to the ecological function of a community or habitat, where the importance of these species is disproportionate to their abundance or biomass.
- B. Presence denotes either the composition or condition of a particular habitat, community or ecosystem
- C. Are tools to garner public support for '*charismatic megafauna*'.
- D. Are species whose conservation grants the protection of a large number of other co-occurring species



6. We have \_\_\_\_\_ tides in Southeastern North Carolina.

- A. Mixed
- B. Diurnal
- C. Semi-diurnal
- D. No

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7. \_\_\_\_\_ is the percent of impervious surface area in a watershed that will lead to polluted tidal creeks.

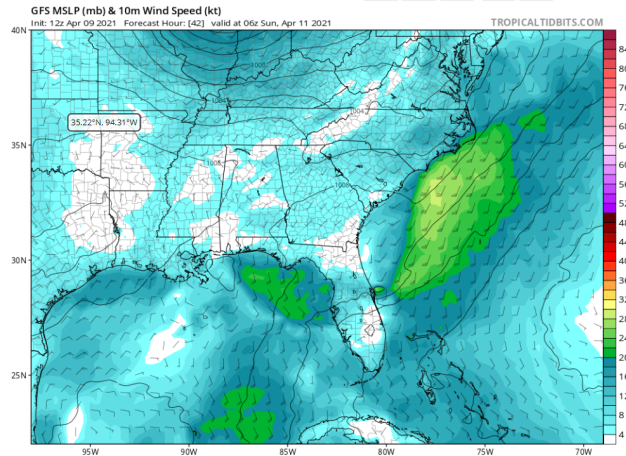
- A. 12%
- B. 20%
- C. 88%
- D. 34%



8. A \_\_\_\_\_ includes the populations of all the species living and interacting in an area.

- A. Biome
- B. Ecosystem
- C. Community
- D. Population

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9. Examine the wind barbs in the green-shaded area off the NC coast. What direction is the wind blowing in this region?

- A. Southeast
- B. Northeast
- C. Southwest
- D. Northwest

10. \_\_\_\_\_ has the highest wind potential on the East Coast.

- A. North Carolina
- B. Rhode Island
- C. Florida
- D. Massachusetts

11. \_\_\_\_\_ is the US economic sector that produces the most greenhouse gas emissions.

- A. Industry
- B. Electricity
- C. Agriculture
- D. Transportation

12. \_\_\_\_\_ is the largest estuary in the U.S.

- A. Pamlico Sound
- B. Chesapeake Bay
- C. Tampa Bay
- D. The Indian River Lagoon

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13. Hurricane \_\_\_\_\_ was the #1 wettest weather even in Wilmington and most costly North Carolina disaster

- A. Hazel
- B. Floyd
- C. Dorian
- D. Florence

14. \_\_\_\_\_ is the state that is most vulnerable to sea level rise in terms of total area lost.

- A. Louisiana
- B. Mississippi
- C. Florida
- D. North Carolina



15. "The \_\_\_\_\_ will live in infamy as the only river that was ever declared a fire hazard." Congressman Louis Stokes

- A. Ohio
- B. Hudson
- C. Cuyahoga
- D. Flint

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16. Define Soil. List the controls on Soil Formation.

17. Define soil horizon and soil profile. How did the soil profiles differ between the two sites we visited on campus as a class? What was the main reason they varied?

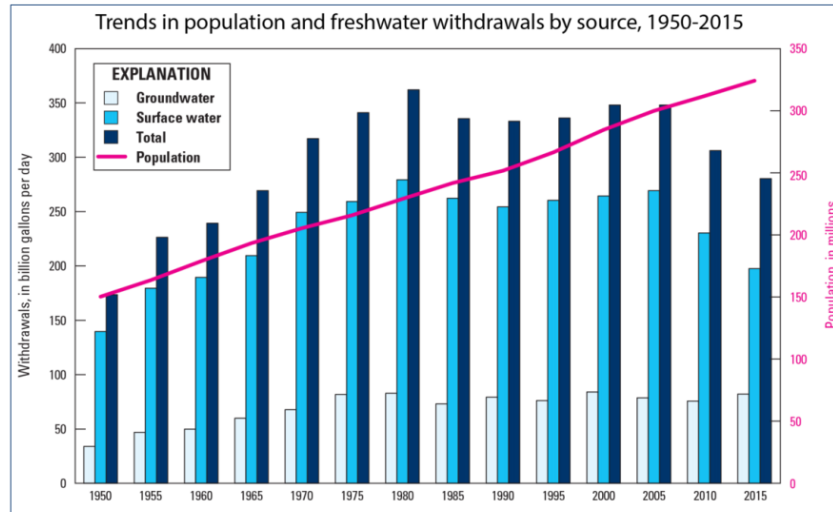
18. Define Climate. What are the two controlling factors for climate?

19. Why are some of the bands of color/climate latitudinal and some longitudinal in the United States?

20. Define Trophic Cascade. Define Keystone Species. Describe one of the Trophic Cascades we discussed in class. Be sure to mention all of the ecological players, their roles in the ecosystem and the ecological implications of the trophic cascade.

21. What is the Earth's angle of tilt? What is the difference in between the equinoxes and solstices with regards to the sun's angle and its location hitting the Earth? Please mention the Tropic of Cancer and Tropic of Capricorn. What is the difference between the typical hours of daylight between the equinoxes and solstices?

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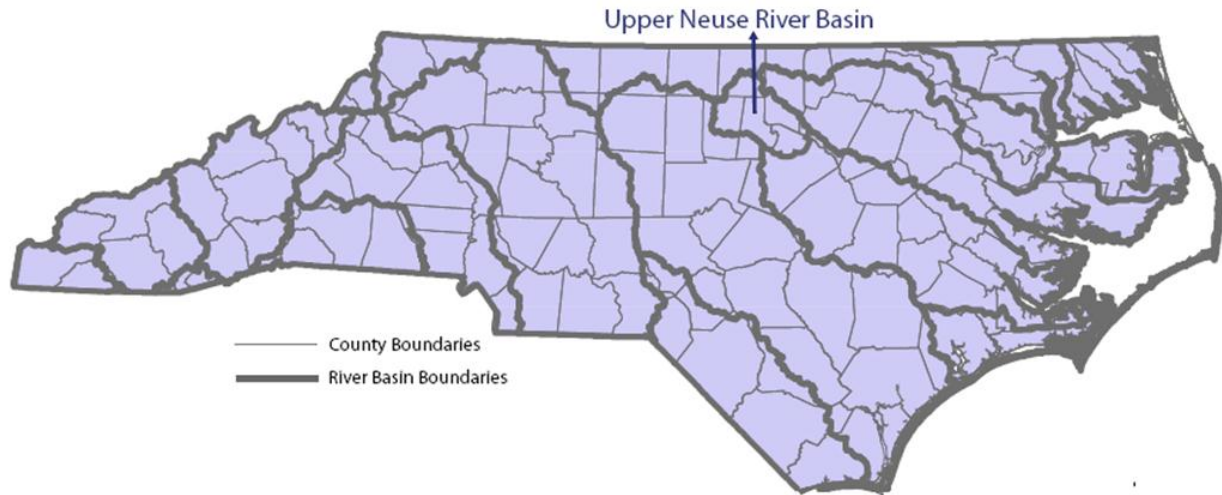
22. Using the graph above, explain the trend of water usage. Provide some reasons for the usage changes you describe. Notice, there is a difference between surface water and ground water usage trends. What is the largest use of water in the U.S. and North Carolina? List the surface water and ground water sources for most of our water in Wilmington, NC.

23. Define Delta. What are the two types of deltas and give examples.

24. Define Storm Water. Give the difference between Point and Non-point Source Pollution, along with an example of each.



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25. The Cape Fear River Basin is North Carolina's largest watershed, with an area of over 9,000 square miles. It is also North Carolina's most ecologically diverse watershed, and the Lower Cape Fear is notable because it is part of a biodiversity hotspot that is home to rare mussels, insects, crustaceans and fish species found nowhere else. Define drainage basin and floodplain. Name 3 types of pollutants that concern us here in the Cape Fear watershed. Describe their sources and possible consequences of them.

26. What is load and what materials would the Cape Fear River likely transport in the Piedmont versus what would be brought to the mouth of the Cape Fear at Bald Head Island? Also, how does the river gradient differ between the two settings?

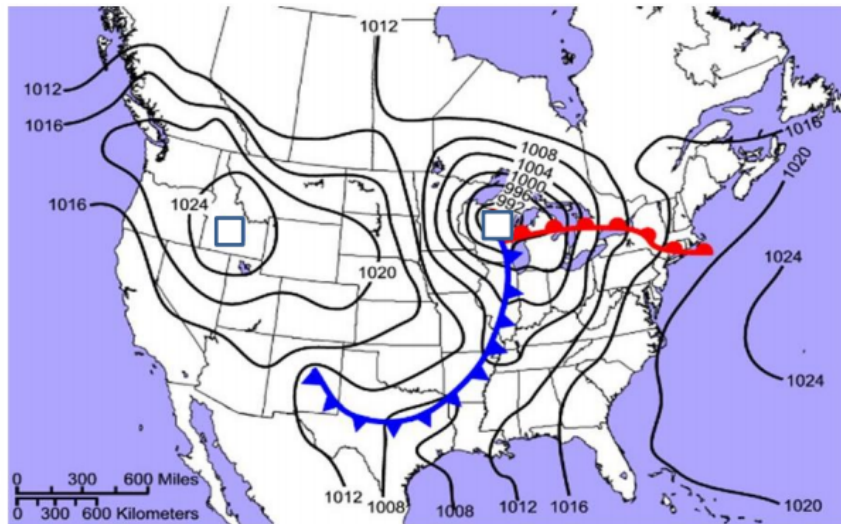


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27. What is the beach? List the controls on the beach.



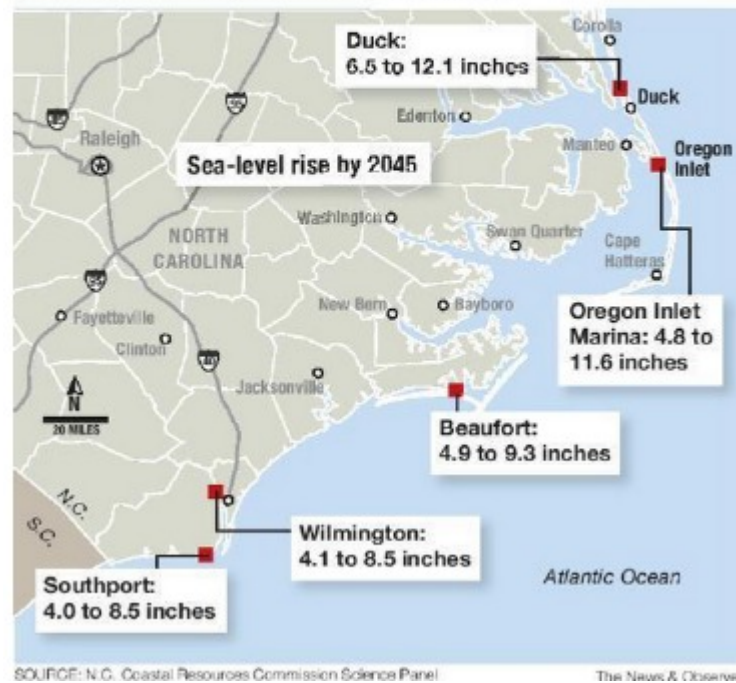
28. What are the controls on the development and size of waves? Why are the famed Banzai Pipeline of Hawaii and the Cape Hatteras Lighthouse better surfing destinations than Wrightsville Beach?



29. Isobars are lines that connect points of equal atmospheric pressure on weather maps. Isobars are used to depict atmospheric pressure changes over an area, and to make predictions concerning wind flow, which is a direct consequence of variations in air pressure. Examine the isobars on the weather map. Give the contour interval between isobars. Highlight the position of the high and low pressure centers (High = left or right) (Low = left or right). Based on what you know about pressure and wind, which way are the winds blowing around each of them? What is a front? What types of fronts are shown on the map?

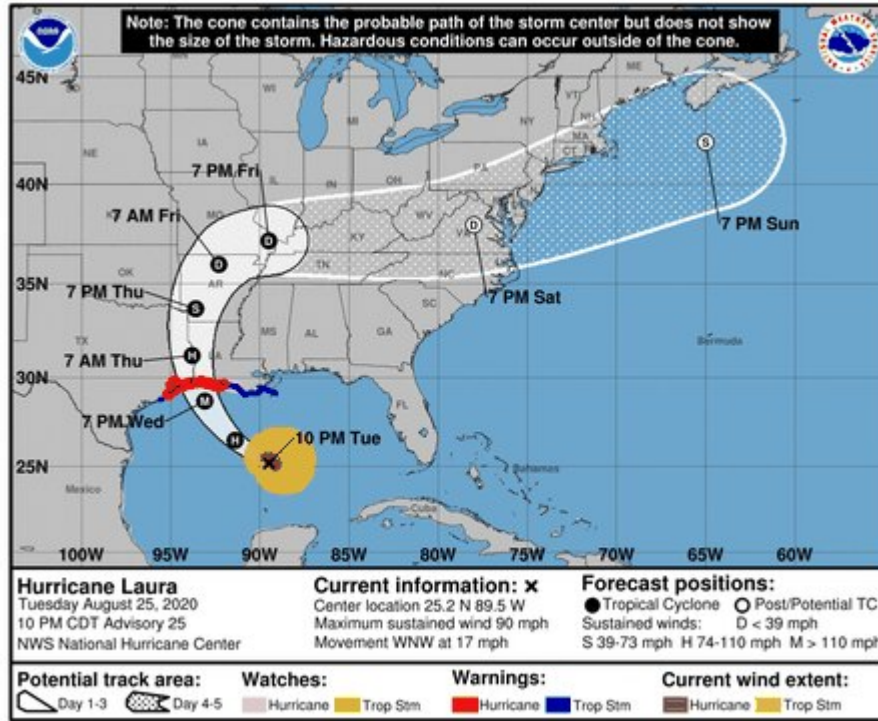
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30. When does the hurricane season begin and end? When is the statistical peak of hurricane season?



31. What is the difference between Eustatic Sea Level and Relative Sea Level? Give reasons/specifics that control each. Why is there variation between the amount of sea level rise Wilmington will experience compared to the areas surrounding the Outer Banks?

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32. The 2020 Hurricane season was the most active and the fifth costliest Atlantic hurricane season on record. Hurricane Laura, the twelfth named storm of the season, and first major hurricane, made landfall near peak intensity on Cameron, Louisiana. What scale is used for the classification of tropical cyclones/hurricanes? A storm of what wind speed and category is considered a major hurricane? Draw a circle around Hurricane Laura at the 7PM Wed position. Draw arrows showing the direction the wind field is rotating around the eye of the storm (highlight clockwise or counterclockwise). Along the coast, and especially along the low-lying barrier islands that line the Gulf, storm surge is often the greatest threat to life and property from a hurricane. Identify the most dangerous quadrant of the storm in regards to storm surge (label). Finally, list the controls on the height of storm surge.

33. What are the trends in electricity generation for NC?

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34. What is climate change? Provide 2 or 3 evidences for climate change. What controls climate change? Provide long term and short term controls.

35. What can you do to reduce GHGs and save money? List things that you can personally do, as well as what the country and NC can do to reduce energy consumption and GHGs. What is the Paris Accord?

36. List the pros and cons for fossil fuels and for renewables (3 pros and 3 cons for each. 12 total).