

Question 4

Bottom water oxygenation

Bottom waters are increasingly becoming deoxygenated because of anthropogenic influences in the coastal zone. But also without influence of mankind dysoxic zone develop in the oceans.

- a) Explain why the zone with lowest oxygen concentrations usually occurs at mid-depth. (5 points)
- b) What proxies exist for the reconstruction of bottom water oxygenation and what are the underlying principles for these proxies. (5 points)
- c) Explain why a basin with an anti-estuarine circulation is oxygenated versus the anoxic bottom-water conditions in a basin characterized by an estuarine circulation. (5 points)
- d) Which 3 main factor today contribute towards increased dysoxia in the coastal zone? (5 points)

Question 5

Carbon 14

- a) Explain the so-called reservoir effects and which factor potentially impact the reservoir effect. (5points)
- b) Through time offsets are observed between true age and ^{14}C ages. What processes are primarily responsible for these offsets and in which direction do they affect this offset? (5 points)

Question 6

The Indian summer monsoon is closely linked to insolation and global climate.

- a) Explain what kind of relations you expect between the different components of insolation and the summer and winter monsoon? (5 points)
- b) How would global climatic change affect the Indian summer monsoon? (5 points)
- c) What tools would you use to study past changes in the Indian summer monsoon to test the above mentioned relationships? (10 points)