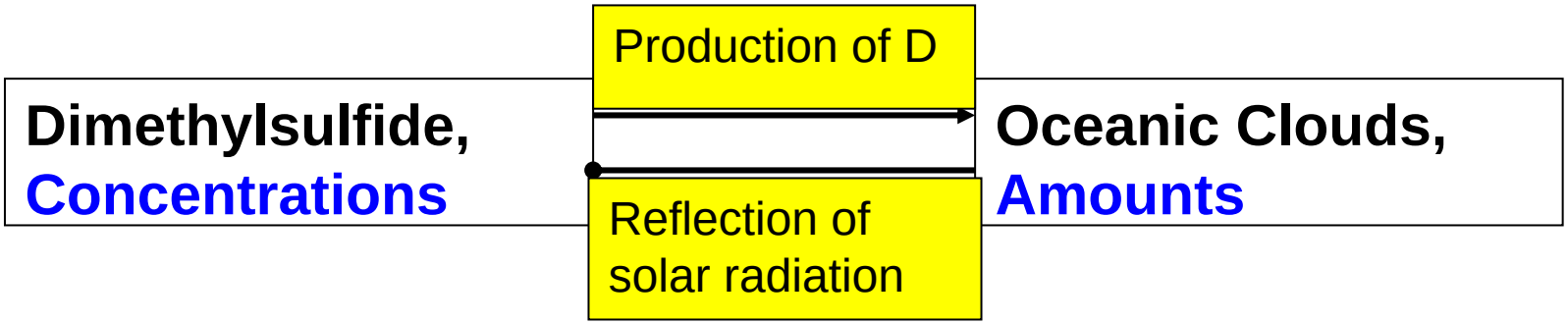
TEST 1 questions

Dimethylsulfide (D) is a chemical produced in abundance by marine organisms. It is considered a precursor to the formation of cloud-condensation nuclei. Hence, its concentration in the atmosphere above oceans is proportional to the amount of oceanic clouds (OC). Thus, it has been suggested that the production of dimethylsulfide by oceanic organisms could be part of an important feedback loop involving clouds. A paper published a couple of weeks ago in a scientific journal reports that dimethylsulfide concentrations over the oceans are strongly correlated with the amount of solar radiation (SR) received by the ocean. In the following questions, you will determine if the result of this paper could be used to establish a feedback loop involving D, OC and SR.



Which of the following could become a component of this D-OC-SR system?

A) Dimethylsulfide concentrations B) solar radiation C) Oceanic clouds
D) cloud-condensation nuclei E) amount of marine organisms

Which of the following can be used as one of the attributes describing this D-OC-SR system?

A) Dimethylsulfide concentrations B) solar radiation C) Oceanic clouds
D) cloud-condensation nuclei E) amount of marine organisms

What is the minimum number of components needed to represent this feedback loop system?

A) 1 B) 2 C) 3 D) 4 E) 5

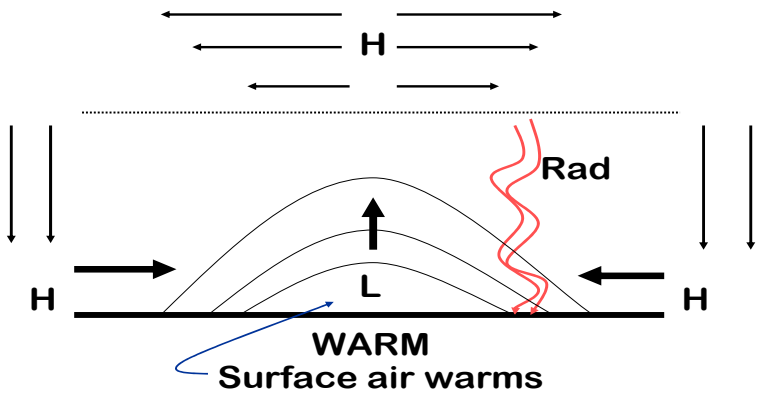
Which of the following processes can be used as one of the coupling mechanisms between components of the D-OC-SR system?

A) absorption of solar radiation by oceanic clouds
B) absorption of infra-red radiation by oceanic clouds
C) emission of infra-red radiation by oceanic clouds
D) production of cloud-condensation nuclei by marine organisms
E) production of dimethylsulfide by marine organisms

What is the sign of the feedback loop(s) characterizing the D-OC-SR system?

A) Both loops are negative feedback loops
B) One loop is positive and the other is a negative feedback loop
C) The only loop is a positive feedback loop
D) The only loop is a negative feedback loop
E) Not enough couplings can be found in the preamble to construct a feedback loop for the D-OC-SR system.

TEST 2 questions



5/4.The above picture depicts the set-up phase of a convective cell. H indicates the location of high pressures. L indicates the location of low pressures. The pressure at the top right of the figure (just above the "downward" arrows) is

A)higher than the pressure below it at the surface S
B)equal to the pressure below it at the surface
C)equal to the pressure near the surface at the centre of the bulge
D)lower than the pressure at the same height to its left at the centre of the figure A
E)neutral with respect to the other pressures in the figure

11/12.Consider a low-pressure cyclone situated in the middle latitudes of the southern hemisphere. The air within this cyclone blows

A.Directly through the middle of the cyclone.
B.Outward from the middle of the cyclone.
C.Downward from the upper parts of the cyclone.
D.Counter-clockwise around the centre of the cyclone. S
E.Clockwise around the centre of the cyclone. A

12/14.The Southern Hemisphere atmospheric jet stream flows mostly from

A. west to east A
B. east to west S
C. north to south
D. south to north
E. north to south in middle latitudes and south to north in tropical latitudes

19/19.Which of the following statements is correct?

A.The cause of geostrophic currents in the oceans middle latitudes is the Ekman transport of surface waters. S
B.Geostrophic currents exist mostly in the lowest layer of the oceans.
C.Along the west coast of a continent in the northern hemisphere, a northward wind results in offshore Ekman transport. S
D.Ekman transport of waters in the surface mixed layer is parallel to the wind stress applied at the surface of the oceans.
E.The force of Coriolis controls the movement of waters in the top 1 kilometre of the oceans. A