A.1. Weather is atmospheric conditions over a short period of time, & climate is atmospheric "behavior" over relatively long periods of time.
(NSES 9-12, p. 189; 5-8 D1J p. 160)

A.2. Seasonal, short-, & long-term changes in ocean properties such as temperature & salinity, can affect the weather & climate.
(NSES 9-12, DIC p. 189; 5-8 D1J p. 160)

A.3. Land & ocean weather maps are used to display & identify weather patterns and to help predict future patterns.

A.4. Long-term weather & oceanographic data sets contribute to climate predictions.

B.1. The interaction of oceanic & atmospheric processes control weather & climate by dominating the Earth's energy system.
(C3A CA)

B.2. The ocean dominates the water cycle, transferring and transporting heat and water globally.

B.3. The ocean absorbs most of the solar radiation reaching the Earth.

B.4. The ocean transfers heat to the atmosphere, driving the water cycle over land & water.
(3B CA)

B.5. Absorption of heat by the ocean moderates the global climate.

B.6. Heat exchange between the ocean & the atmosphere drives atmospheric circulation.

B.7. Transfer of heat stored in the tropical ocean provides energy for weather, including hurricanes, cyclones, & polar storms.

B.8. Ocean currents move heat throughout the ocean basins (like rivers through the ocean).
(3C CA)

B.9. The El Niño Southern Oscillation causes important changes in global weather patterns because it alters the sea surface temperature patterns in the Pacific.

B.10. Most rain that falls on land evaporated from the tropical ocean.

B.11. Ocean currents moderate weather along coastlines to a greater degree than that of inland regions.

B.12. The increase in sea surface temperature increases atmospheric convection, changing patterns of rainfall & drought.

C.1. Carbon-containing gases (CO2, CH4) are exchanged between the ocean and the atmosphere. This is part of the carbon cycle.

C.2. The ocean removes & stores atmospheric CO2 through biological activity mediating the global greenhouse effect.

C.3. The ocean and atmosphere are in a dynamic equilibrium related to carbon flux. Excess input of carbon, including from human activity, into the atmosphere changes this equilibrium.

C.4. CO2 is taken up through photosynthesis by phytoplankton.

C.5. When the ocean absorbs CO2, carboxic acid may be produced, increasing the acidity of the ocean.

C.6. An increase in greenhouse gases contributes to warming of the atmosphere.

C.7. A primary source of excess CO2 is burning fossil fuels.

C.8. Deforestation reduces the amount of photosynthesis, increasing the amount of CO2 in the atmosphere.

See Principle 7D