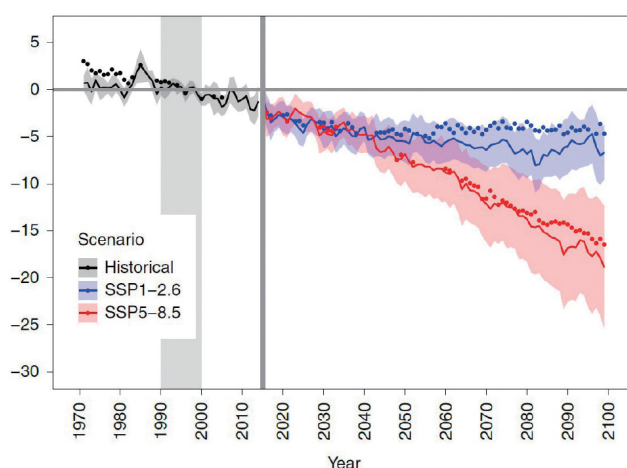


MARINE ECOLOGY



Although the land area of Taiwan only accounts for about 0.025% of the earth, the marine life diversity in the surrounding waters reach 10% of the world's marine species. One of the reasons is that there are diverse marine ecosystems around Taiwan, and these highly diversified habitats accommodate a wide variety of species, so the diversity ratio per unit area is extremely high.

Since 2012, under the influence of climate change, the ten-year average sea surface temperature in the Taiwan Strait has increased by approximately 0.63°C (Lee et al., 2021), and the warming trend may lead to adaptive changes in inhabiting organisms. Most marine ecosystems in Taiwan lack long-term background information, and it is difficult to figure out the causal relationship between environmental changes and ecosystem transformation under future climate change. As a result, there are currently only a few cases where scientific evidence is sufficient to show that certain marine ecosystem is indeed affected by climate change. The new-generation Earth system model outputs from Phase 6 of the Coupled Model Intercomparison Project (CMIP6) suggest a greater decline in mean global ocean animal biomass under both strong-mitigation and high-emissions scenarios due to elevated warming (Tittensor et al., 2021). After 2030, CMIP6 models show larger declines in marine animal biomass, with almost every year showing a more pronounced decrease under strong mitigation and most years from 2060 onwards showing a more pronounced decrease under high emissions (Figure).



Note:

Blue coloring represents strong mitigation, and red represents high emissions.

Figure
Multimodel Mean Changes in Marine
Animal Biomass under
Strong-Mitigation and High-Emissions
Scenarios (Source: Tittensor et al., 2021)

