



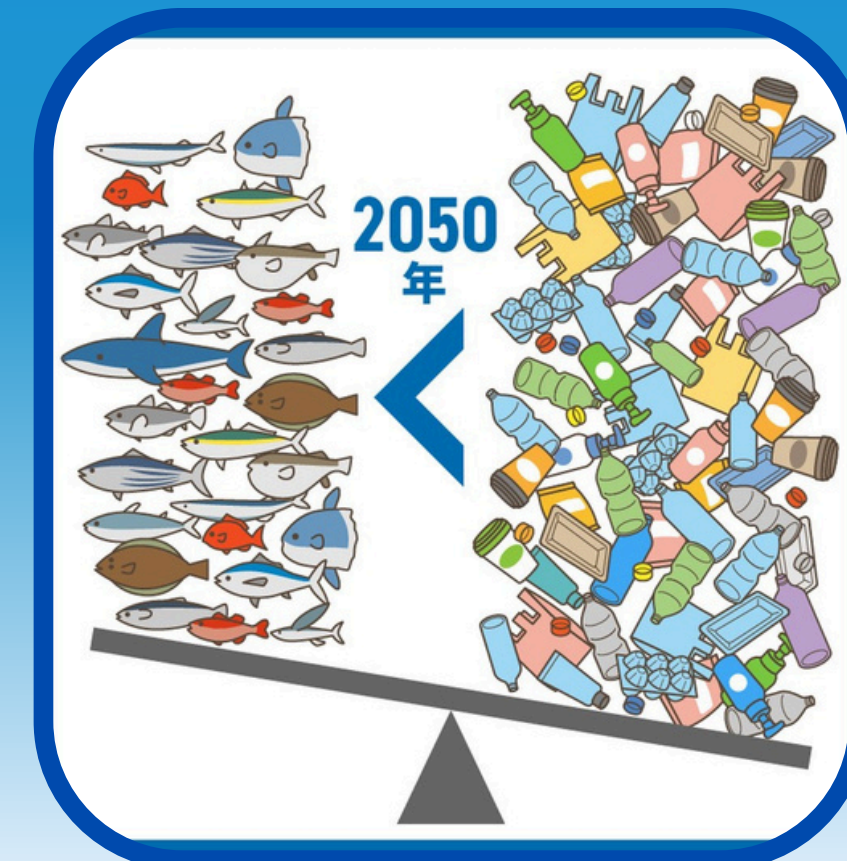
Plastic pollution in water

To what extent plastic pollution is a risk for seas and oceans ?



≠ **Plastics are present in almost every aspect of life**
An important environmental challenge

➔ 460 million tons of plastic/year
150 million tons in the sea
15 tons of plastics/minute



I- Chemical structure of plastic

polymerization

monomers = repetition
of small molecules

polymers

ethylene
 $\text{CH}_2=\text{CH}_2$

polyethylene
 $[-\text{CH}_2-\text{CH}_2-]_n$

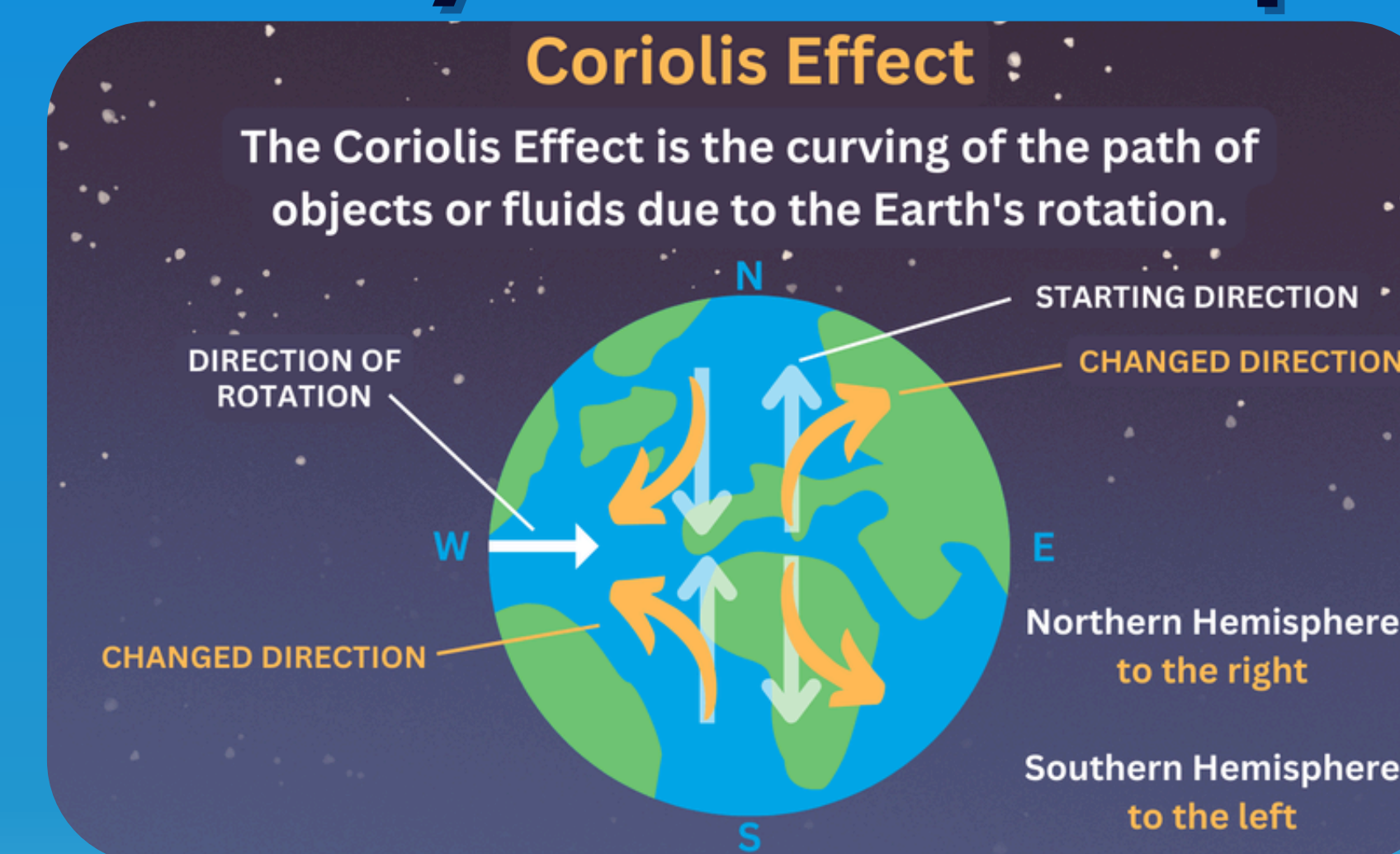
→ strong carbon-carbon (C-C) and
carbon-hydrogen (C-H) bonds



➔ plastics are hydrophobic = repel water

➔ persist in the environment

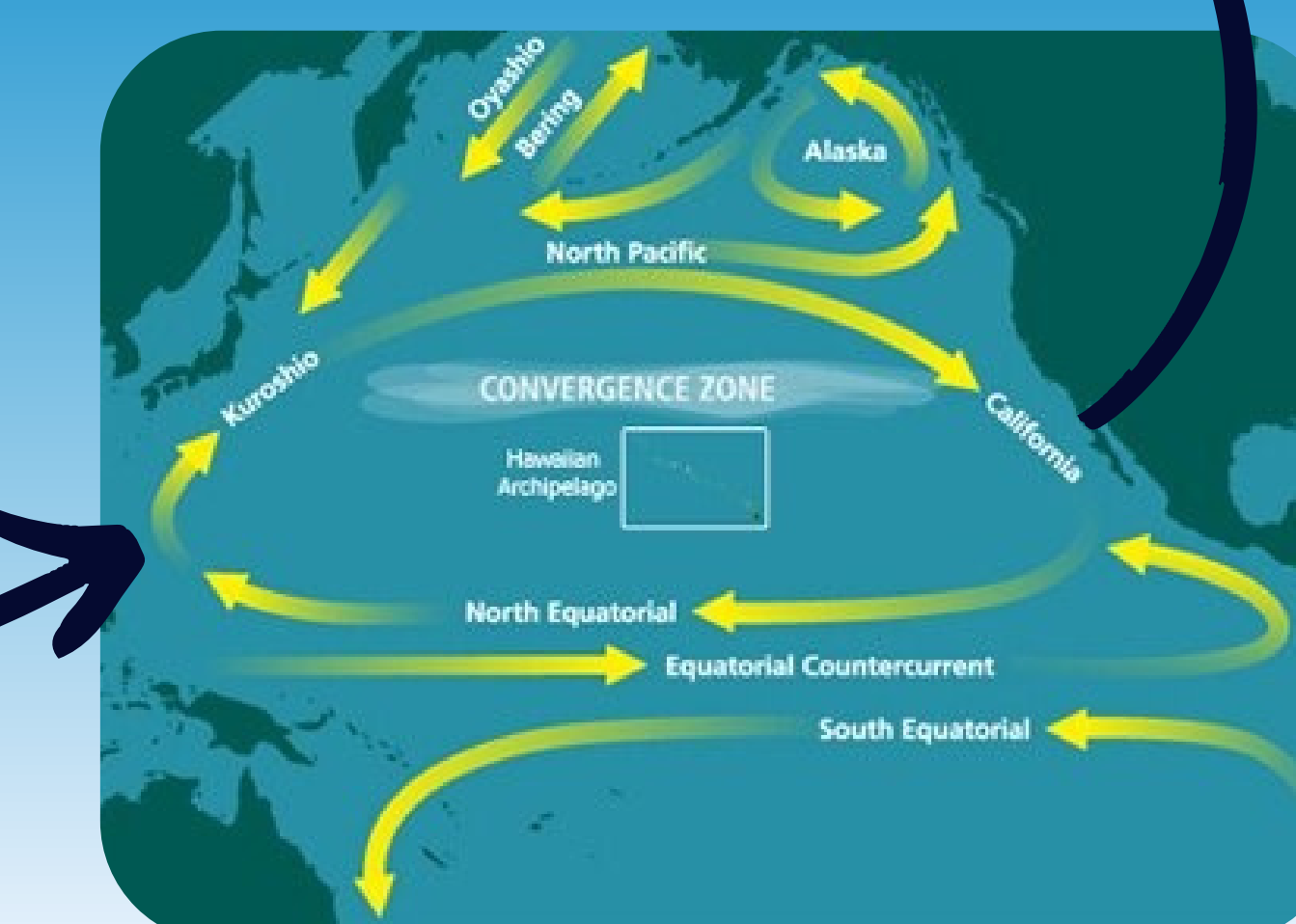
II- Physical transport of plastics in oceans



Ocean Gyres



Great Pacific Garbage Patch



III- The risks and solutions

→ More than 700 marine species affected



animals eat plastic



plastic particles enter
the food chain



Humans eat plastic: 5 g/
week



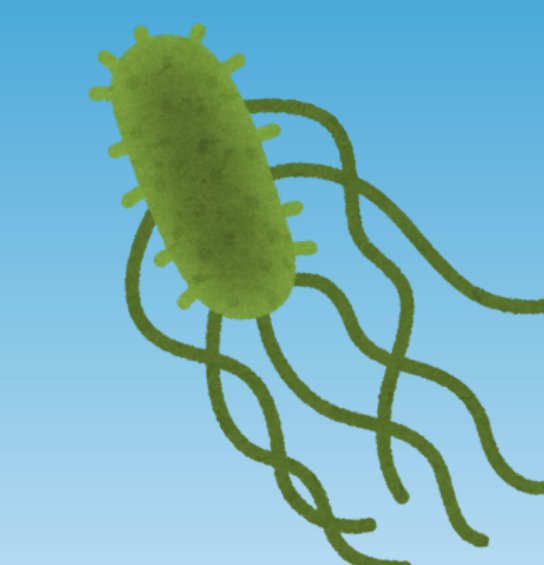
Reduce plastic



Bioplastic



Clean-up operations



Bacteria *Ideonella sakaiensis*