



# Ocean Gyres

Lesson #2

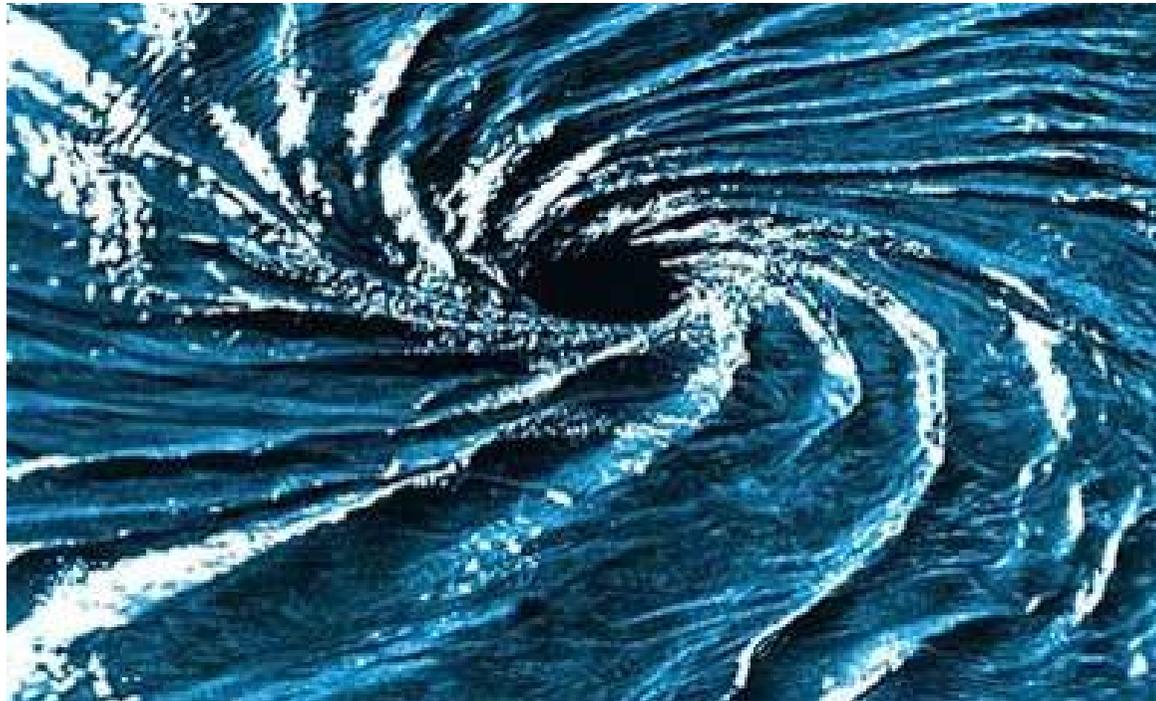
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Today we are going to talk about a thing called a 'Gyre'.  
It's a strange word and most people have no idea they exist.  
However the Gyres are a major environmental issue.

So what is a Gyre?



Well it's kind of like a whirlpool

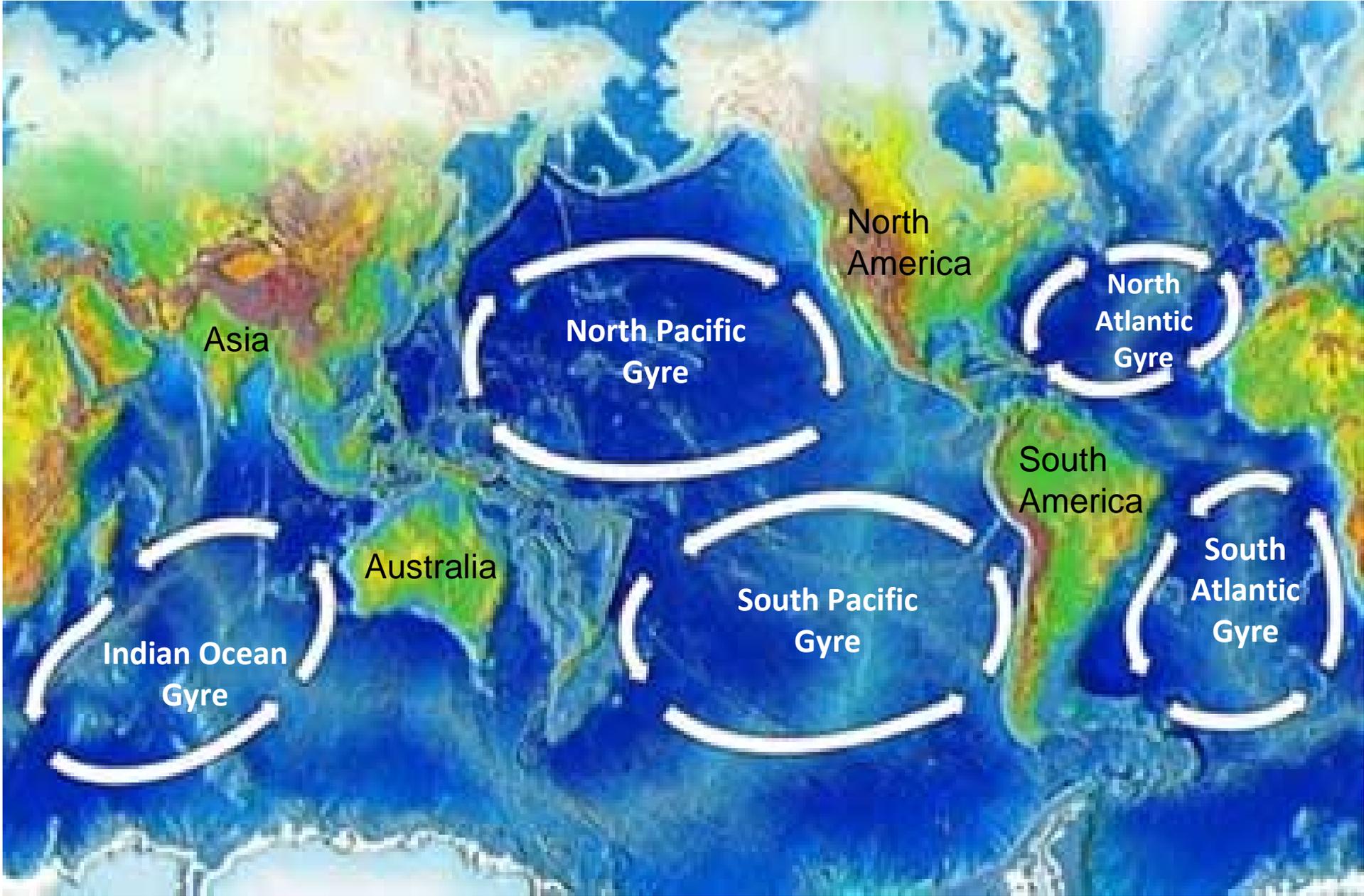
A satellite image of the North Pacific Ocean, showing the coastline of North America on the left and the swirling patterns of ocean currents. The central part of the image shows a large, circular gyre, which is the North Pacific Gyre. The text is overlaid on the right side of the image.

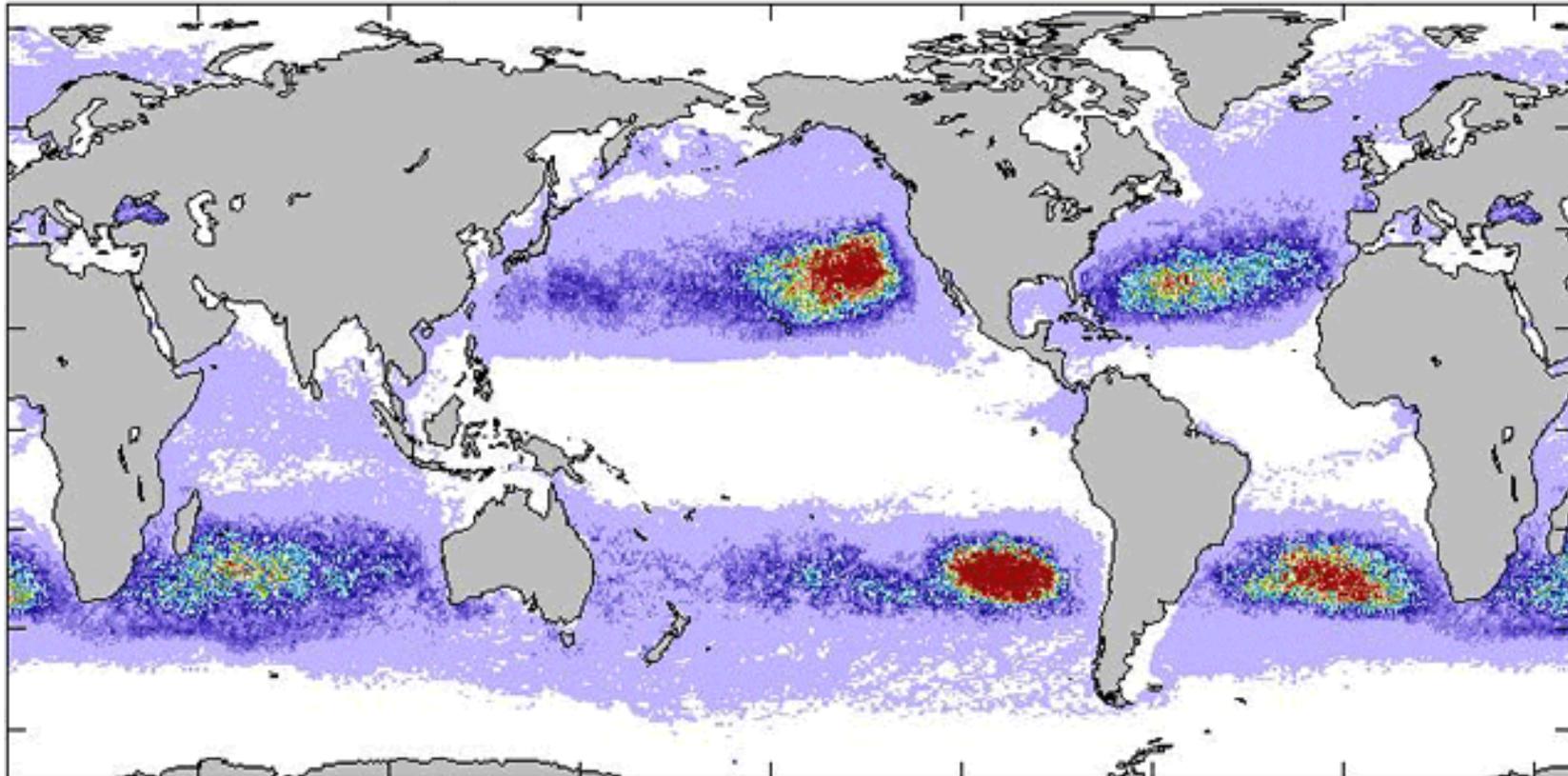
## What is a Gyre?

- Just like a whirlpool you create in your swimming pool, we have whirlpools in the ocean. We call them Gyres.
- Due to the ocean currents spinning, all waste produced by humans that has escaped to the ocean has collected in the middle of these Gyres and cannot escape.
- The main one is the North Pacific Gyre and is also known as the 'Great Pacific Garbage Patch' and the 'Trash Vortex'.
- BUT HOW MANY ARE THERE?

There  
are







This image shows the amount of rubbish in the ocean. The red indicates areas that are anywhere between 3m (10ft) to 10m (33ft) deep with rubbish.

It is believed that in the North Pacific Gyre, there is enough rubbish to cover Australia in 3m (10ft) of garbage! Imagine that!

# When was it first discovered?



- Captain Charles Moore, Founder of the Algalita Marine Research Foundation discovered the North Pacific Gyre in 1997 whilst returning to California from Hawaii aboard his catamaran.
- Sailors traditionally avoid this area due to its light winds, hence the vortex had been previously avoided.
- In the eastern portion of the Gyre he encountered a substantial amount of trash, mostly plastic, scattered across the area. The area contained everything from large abandoned fishing nets (ghost nets) to plastic bottles, bottle caps, toothbrushes, containers, boxes, to miniscule particles of plastic that have either been reduced from larger pieces by wave action or sunlight (photo-degradation).

**HOW**

**DID**

**THIS**

**HAPPEN?**

- Around the world, approximately 100 million tonnes (220.5 million kip) of plastic are produced each year of which about 10 percent ends up in the sea. About 20 percent of this is from ships and platforms, the rest from land.



World-wide 13-15,000 pieces of plastic are dumped into the ocean every day.

Every year, 10 million tonnes (22.5 million kip) of rubbish is dumped into the ocean.

This is the same as a line of dump trucks that reach all the way across Australia each loaded with garbage. Now that's a lot of rubbish going into our oceans.



# What is in these gyres?

- The North Pacific Gyre is a rubbish dump. Instead of servicing the waste disposal needs of a small community, it collects rubbish from several countries.
- The material in the gyre is nearly all plastic and nearly all from Japan and the USA. Plastic bags, cups, packets, containers, toothbrushes, shoes and fishing nets. Styrofoam, dental floss, beer wraps and hair gel. The gyre does not discriminate.
- These plastic materials all have one characteristic in common; they are not organic therefore they cannot *bio-degrade*. So they will never disappear.
- Most of what is in the gyre is not visible on the surface, rather it is broken into billions of confetti like pieces which sit beneath the waters surface.
- 70% of the plastic sinks to the bottom. Dutch scientists have counted around 110 pieces of litter for every square kilometre of the seabed, a staggering 600,000 tonnes (1.3 million Kip) in the North Sea alone.

# Water Samples from the Gyre?



# The Impact?



# Can we clean it up?

Research is looking into the affects of taking the rubbish out. Unfortunately it has been there so long that hundreds and thousands of creatures are now living amongst the plastic so if we take it all out without thinking, we will kill so many creatures. We need to research the problem before we remove it. However we can stop adding to it!



# What can I do?



Make sure your rubbish goes in the bin



and



**Instead of this?**



Use one of these



**Instead of this?**



Use one of these





to plastic products and they won't end up in the ocean where they can hurt our animals.