

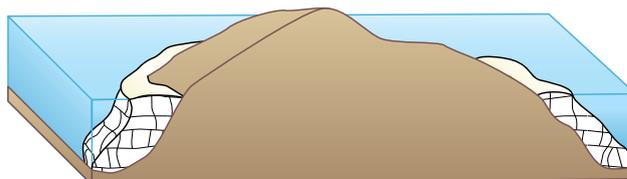
Reef Structures

Subject matter: Recall the different types of reef structure (e.g. fringing, platform, ribbon, barrier, atolls, coral cays).

Recommended reading: *Coral Reefs and Climate Change - Patterns of distribution (p.84-85) Zones across the reef (p.92-94)*

FRINGING REEF

Fringing reefs are reefs that grow directly from a shore, with no “true” lagoon (i.e., deep water channel) between the reef and the nearby land. Without an intervening lagoon to effectively buffer freshwater runoff, pollution, and sedimentation, fringing reefs tend to particularly sensitive to these forms of human impact.



Fringing reef



Coral coast, Fiji

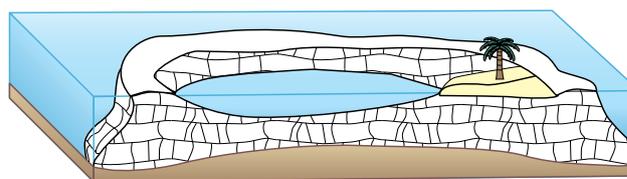


Fringing reef in Indonesia.

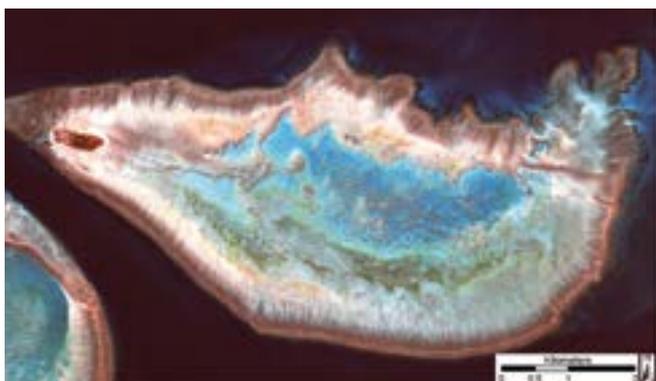
PLATFORM REEFS AND CORAL CAYS

Platform reefs begin to form on underwater mountains or other rock-hard outcrops between the shore and a barrier reef.

Coral cays begin to form when broken coral and sand wash onto these flats; cays can also form on shallow reefs around atolls. Coral cays are small islands, with typical length scales between 100 - 1000 m, that form on platform reefs,



Platform reef and Coral cay



Heron Island

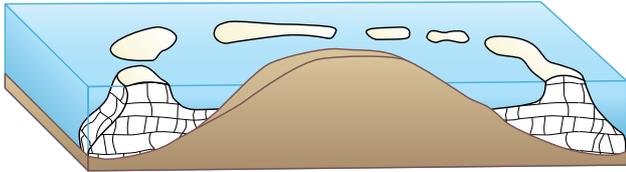


Lady Elliot Island

Reef Structures

BARRIER REEFS

BARRIER REEFS are coral reefs roughly parallel to a shore and separated from it by a lagoon or other body of water. The coral reef structure buffers shorelines against waves, storms, and floods, helping to prevent loss of life, property damage, and erosion.



RIBBON REEFS are a type of barrier reef and are unique to Australia. The name relates to the elongated Reef bodies starting to the north of Cairns, and finishing to the east of Lizard Island. The Ribbon Reefs form a stunning chain of 10 individual reefs.



Charite Veron
Outer Ribbon Reefs of the Northern GBR



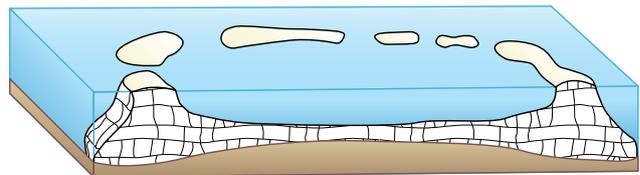
Planet Dove - Allen Coral Atlas



Planet Dove - Allen Coral Atlas

ATOLLS

Atolls are a series of coral islands that form a circular shape surrounding a central lagoon. The formation of an atoll is a slow process that can take millions of years. It begins when an underwater volcano erupts, creating a buildup of lava on the seafloor. Fringing reefs develop around the volcanic island. As the reef expands, the interior island usually begins to subside and the fringing reef turns into a barrier reef. When the island completely subsides beneath the water leaving a ring of growing coral with an open lagoon in its center, it is called an atoll.



There are 5 atolls in Australia: Lihou Reef (Coral Sea), Mermaid Reef, Imperiesuse Reef, Clerke Reef (NW Coast), Ningaloo Reef (WA)



Planet Dove - Allen Coral Atlas

Maldives



Dave Logan

Coral Sea

Reef Structures

Identifying reef distribution and types - Classroom

Use <http://reefgis.reefbase.org> to:

1. Recall where coral reefs are in the world by describing the main regions (e.g. Red Sea).
2. Identify which regions in the world were affected by a severe coral bleaching event during the period January to December 2002 by selecting the spatial data layer: Coral bleaching and SST and then select the dates and refresh the map.
3. Identify the regions which had the largest occurrence of coral disease in the period January to December 2002 by selecting the spatial data layer: Coral diseases, and then select the dates and refresh the map.
4. Locate in South East Asia which countries are mostly threatened in 2002 by: coastal development, overfishing, destructive fishing, or marine pollution by selecting the country and then select the spatial data layer: Reefs at Risk, and refresh the map.
5. Determine areas in South East Asia that are commonly monitored by Reef Check's volunteer monitoring program by selecting the country or zoom into South East Asia and then select the spatial data layer: Coral Reef Monitoring, and refresh the map.
6. For South East Asian countries find out which one's have: atoll reefs, fringing reefs or barrier reefs by selecting the country or zoom into South East Asia and then select the spatial data layer: Location of Coral Reefs, then select the reef and geomorphic type and refresh the map.

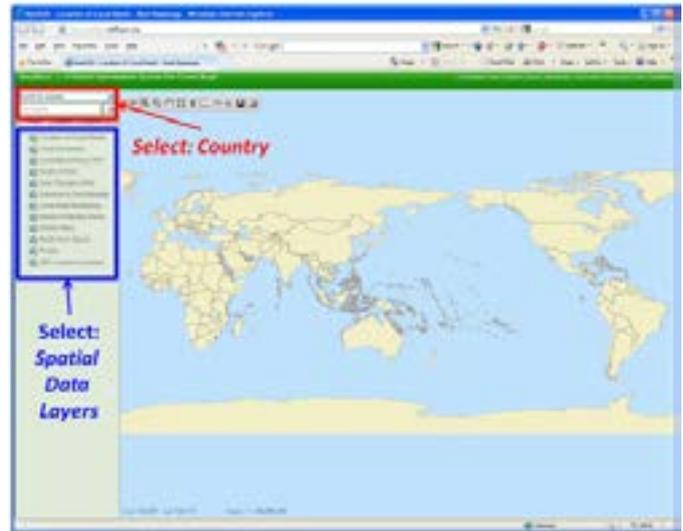


Figure 3: Screenshot of the Reef Base Geographical Information System Website which provides a user interface to assess, question and analyse geographic information related to the reefs of the world by selecting a spatial data layer and a region of interest.



Use Google Earth to:

7. View the satellite imagery of an atoll reef, fringing reef or barrier reef, previously found in Reef Base GIS (task 6) and then describe the location of the reef types in relation to the country by zooming into the area of interest using Google Earth tools and determine the neighbouring countries.
8. For the atoll reef, fringing reef or barrier reef of tasks 6 and 7, describe what you expect are the impacts using a visual assessment of the imagery in location to adjacent countries and oceans. Again, zoom into the area of interest and assess the land adjacent to the reefs on number. Determine the population density by assessing the number of cities or villages or the run of turbid water.

Questions

1. What type of reefs will be most influenced by activities on land and why?
2. What type of reefs do you find closest to your home or choose a reef you have visited.