Welcome students. Today I'm going to discuss one of the important topic from the course GC 106 climatology oceanography for geography students of six semester under Bachelor of Arts program. , I'm Mr Kiran Prakash Naik, Assistant Professor, Department of Geography from Government College of Arts science, Commerce, Quepem Goa. The topic that we are going to discuss is from Unit 3, the title of the unit is oceanography, and the module that we are going to discuss today is tides and its types. In this video I'm going to discuss about the concept of tides, how tides are formed, the tidal burst that stages of the tides, the types of the tires, and the impacts on the tires on the coastal environments followed by conclusion. At the end of this video, students will be able to understand the concept of types and its formation. Students will also get in depth knowledge about the various types of types and they will understand the impact of this types on the various ecosystems.

Tide can be defined as the alternate rise and the fall of the ocean water, and this is done with the gravitational pull of the celestial bodies such as sun and the moon on the earth and the ocean, which leads to the formation of tides. Now this tights can be caused due to the gravitational pull of the earth by the sun. Also the gravitational pull of the earth by the moon as well as the rotation of the earth. These things are responsible for the formation of ties. Now let us discuss how tides are formed. The mechanism of the gravitational forces of the sun and the moon is depend on the gravitational pool and the distance of the. Sun, Moon, and the earth. Now the sun is bigger as compared to Moon, so you all will be assuming that the sun will be having more gravitational force on the earth. But here distance also matters.

The moon is very close to the earth as compared to Sun. That is why the gravitational pull of the moon over the earth is more as compared to Sun. So the moon determines. The magnitudes of the type. It is both the land and the water bodies that are pulled by the gravitation, but the relative pool of the land is lesser as compared to the water, so the effects of the gravitation on the water is more. Also, the position of the Moon, Sun and Earth plays a very important role which is responsible for the different types of their types, whether it is a line or whether it is

right angle that also plays a very important role. Next we have is tidal bulge. Now this tidal birds are there high tide regions. Because of the gravitational pool, the water is attracted towards this celestial body and give rise to high tide. The side of the Earth that is nearer to the moon will be having one tidal burst whereas the other side of the Earth will be having the second bulge. So the water of the ocean is pulled towards the moon under the impact of gravitational pool and this create a tidal bulge. In this diagram you can see there are two figures. One is showing springtide wherein you can see the two tidal bulge. One is towards the sun and one is towards the moon, whereas on the other hand the nip tide shows the balls one is towards the moon which is having a greater balls whereas the other one towards the sun.

There are different stages of the tides. In first stage you can see there is a flood tide where in the sea level rise for a certain hours, then we have high tide, where in it is a stage where the water reaches to its maximum level. After certain hours it will be having a ebb tide. Varying. In this stage the sea level keep on resetting over a several height. Where in the sea level keep on resetting over a several hours. Next we have is low tide where the sea level stops receding. The tides can be classified into different types based on its site based on the position and based on the frequency of the types based on the height, we have high tide and low tide based on the position of the moon, Earth and the sun we have nip, tide, spring tide and based on the frequency we have to Reynold tides, semidiurnal, tides and mix types. Now let us discuss about the first type of types that is classified according to the height of the types. We have. High tide and these are the sea level where the water is at its greater height during its tidal cycle, whereas low tide refers to the sea level where it reaches to its. Lowest height within the tidal cycle.

The difference between the high tide and the low tide is tidal range. In this diagram you can see. The light color of the ocean water representing the high tide, whereas the dark color. Of the ocean water in dark blue represent the low tide, so this line will represent the high tide level, whereas this line will be representing the low tile level where the water is reaching up to this level. During low tide, the difference

between this high tide and low tide is tidal range. This tidal range may varies from one type of tide to another, so it is not constant. It changes based on the location of the Moon and Sun. That means it changes during Nip, tide and spring time and it has a. High tide during the spring tide so extreme tidal range can be seen during these spring tide.

According to the position of the Earth sun and the moon, this time it can be again divided into 2 times spring tide and nip tide. Spring Tide is a situation where in you can see the sun, Earth and moon are aligned so the gravitational pull is very high. So this can be seen in full moon and New Moon phase and they are effects is combined producing the springtide, whereas on the other hand the nip tide. Can be seen where the sun, earth and the moon is at the right angle and this can be seen in the vaccine and waning moon. Or you can say Half Moon or maybe give us moon or first and the third quarter so this effects are detected and obtaining the tide which is having less height and that is called as neap tides. So spring tide is the position as I said, when the sun moon and the. Earth are aligned are in a straight line, so the force of the sun and the moon is greater, so you can see here there is a great bulge tidal balls. You can see which shows the spring tide. So this position is also known as CG position where in. These bodies are in a straight line. This occurs twice a month, wherein you can say it occurs during full moon day and also in the new Moon Day.

There is an increase in the activity of phase during the spring time and if it is coincide with the sunset or sunrise, you can see fishing activity will be done in a very great grade. This spring tide is also known as King Tide because the height of the tires are greater. As compared to nib types. The next type of type that we have is nip tide, wherein you can see the sun, the Earth and the moon creates a right angle so gravitational pull between the moon and earth is shown here, whereas the gravitational pull between the sun and the earth is shown here. You can also see here the bulge towards simones more because distance also plays a very important role. This can be seen in the Half Moon or gibbous moon of the phase of the moon. The gravitational pull of the Earth and the sun fights with each other, which means

that there is a lot of stress over the earth between these two position. So this movement is resulted in the seabed tend to be less and normally result in days that are less properties for fishing. According to the frequency, the tides are again categorized into three types. Geranyl tires were in. You can see only one high tide and one low tide can be seen per day and that is. During a refers to the daily occurrence daily. One tide and low tide which is of equal height. You can. Endurant tires only one tide and low tide can be seen per day during all refers to daily occurrence.

Second type we have is semi different types. It is also a tidal cycle wherein 2 equal high tides and two low tires can be observed parede whereas we also have mixed add. It is also tide cycle in which to unequal height of low tides and high tides are found. In this diagram you can see in this figure you can see only one high tide and low tide is observed quality and that is a daily occurrence of tide. It is a situation where only one complete tidal cycle per day. Example of this type of tires can be seen in the Gulf of Mexico along the western course of Alaska in parts of Southeast Asia. 2nd is semi. During all tires you can see 2 equal high tides as well as two equal low tires can be seen per day so the interval between the high tide and low tide is around 12 hours 25 minutes. The example here we can see this type of situation is widespread in the Indian Ocean, eastern African coast and Bay of Bengal. Last type of tide that we have based on the frequency is mixed I'd wherein you can see two unequal high tides and low tides with different heights. Here you can see high tide is of 1 meter in the same day you can see one more high tide with a 3 meters of height. Also there is unequal. Low tides occurring at that particular day, so the example here we can say is Gulf of Mexico and in Caribbean sea and also southeastern Brazilian coast. This map shows the occurrence of tides based on the frequency. The green color shows the places or the coastal environments where renew observed semi durable tires. Yellow color regions shows the region rates during and tires. The red color region shows the places where mixed tides can be observed. Tide also have impact on the various landforms on the Earth. They can destroy the coastal and also helps the. They can destroy the coastlines and also help

in the formation of creeks and inlets. A strong tide will be also helpful in building the Loeffler plains of rivers, which are very fertile since the day breezes swept away from the tires, they help to keep the harbors clean. So in cold countries tires bring a saltwater to the shore, so in the continuous movement prevents the harbor from becoming ice bounds.

The low lying areas around the seacoast during the high tide traps water, which is used for the manufacture of salt. Indian coastline of the West Coast is best example of the same. The alternative rise and the fall of the tires also help for the fishermen to sell out and return back to the coast with their types. The tidal energy is fast becoming an important and convenient source of energy. They are used in the production of electricity along the Gulf of Kutch and in state of Gujarat. The tides are very helpful for the tidal pores that prevent. Shallow water, which is constrained for the big ships to enter. Tidal currents are very potential source for the tidal energy, which is harnessed by many developed countries on very large scale. It can be devastating in case by the tides gets two huge and results in the flooding of nearby coastal regions. Also, the tides are very helpful for ecosystems such as mangroves, forests, and coral reefs to grow and sustain. During high tide near the mangrove environment, the water level rises so lot of fish is comes near the mangoes and mango have the spatial characteristics in which the roots are exposed above the ground. So during low tide the water level comes down South Fish is that have come near the mangoes trapped in the roots. So this also act as a fishing ground for different migratory birds also for different animals and also for the.

People living near this environment, so these are some of the impacts of the types. To conclude, I would like to say the rise and the fall of the ocean water give rise to tires, and this tides are classified on the basis of height, position, frequency of the types. Tide rise this tides raise the level of seawater and hence exposes a large part of the ocean for erosion and it can be devastating in cases where the tire scared two huge and reserves in the flooding of the nearby coastal areas. Tides are very helpful for ecosystems such as mangroves, forests and also coral reefs to grow and

sustain. These are some of the references that were used to make this presentations. Students are expected to go through these websites. Thank you so much.