

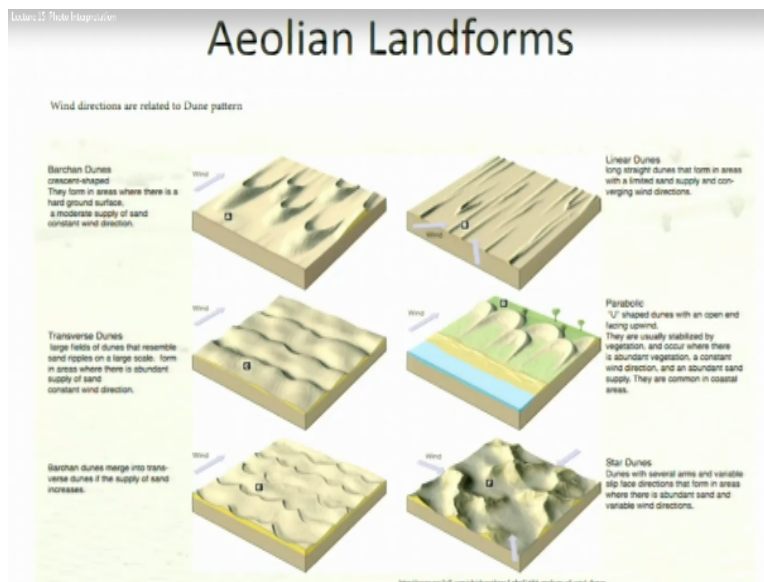
Photogeology in Terrain Evaluation (Part -2)
Prof. Javed N Malik
Department of Earth Sciences
Indian Institute of Technology – Kanpur

Lecture – 15

Photo Interpretations: Aeolian Landforms and their Surface Expression

Welcome back so today we will briefly discuss about the landforms which are formed due to aeolian activity that is wind action and mostly this type of features or the landforms you will come across wherever you are having very strong winds blowing.

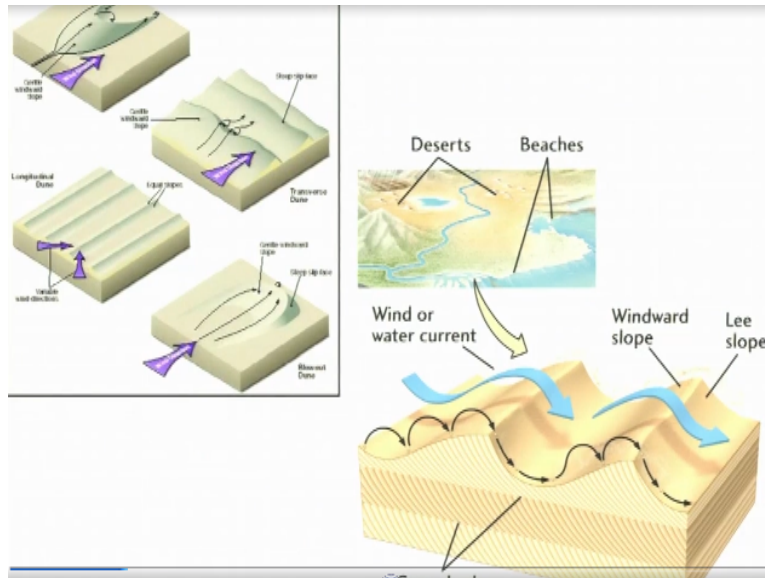
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And then loose sands are available so you may see this mostly we whenever we talk about the aeolian landforms it comes to our mind that we will see this in the desert or will come across such landforms in desert area. But you can see such features even along the coastal regions as well long some wide banks of the rivers or along in the flat plain area also. But the concentration of such land forms will be more in the desert areas.

Now this has few shapes or the forms of the aeolian landforms which have commonly observed so like Barchan Dunes, Transverse Dunes you are having and then you are having like Star dunes, Parabolic dunes and linear dunes, okay so this all landforms as I told the product of the wind action.

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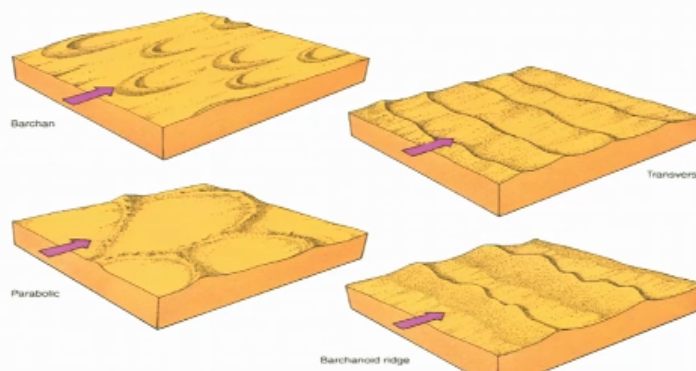


Now as I told that this land forms can be seen or observed in the desert or on the other side of the river valley also okay on the flood plain areas and everything depends on the wind action. For example, what is be shown here is the wind direction and also you having a very gentle slope here and then getting steeper and this is a wind go direction and this is the end which you are having the steeper part and this is your levered portion.

So, everything depends on the wind action so if you are having for example the wind action coming from three sides or more than that then you will come across the formation of the star dunes.

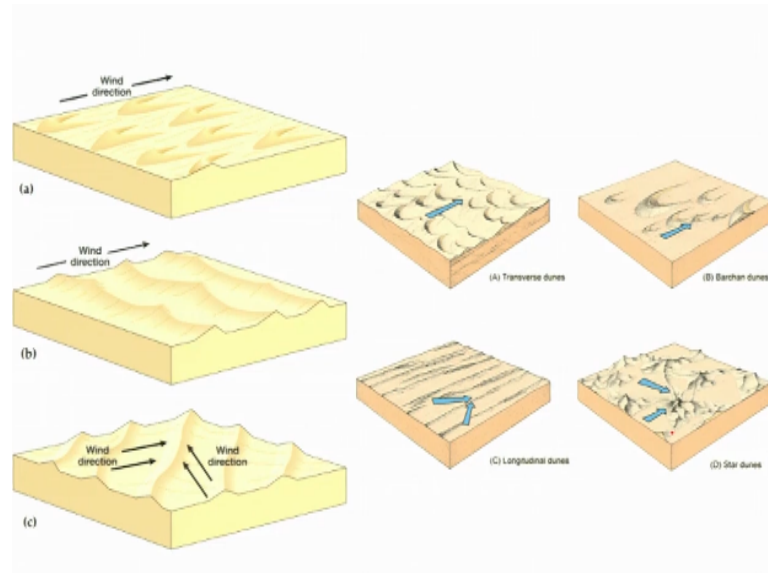
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Class	Type	Description
Crescentic	Barchan	Crescent-shaped dune with horns pointed downwind. Winds are constant with little directional variability. Limited sand available. Only one slipface. Can be scattered over bare rock or desert pavement or commonly in dune fields.
	Transverse	Asymmetrical ridge, transverse to wind direction (right angle). Only one slipface. Results from relatively ineffective wind and abundant sand supply.
	Parabolic	Role of anchoring vegetation important. Open end faces upwind with U-shaped "blow-out" and arms anchored by vegetation. Multiple slipfaces, partially stabilized.
	Barchanoid ridge	A wavy, asymmetrical dune ridge aligned transverse to effective winds. Formed from coalesced barchans; look like connected crescents in rows with open areas between them.



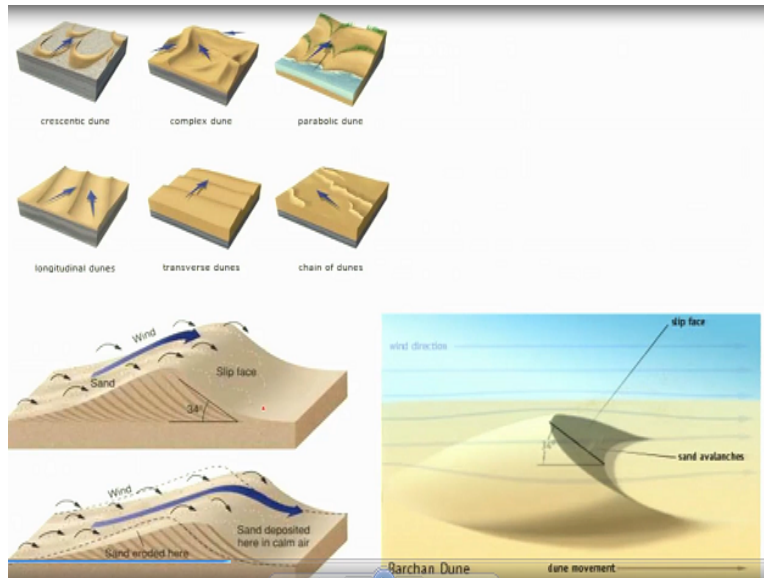
There is another example of the same thing and this part we will discuss and greater detail when the labs have been conducted so after this we are going we will get into the labs where you will be looking at the photographs and you will try to extract the information which are required for the deterrent evaluation.

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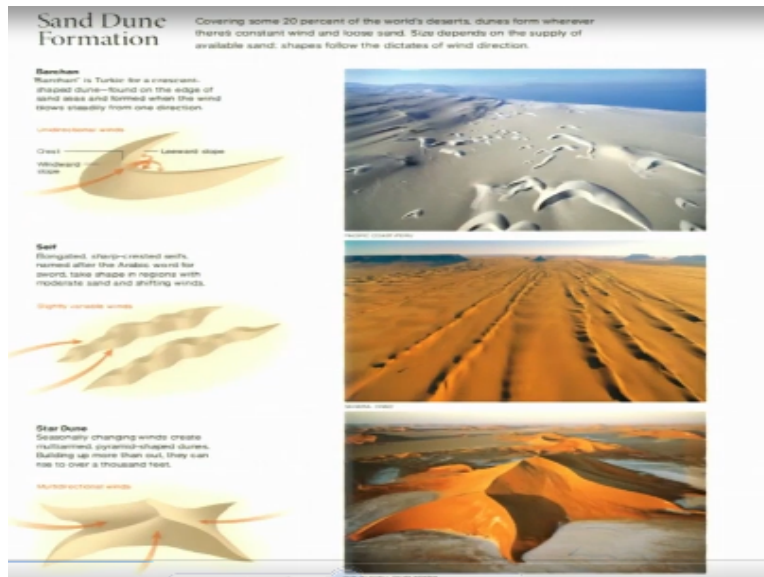


But this is typical of the star dunes where you are having the direction of the wind from more than one side. Now will see some examples of this on the satellite photographs and I have tried my best to get some photographs corona satellite photographs from our Rajasthan area or we can say border our area between the India and Pakistan we are having with some good photographs we will talk more in detail.

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So, this is what I was showing adjacent it has the steep face here and then you are having the slip face of the sediments coming in which will give rise to different shape of dunes either they are longitudinal or transverse dunes and then you are having the parabolic or sometime complex and complex dunes are mostly we can see in the terms of the star dunes and the crescentic dunes also. (Refer Slide Time: 04:19)



These are the examples of some photographs of your Barchan dunes and we are the windward side and the steeper side. And you are having the leeward slope or the leeward side and this one is the typical of the star dunes where you are having the direction of the wind is from different side. So, multi directional wind and steadily variable once then you will have to come across like a seif shape elongated longitudinal dunes which are just shown here.

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Aeolian Desert Dunes



This is how you typically look at a typically dune field and desert and this is ground photograph of the Barchan dunes and again longitudinal and very much similar to the ripple marks actually this one and again this is an example of longitudinal or elongated dunes field and the ground photograph of that and this is an aeolian photograph showing the ground conditions.

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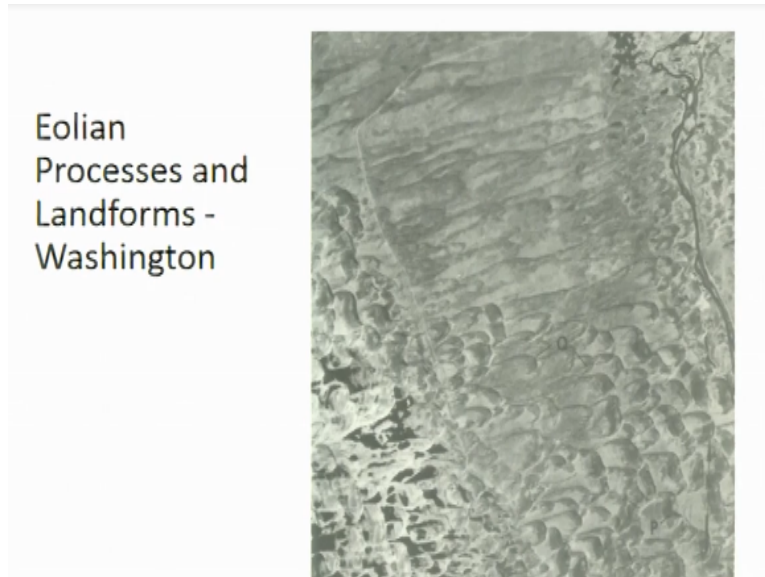


Similarly, this so we have a complex dune here and it demarcates the boundary between the two different environments here. If you see this side and this side is a clear cut boundary and this is an example of again longitudinal dunes and you are having a linear elongated and some erosional features over here so wind can erode also and you can see some very typical landforms which

you can also come across through the water action also.

And this is a typical of the wind action so wind can erode even the hard rocks again.

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This is again the Barchan valley and really you can mark it and it is longitudinal dunes similar photographs here also so this we will cover in detail and we are talking about in the labs and now let me go back and try to spend some time on the photographs which we have from Rajasthan wing.

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Now if you carefully look at this image you see in your left and this whitish tone features this is

your stream which flows at the contact of the desert and aeolian plane areas. This photograph is demarcating this boundary between the desert and the alluvial plains and this is from Rajasthan and this also marks the contact between the two different geomorphic areas or the zones and this contact is also representing the fault contacts. And this is known as (()) (07:51).

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More clear photograph here and if you enlarge it and then you can be able to make out clearly that this side you are having fluvial system where you are having all tightly me under system or the channels you are having here you can see this and some you may be able to see that they have the channels of the left out streams which are not connected to the present day one but this boundary is very clear boundary.

I have seen this in the field okay so if you go from this side to this you will see that very sharp boundary between the dune field and the active fertile here for the close of if you see you can be able to easily make out the features over here again you are having a very typical longitudinal dunes and we have few more which will help you in identifying such terrains. Now I was showing you one photograph in the presentation this you can easily make out.

It is a typical of the linear dunes or longitudinal elongated dune field and contact between the alluvial plains and desert. So, all this linear feature is nothing but the topographic which is being created because of the aeolian activity and the wind action the file is bit heavy you will be able to

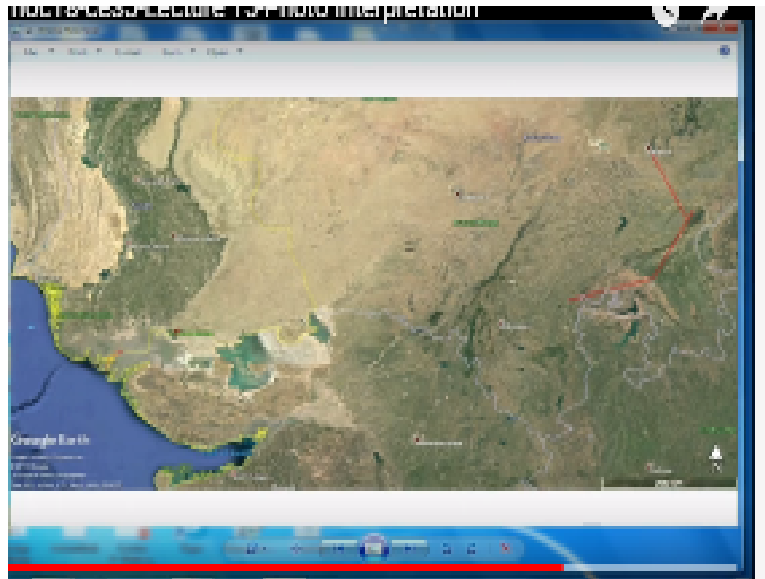
demarcate the land forms very easily.

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So, this is an another example of longitudinal dunes which you can clearly pick up from our resolutions satellite photo and these are from thar desert.

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And now this is the Google earth image and the previous photographs which I have shown the corona satellite photos high resolution and they were from this area actually but even if you take this image from Google earth and try to look at. It you will be able to easily the market the boundaries between the different geomorphic zones. So, for example I will just explain this and then you will have the labs where you will be looking at some coastal land forms.

And deflection google landforms and aeolian. Also of course the other part which we talked about that how the subsurface lithology will be reflected in forms of the different drainage pattern. And all that again and how we can identify those that we will do very quickly in the labs also. Now if you take this of course they are boundaries and which is also marking the international boundary here.

So, there is a part of the Gujarat and the boundary here which you can again pick up based on the tonal variation so this is the part which is occupied or is within Pakistan and of course this is the boundary. The yellow line which marks is the boundary between India and Pakistan and this whole area which you see here is your thar desert. We were looking at some photographs from the Indian side.

I was there from here with which we looked at the mostly the longitudinal dunes okay and the boundary or the contact which I was talking about was this one here. It goes like that and this also marks the geomorphic boundary as well as this marks the fault boundary again and this is another parker fault here and we have different tonal variations over here. And the coastal landforms which you can easily make out from this area and then Aeolian and fluvial over here.

So, I will stop here and then but at the end I would like to say that please do the labs very carefully because that is going to be a help or as the practice you do more you will be able to understand the terrain in a better way okay so thank you so much.