This topic is Third year BSc in subject of Geology

5th semester in paper. GEC 106 structural geology.

Module name is false and criteria for faulting. Module

number is 19. My name is Dattaraj Jawdekar. I work as

assistant professor in Government College of Arts,

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In this topic, we are going to deal with various criteria

that demonstrate faulting.

After studying this topic,students will be able to

identify faults in the field and describe various indicators that

point to presence of faults.

Criteria for faulting.

The force for us.

When we are studying is like a

simple line. In the Maps that we

draw in class. Fault is demonstrated as a simple line.

The images that are shown to you in the class.

Also are ideally images that clearly demonstrate that

defaulting has taken place.

They show that somebody has terminated abruptly and as got

offset because of faulting.

But in the field.

Things are not so simple.

For that we need several indications, several

evidences that tell us that faulting has taken place.

False may be recognized in the field with the help of several.

Evidences which are the continuity of structures,

repetition or omission of the strata silicification and

mineralisation in the fault zones, features that are

characteristic of fault planes sudden change in sedimentary

facies, and physiographic data.We will see each of this one

by one in the following slides.

Discontinuity of structures.

If a strata  terminates abruptly against different

bears, then a fault may be

present. You should also remember that certain strata may

terminate abruptly at the unconformities as well.

So enough care has to be taken while calling a

a certain plane is at fault.

The second criteria is reputation or

omission of strata.

If any layer of rocks.

Or layers of rocks are subjected

to faulting. Then a particular strata may get repeated across

the faults, and they may also

get omitted. Here in this case I've shown you one

image of an orange color bed that has got repeated.

Across the fault as well.

Care has to be taken here as well. Because

folding may also lead to repetition of the beds.

There are several features which are characteristic of

fault planes.

Faults are usually accompanied by features such as

slickensides. Gorge, Brescia and

mylonite. Slickensides are polished and scratched Surface

that result from friction along the fault plane.

Breccia is an angular rock of sedimentary origin

having angular fragments.

Breccia can also be used as an indicator of fault.

Apart from that I have Gouge which is like a micro bracia

where we have angular fragments,but they're very very small in

size, so it indicates intensecrushing across the.

Faults or a fault plane.

Then we also have Mylonite.Now Mylonite is a metamorphic

rock that is.

Foliated OK then it is foliated

cause of. Movement along the fault plane. So if you have

Mylonite in the field, itcan tell you that faulting

has taken place.

Here I have an image of

slickensides. In this image you will be able to see that there

are several scratches.

These scratches, or these striations help us in

determining that fault has taken place in a certain region.

Slickensides can also tell you the probable, The word

probable is important, The Probable direction of motion

along the fault plane. If you move your hand.

In One Direction, and if that direction feels smooth.

Then it is the probable direction of motion in

that particular region.

Care has to be taken again because slickensides and

similar features may be confused.

And may not be 100% sure indicator of faulting.

Next indicator is silicification and mineralisation.

Faults are fractures.

Fractures allow movement of mineralizing solutions, so

fluids may move in and around

the faults. And similar

fractures. If these fluids.

Such as water is concentrated with some ions.

Then it may deposit the material into the faults

and those fractures.

The mineralising solution may also replace the host rock with

a new mineral such as quartz.

Such replacements indicate faulting has taken place.

Change in sedimentary facies.

Because of faulting rocks.Having different forces may also

come in contact with each other.

For example, certain rocks are characteristic of salt certain

geological setting. An example would be

sandstone, which is usually found in near-shore environments.

And limestones are found slightly away from the shore.

In between usually we get deposition of argillaceous

clastic sedimentary rocks such

as shale. But if sandstone is brought in contact with

limestone, then it could indicate that faulting has taken

place, and because of thefaulting those two beds have

come in contact with each other.

Apart from that, we also have several physiographic criteria.

First, among those is fault scarps.

Scarps are steep wall like

features and they could indicate faulting.

Several other physiographic evidences include alignment

of waterfalls.

Alignment of rivers, rivers,taking 90 degree bends and

similar physiographic criteria,can be used in determining

presence of faults.

Exercise caution while reducing that there is any fault in a

given region because.

Evidences can be misleading.

As a result.

And as a precaution, one may choose to look at several

criterias together. For example,abrupt termination of the beds

can suggest faulting, but it could also suggest unconformity.

But faults are usually accompanied by breccias.

Where unconformities are usually accompanied by.

conglomerates so if there is evera termination and breccia, it

could give you a slightly surer answer to whether there is

presence of fault or not.

If you have waterfall in a given

area. And. It should not happen

that. It is directly deduced that there is faulting in that

region. Waterfalls can form as a result of erosional processes as

well. So to avoid that, you may have to look at several

other features such as slickensides and again

breccia and all those criteria if used together

can be very helpful in giving a sure answer to

presence of fault.

For this topic, I've referred to structural

geology by MP Billings.

Thank you.