**Unit 5\_Geomation: Redwoods**

So out here there's the great Pacific Ocean. And the wind comes trucking in from the Pacific Ocean. And it's just going great guns except at some point it runs into the giant mountain range of the Sierra, which we know goes up over the top and down the other side and down to Death Valley.

And so when the air runs into that, the air has to rise. And you may know that when air has to rise, it expands. And when you have air expanding, whether it be out here on the Pacific or from a bicycle tire, it cools. And when the air cools that makes nice clouds. And when that makes clouds that makes rain that comes dripping down. And so sitting underneath that, as you might imagine, you have really wonderful trees called the Redwoods because it rains like crazy on them. And they're really happy with that.

Now the air is cooling and the cooling rate is something vaguely about three degrees Fahrenheit for each 1,000 feet that the air goes up. It should be five, five is the thermodynamics. But when the cooling causes condensation that makes the rain that we see, condensing actually gives up a little heat. And so you only get a cooling of about three degrees Fahrenheit per 1,000 feet going up.

Now when the air comes over the top and starts coming down the other side, there's no water in it to evaporate. There's no water there, it's dry. And when air is coming down like that and being squeezed, it ends up warming. And that warming is about five degrees Fahrenheit per 1,000 feet that it comes down.

And so it cools going up at about three degrees Fahrenheit per 1,000 feet. It warms coming down five degrees Fahrenheit per 1,000 feet. And that in turn means that because the mountains are really high, that if the air comes trucking in at something like 70 degrees Fahrenheit, by the time it goes over 15,000 foot high, it's almost 15,000 feet to the top of the Sierra, and the air has to get over, why when it comes back down here to Death Valley, it is 100 degrees Fahrenheit. And you really would be wiser to go visit in the winter rather than in the summer.