agMOOCs
GIS and Drought Management_a global perspective
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Welcome to this talk on GIS and drought management in a global perspective. This talk is part of the GIS course on agMOOCs. My name is Balaji. I work for the Commonwealth of Learning based in Vancouver in Canada. My co-author in this is Shridhar who is based in India.

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At the end of this talk you would be able to state that in adaptation and preparedness for drought local information is important and its integration with S&T Science and Technology derived information is important. You would be able to give an example of a highly integrated local planning tool and you would be able to show the role of GIS in it.

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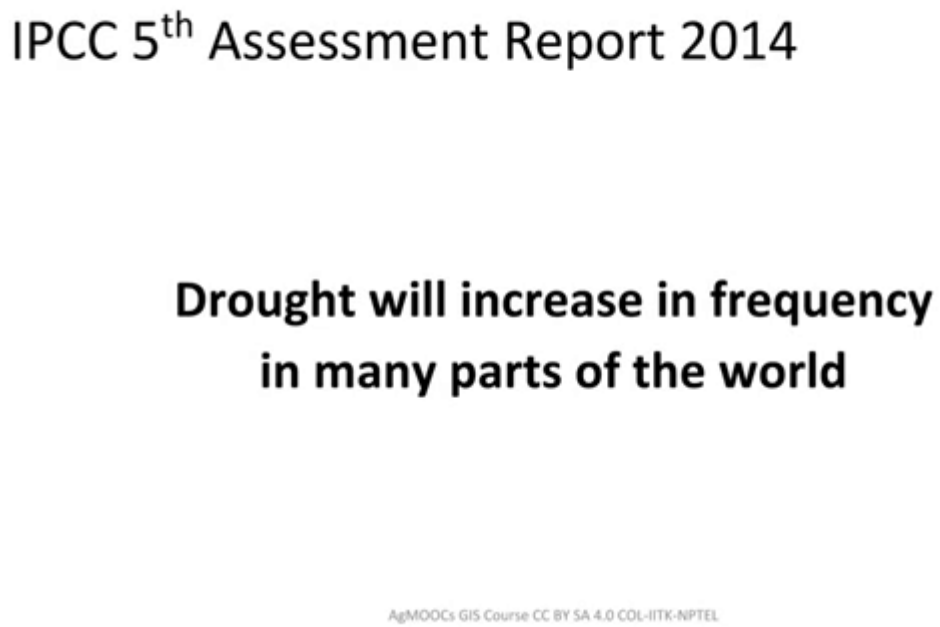

In another talk we learnt about the IPCC, the Intergovernmental Panel on Climate Change and the way it makes its assessment available to the global public through assessment reports. The last report appeared in 2014, it was called the Fifth Assessment Report. One very important forecast in that report is that drought will increase in frequency in many parts of the world in many parts of the world.
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This report also pointed out that effective adaptation strategies must integrate local knowledge with globally derived scientific and technological knowledge, local knowledge must be integrated with scientific and technological knowledge.
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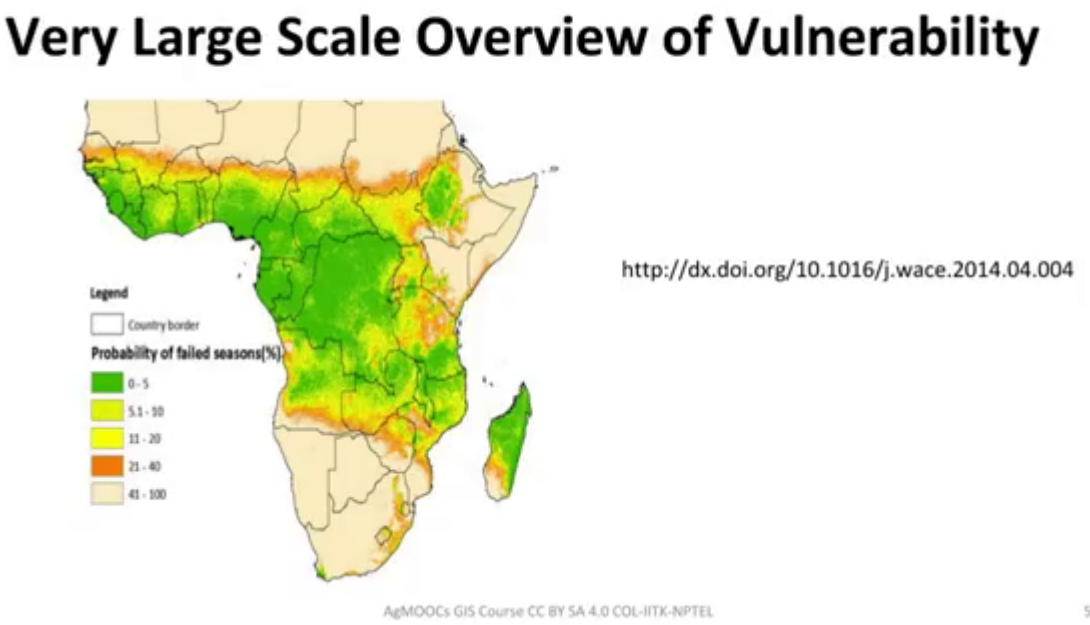

We saw in another talk in this course that very large-scale overviews global overviews were available, like in this case for Africa, drought vulnerability has been computed and forecast.
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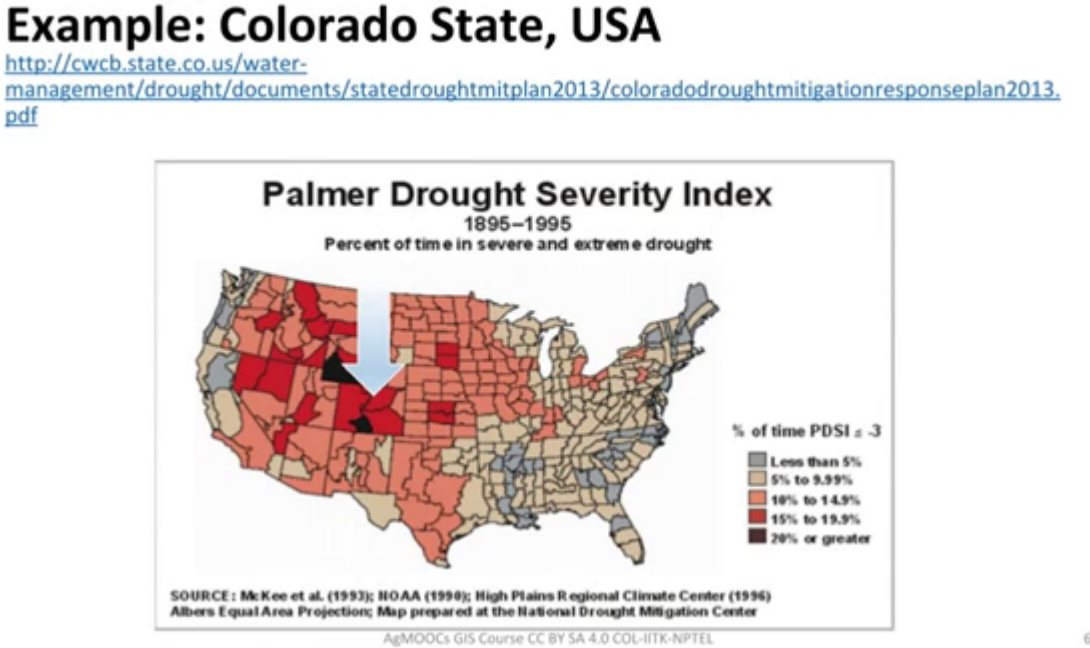

We also looked at how drought vulnerability is made available for a continental nation like United States.
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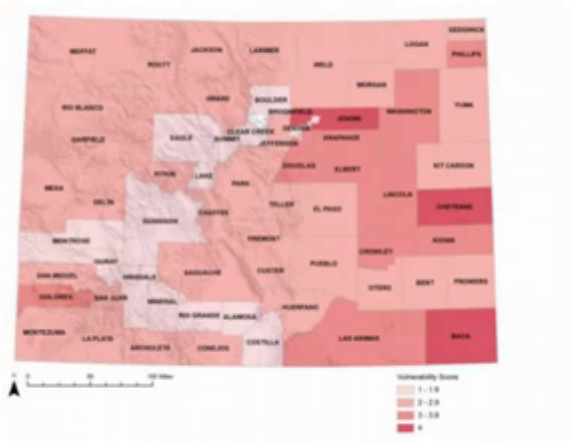
Colorado, USA
Agricultural Vulnerability to Drought (2010-



http://cwcb.state.co.us/water-management/drought/documents/statedroughtmitplan2013/coloradodroughtmitigationresponseplan2013.pdf

We also looked at the fact that it can be scaled down to the level of a state and even to a collection of counties inside that state in this case Colorado which is considered to be a highly vulnerable state, but you find in this map that some counties inside the state are not as vulnerable as many others are in other words there are -- there is a noticeable variation in vulnerability to drought. That is clear only when you scale down. When you go from a macro scale to a semi macro scale.

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In summary

To plan mitigation steps

micro-level assessment is necessary

Not much progress here yet!

GIS tools can help at all scales

We understood that to plan mitigation steps micro level assessment is necessary. We also understood that there has not been much progress here. One of the best examples of how

micro level assessment is used in drought management has come from Professor Nagarajan who covered this in another lecture on this course.
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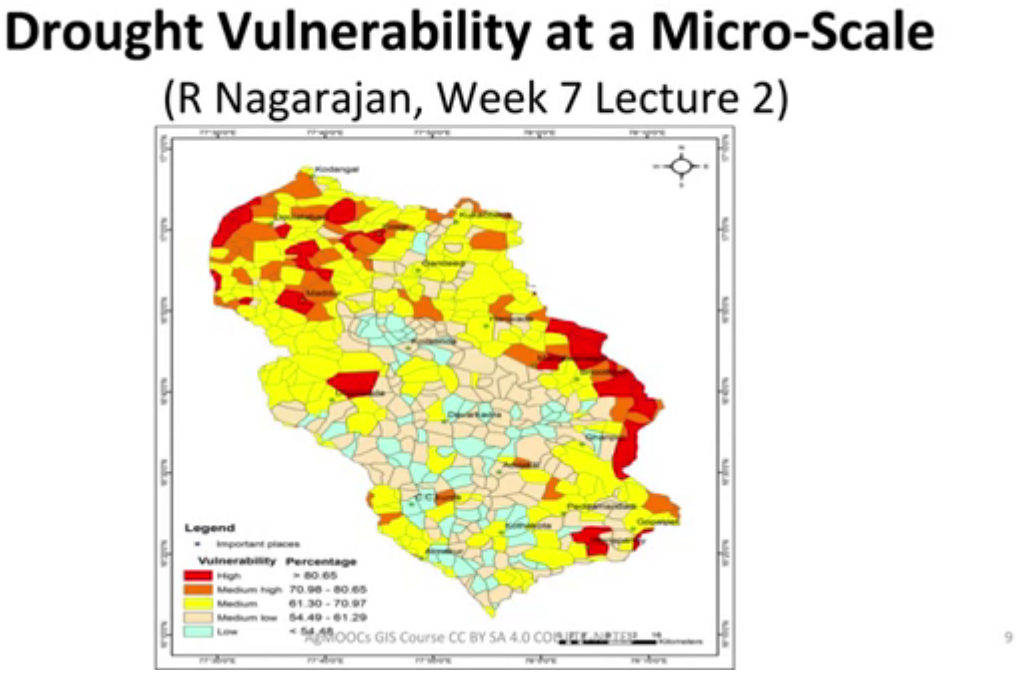

Here is a cluster of villages 200 of them that we are looking at where Professor Nagarajan has computed drought vulnerability based on a variety of parameters but primarily based on rainfall. This map shows village by village vulnerability.
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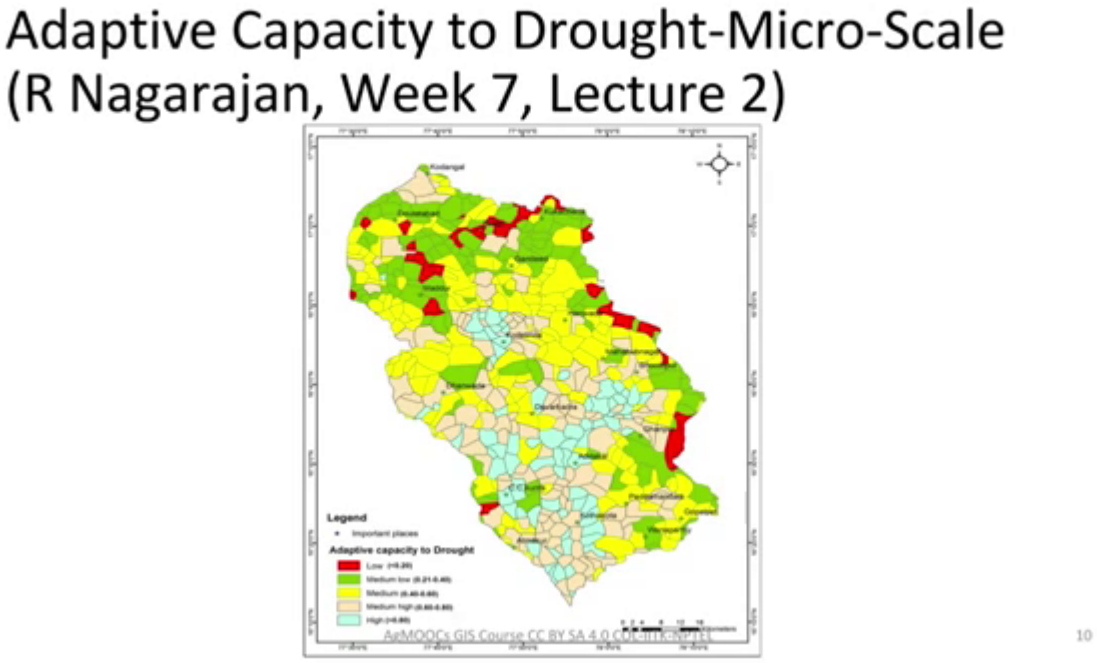

Professor Nagarajan also showed village-by-village adaptive capacity to draw which is presented here. This is a cluster of 200 villages we said. We can look at a much smaller cluster mainly as clustered around a village called (inaudible 00:03:26).

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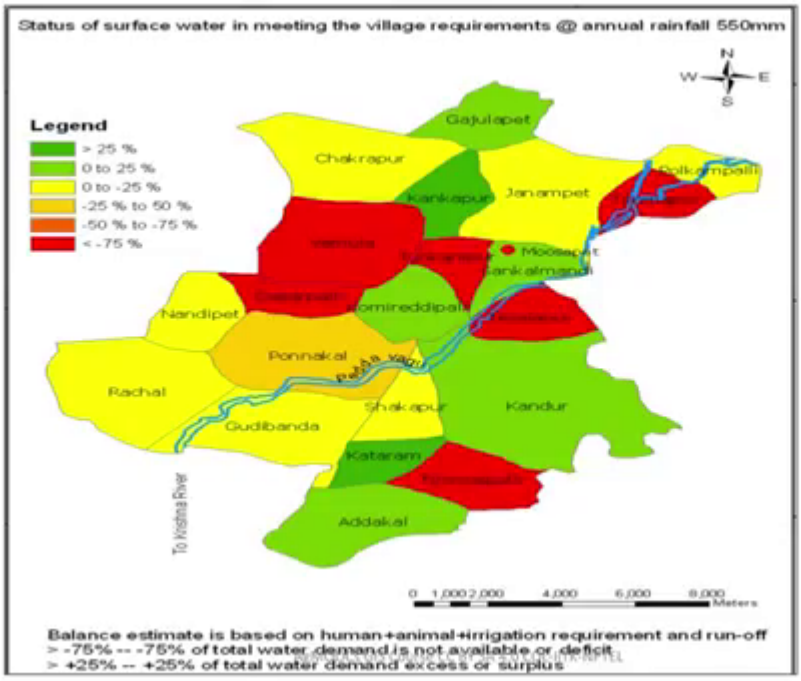

This map shows how in the cluster of just 21 villages inside that 200 village collection. How drought vulnerability varies? It's based on a particular forecast of rainfall and you find that some villages are extremely vulnerable compared to several others. And therefore effective measures can be taken by local authorities as well as by farmers based on such information. For example crops can be planned in a better way. Irrigation can be planned in a better way. In fact choices of seeds can be arrived in a much better way using this information. This information was indeed shared with farmers and they found that information highly useful and authentic statements are available on the internet.

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https://www.youtube.com/watch?v=gnQGyE5AWPA

Here is Mr. Balachander who is from one of the affected villages, potentially vulnerable villages talking about how useful to him this particular vulnerability analysis was. There could be many such examples that we will notice in a small area like this.
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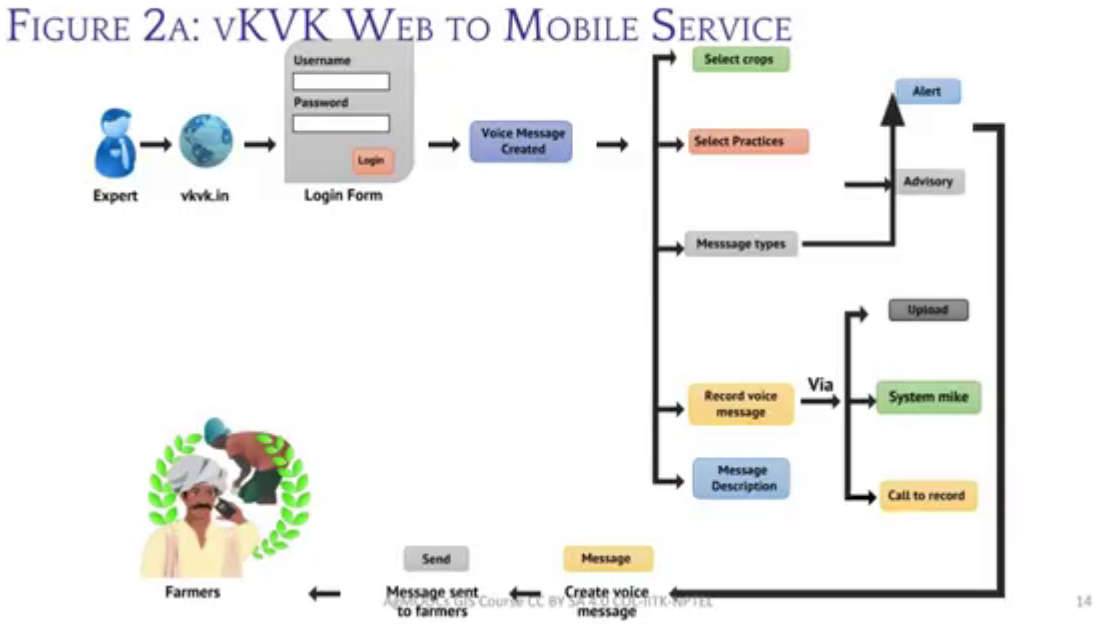

Today, it's not necessary to communicate with farmers only face-to-face information like this which is very specific to localities can be communicated via mobile phones. IIT Kanpur Professor, T.V. Prabhakar's group which runs the agMOOCs has developed a very very sophisticated yet very easy to use technology for connecting experts to farmers to communicate information pertaining to localities in a very precise and in a very timely manner, it's called vKVK. Now the GIS tools and with vKVK farmers can be given extremely precise vulnerability assessment and in a way that is very timely for them.
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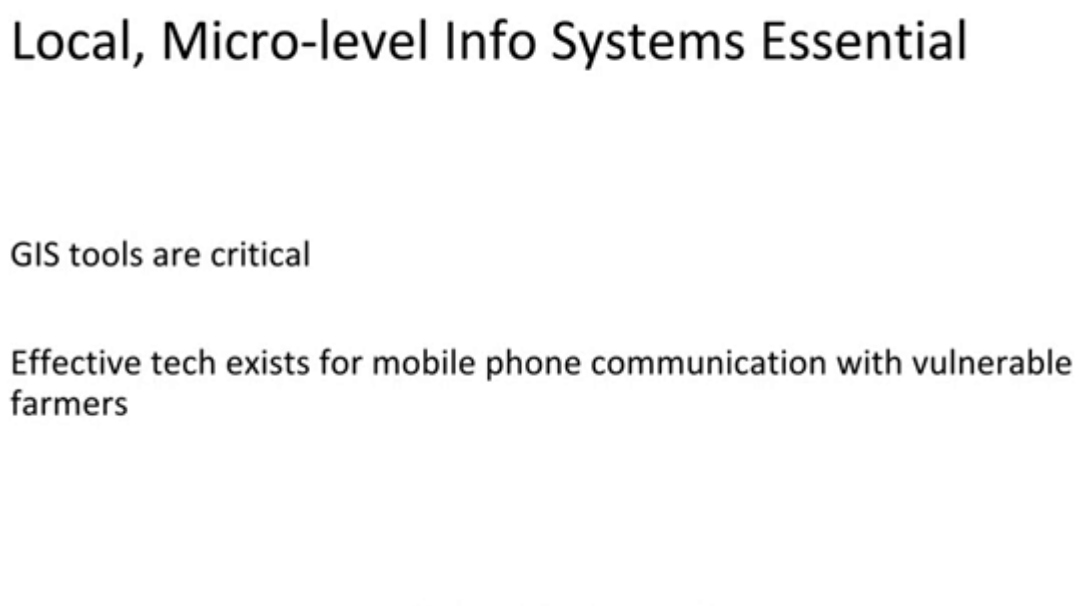

So to conclude this talk, we would say that local micro level info systems are essential for planning adaptation to drought which is going to increase in frequency in many parts of the world. GIS tools are critical and there is effective technology available for communicating those results to farmers who need them most. This combination of GIS tools and mobile technology is going to be fundamentally important in the years to come in most regions of the world where drought is going to increase both in intensity and in frequency. Thank you.