

GIS and Drought Management: a global perspective

Balaji V

Commonwealth of Learning (COL), Metro Vancouver, Canada

With Sreedhar G, Hyderabad, India

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At the end of this talk

You would be able to state that in adaptation and preparedness for drought

- Importance of local info and integration with S&T info

- One example of highly integrated local planning tool

- Role of GIS in it

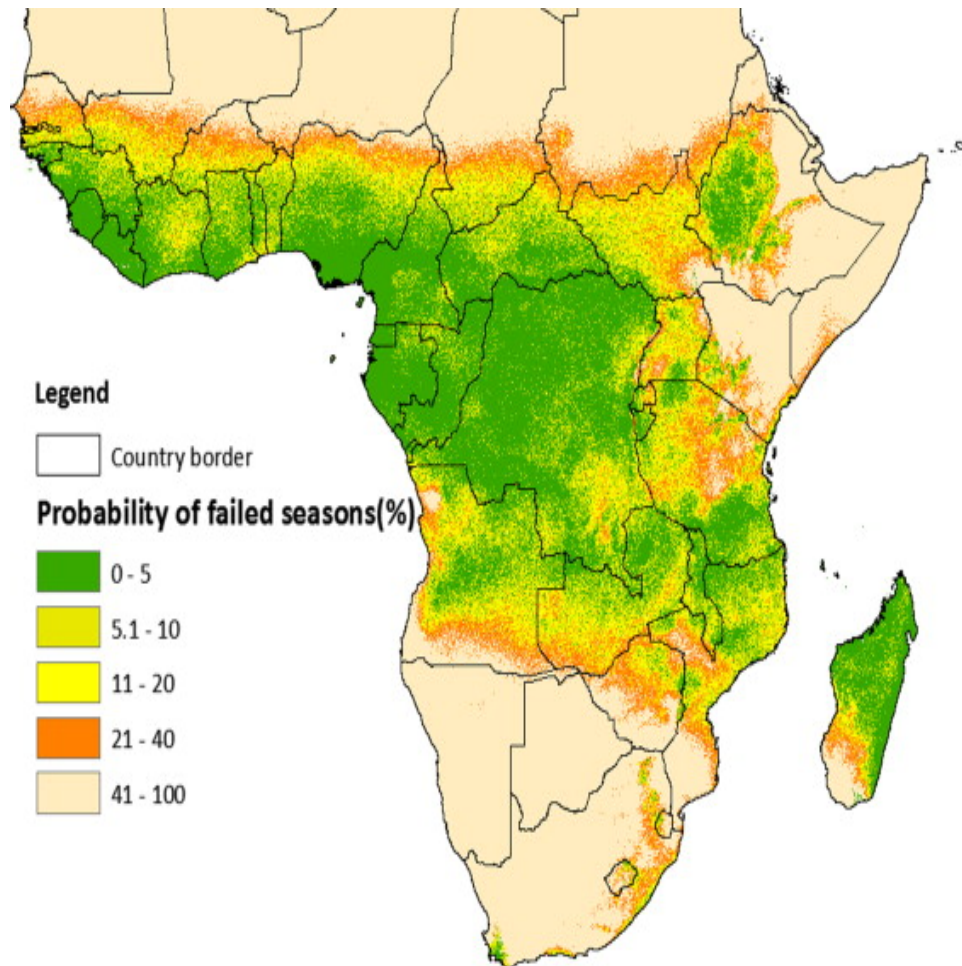
IPCC 5th Assessment Report 2014

**Drought will increase in frequency
in many parts of the world**

IPCC 5th Assessment Report 2014

**Effective adaptation strategies must integrate
local knowledge
with
global S&T knowledge**

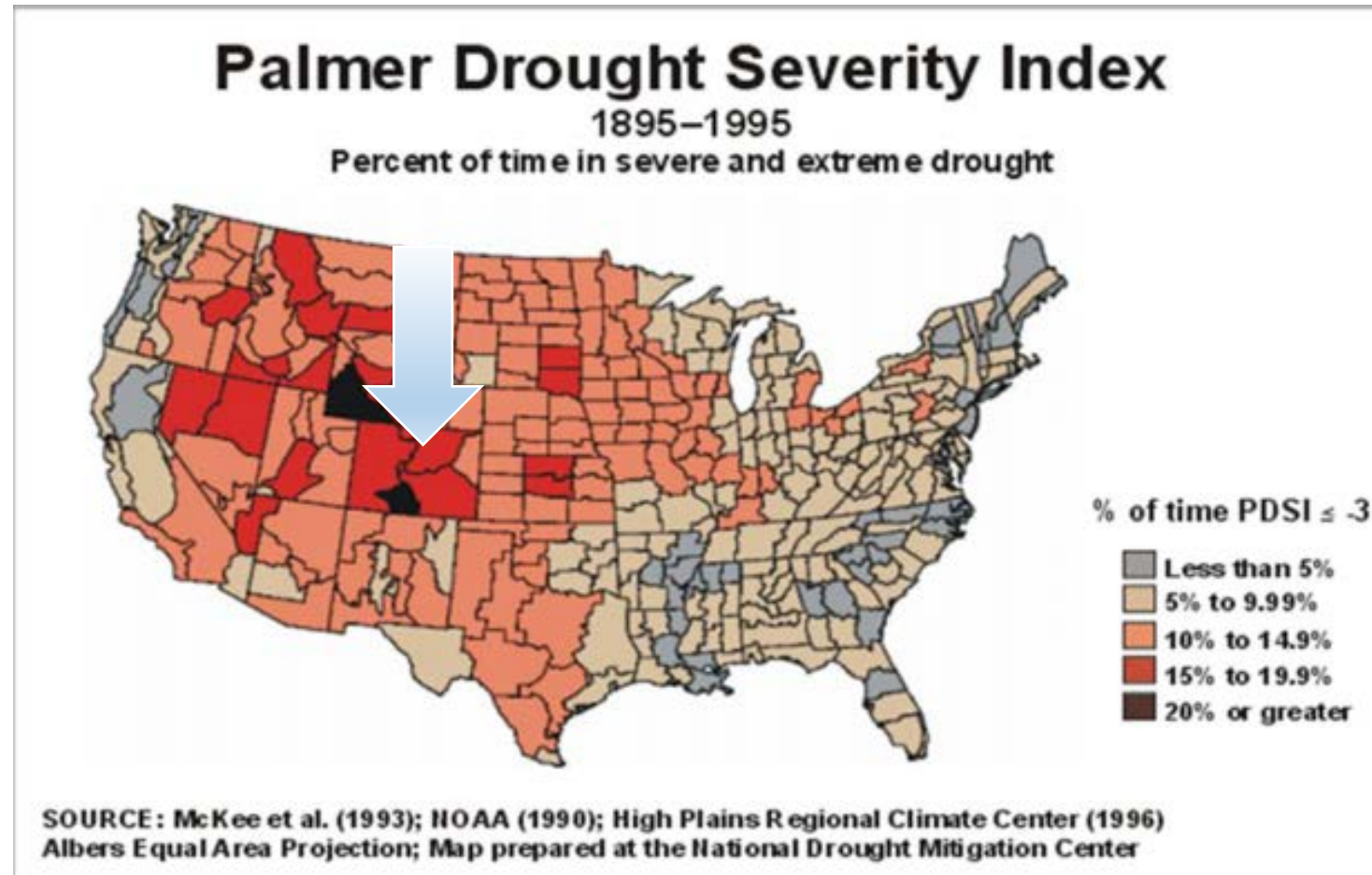
Very Large Scale Overview of Vulnerability



<http://dx.doi.org/10.1016/j.wace.2014.04.004>

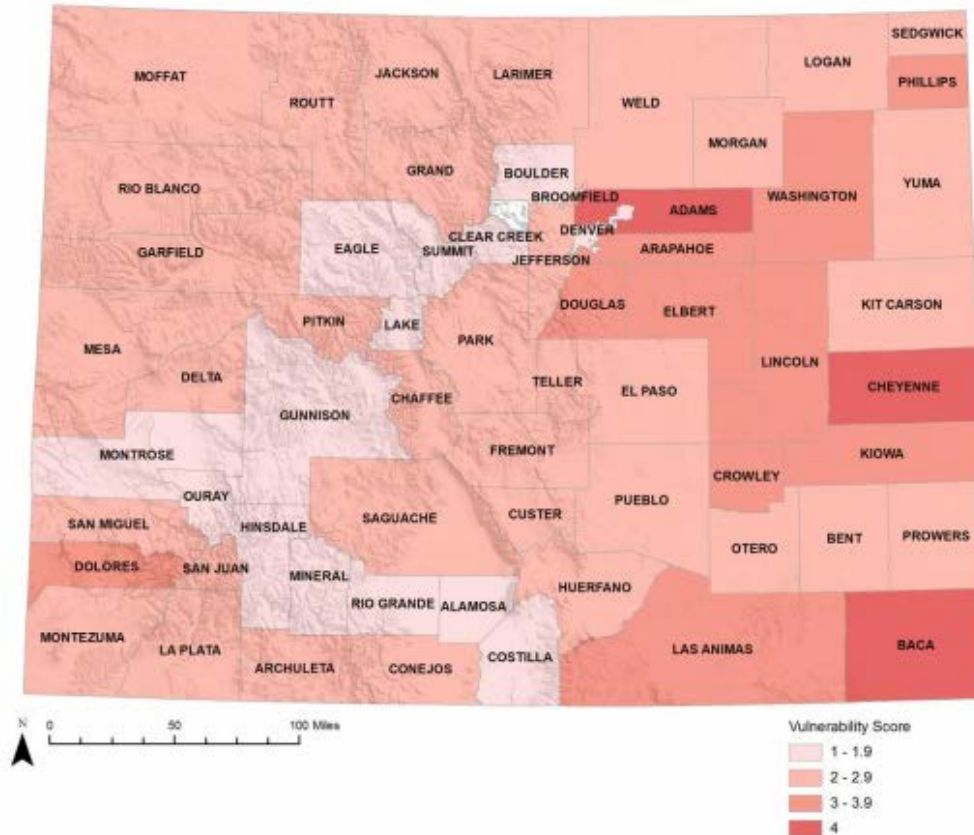
Example: Colorado State, USA

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



Colorado, USA

Agricultural Vulnerability to Drought (2010-11)



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

In summary

To plan mitigation steps

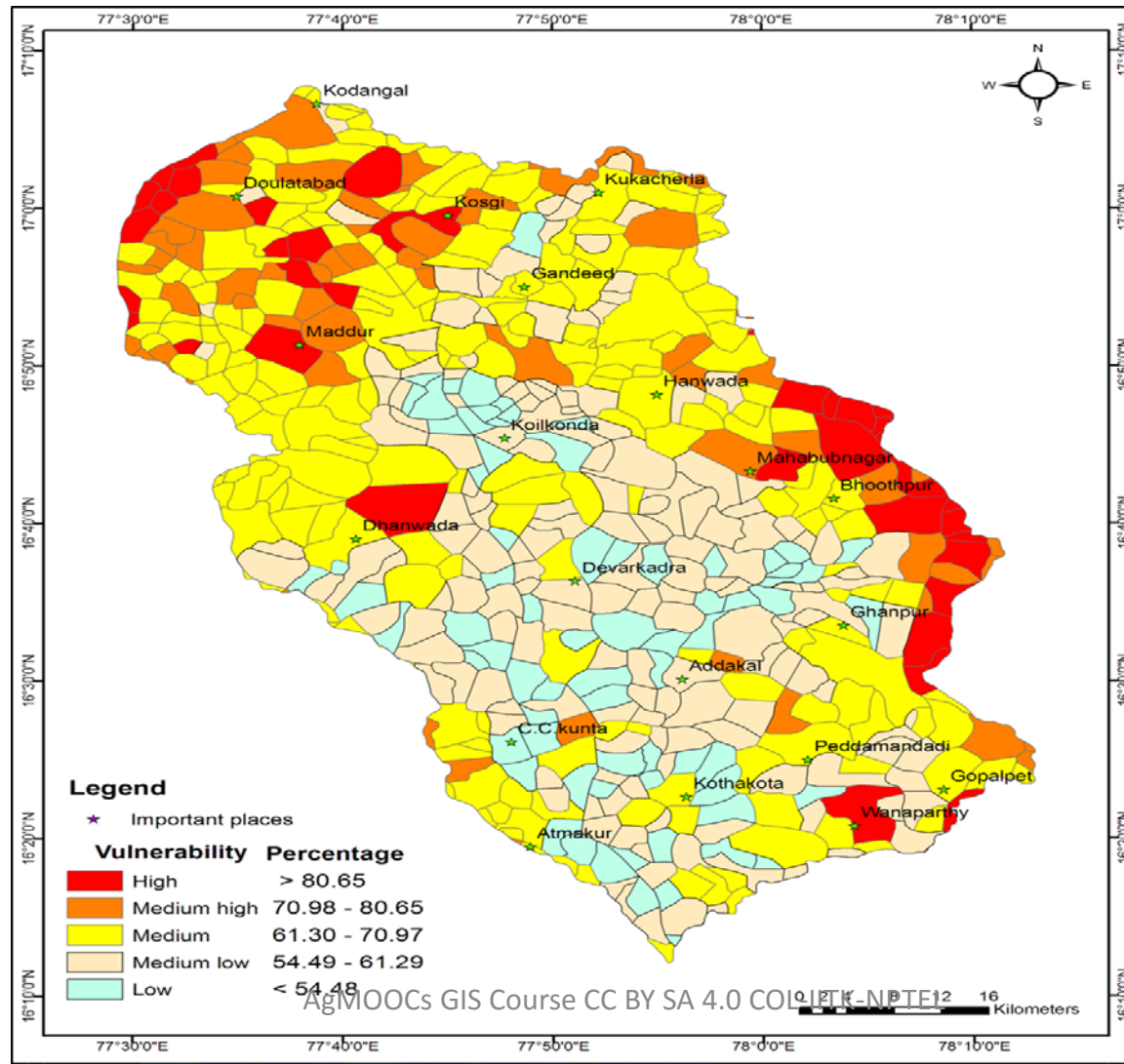
micro-level assessment is necessary

Not much progress here yet!

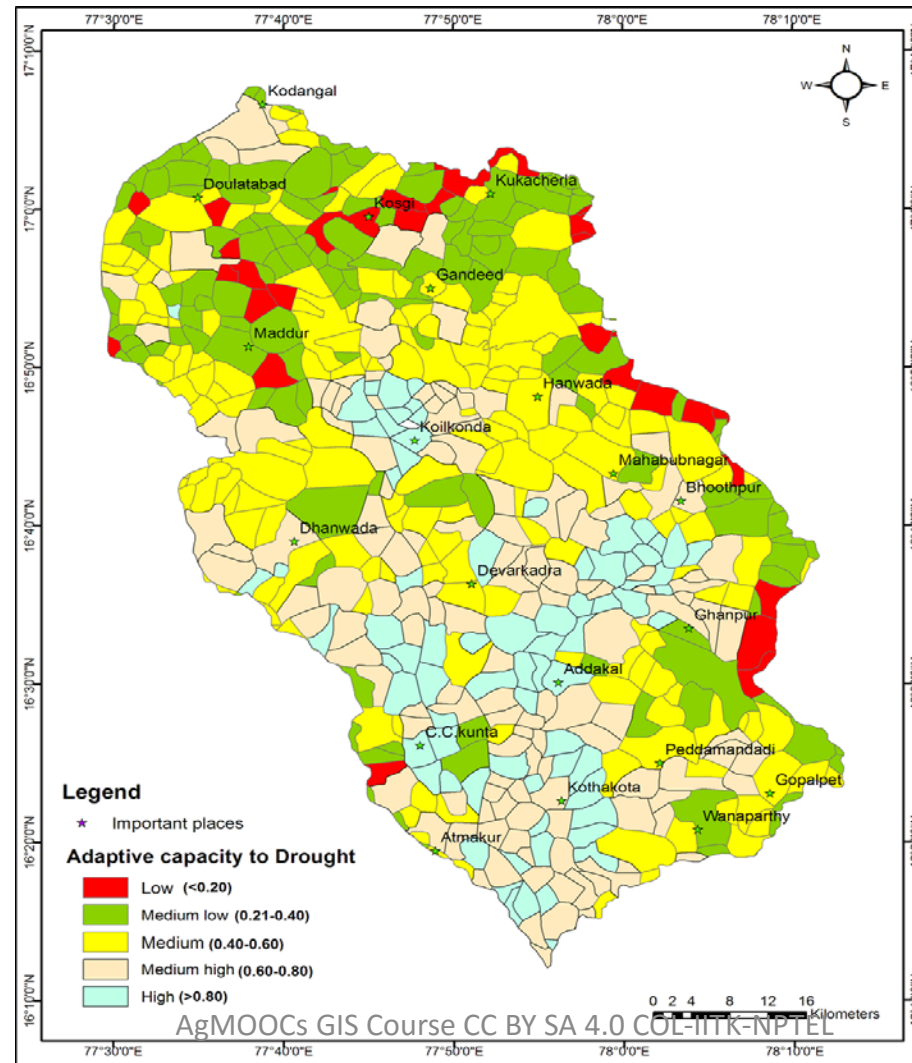
GIS tools can help at all scales

Drought Vulnerability at a Micro-Scale

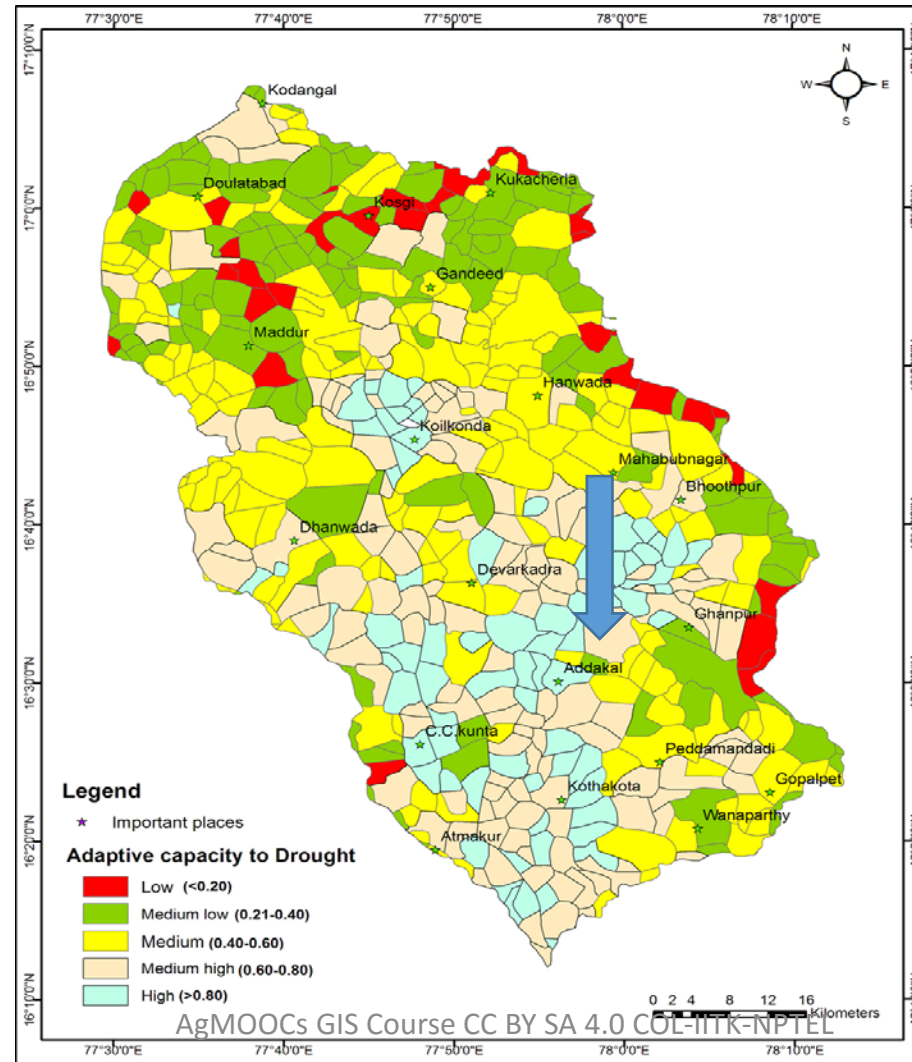
(R Nagarajan, Week 7 Lecture 2)



Adaptive Capacity to Drought-Micro-Scale (R Nagarajan, Week 7, Lecture 2)

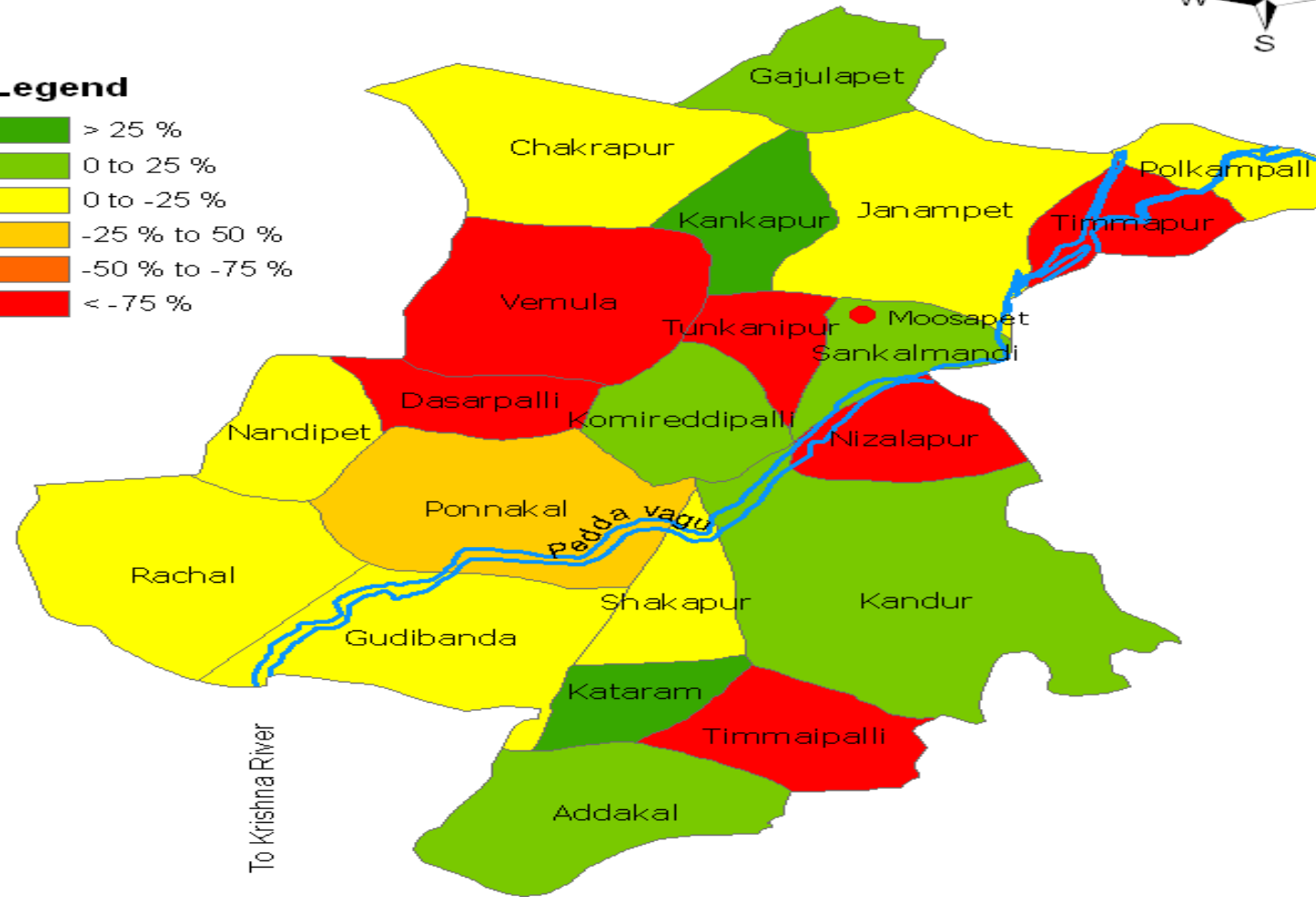
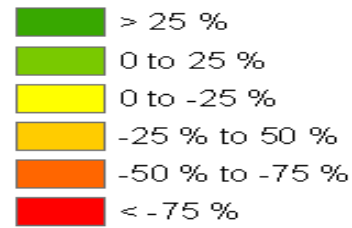


Adaptive Capacity to Drought-Micro-Scale (R Nagarajan, Week 7, Lecture 2)



Status of surface water in meeting the village requirements @ annual rainfall 550mm

Legend



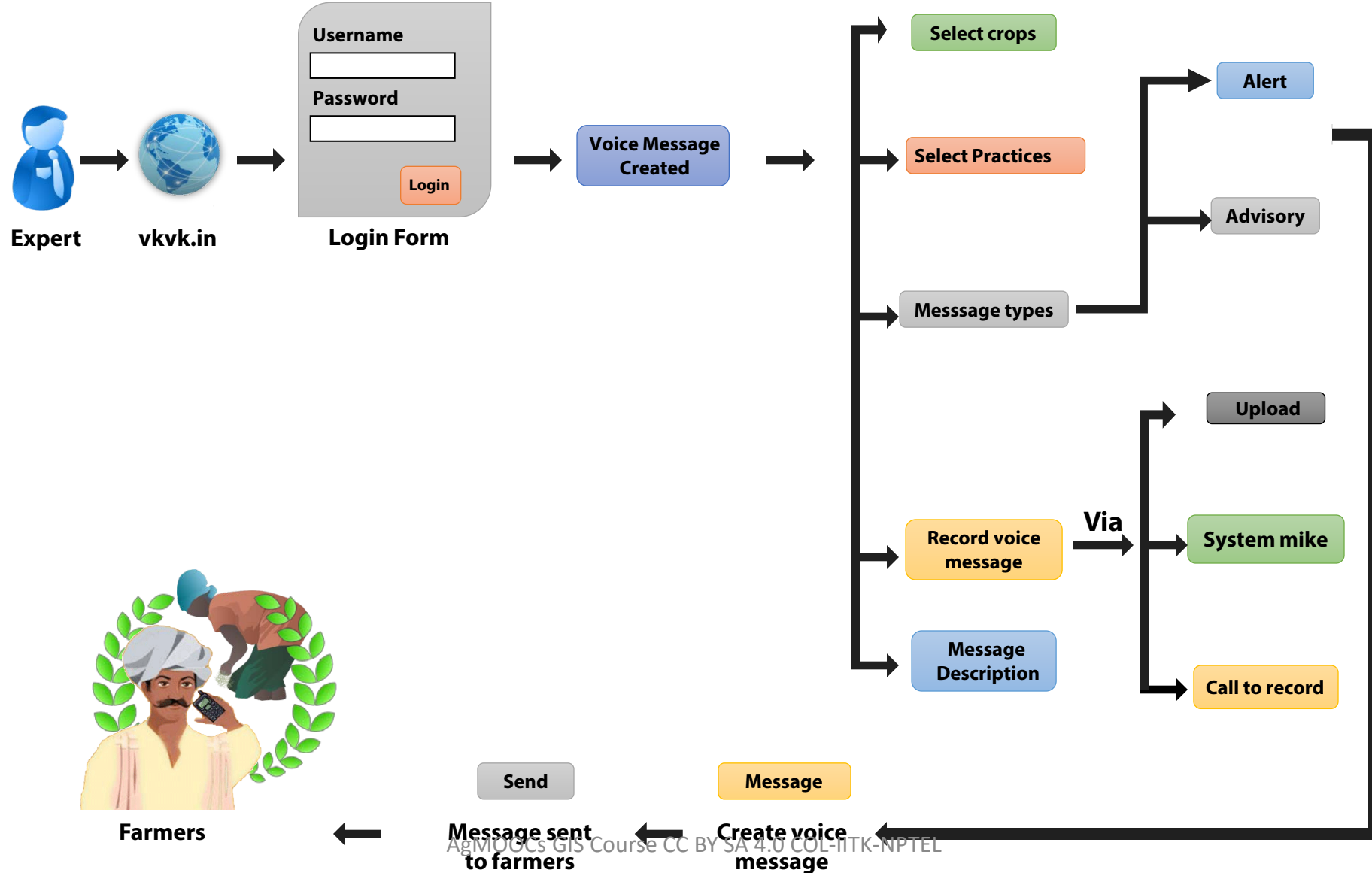
Balance estimate is based on human+animal+irrigation requirement and run-off
 > -75% -- -75% of total water demand is not available or deficit
 > +25% -- +25% of total water demand excess or surplus



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

Adakkal-Balachander Interview about drought preparedness

FIGURE 2A: vKVK WEB TO MOBILE SERVICE



Local, Micro-level Info Systems Essential

GIS tools are critical

Effective tech exists for mobile phone communication with vulnerable farmers