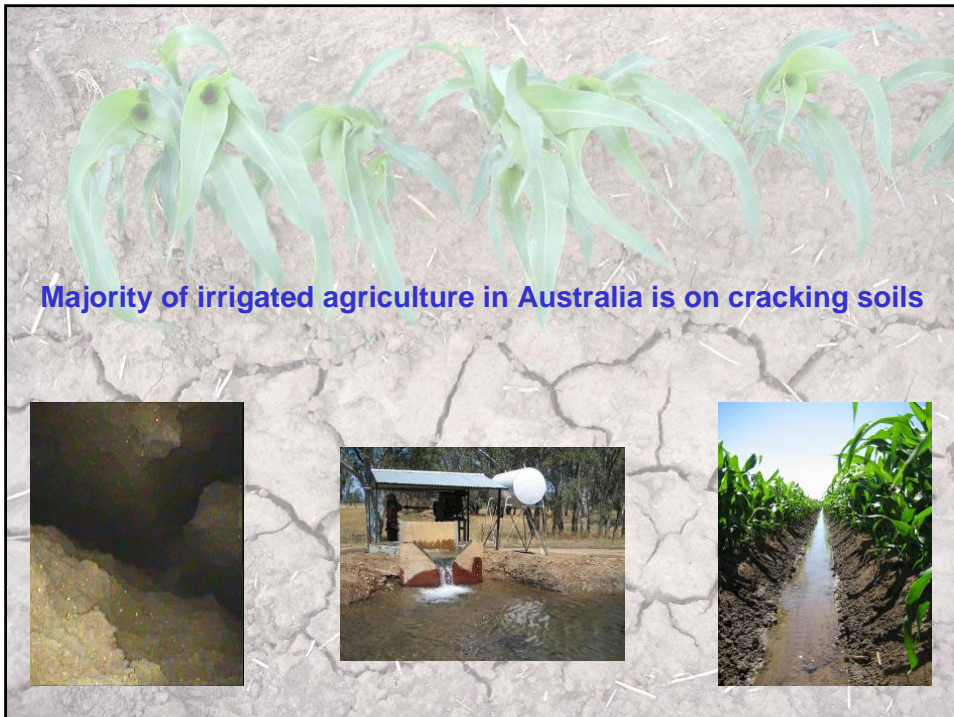
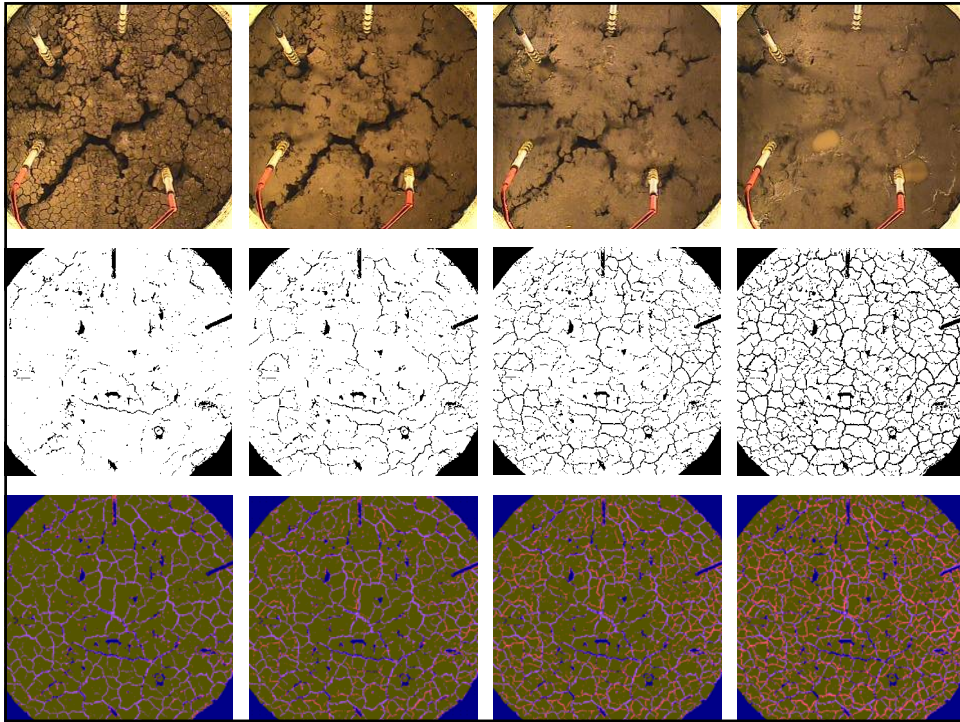


IAH-NSW Presentation Oct 08

Monitoring Depth of Soil Cracking in Irrigated Fields

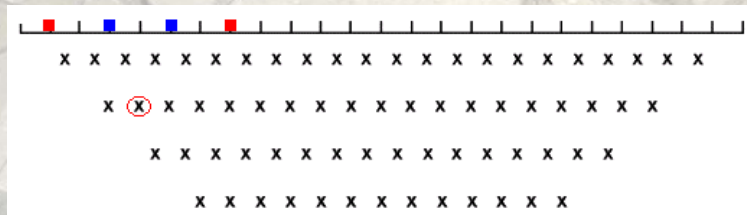
AK Greve, RI Acworth, BFJ Kelly
October 2008



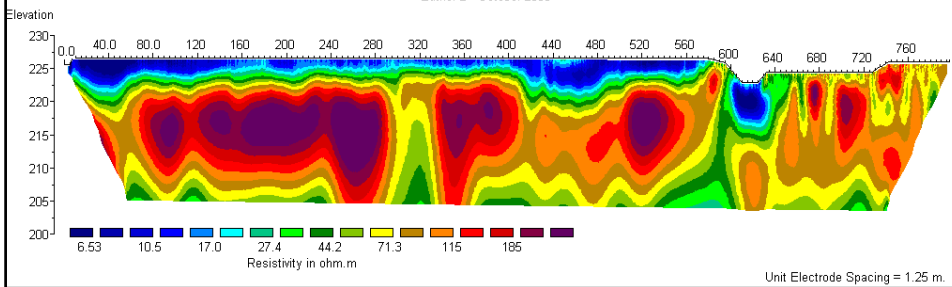


Electrical Resistivity Imaging:

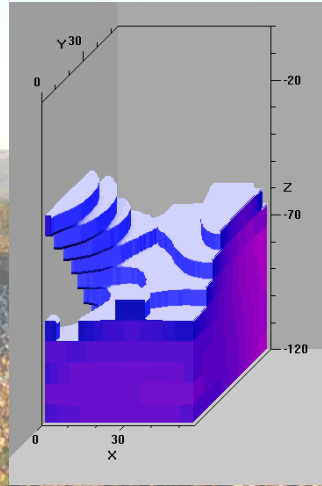
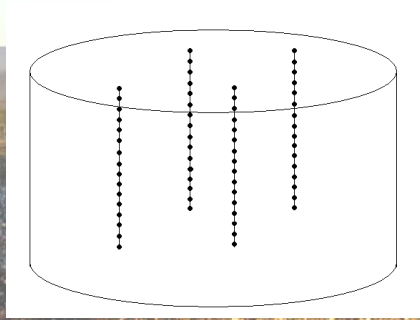
- 4 electrodes, 2 for current flow & 2 for potential measurements → Resistivity



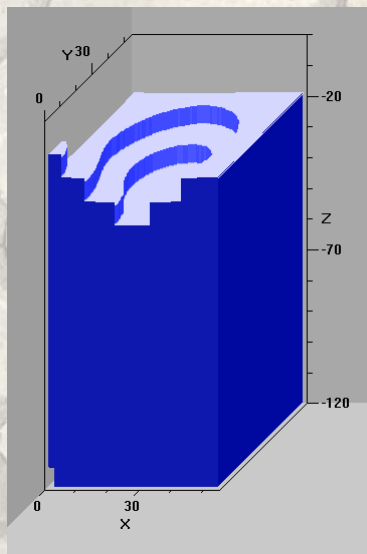
Eather 2 - October 2006



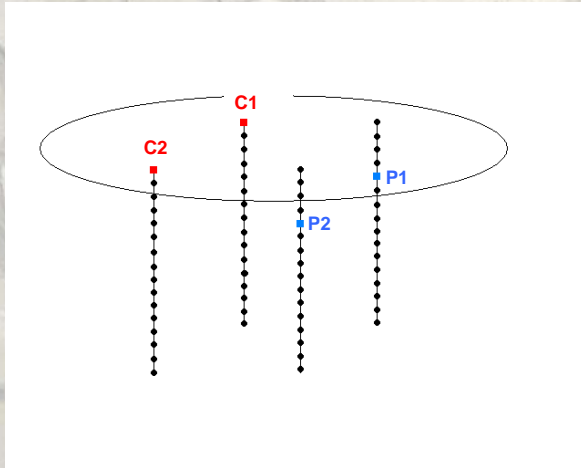
3D Resistivity tomography around crop roots:



Flood irrigation of cracked soil:



Apparent Anisotropy Index (AAI):



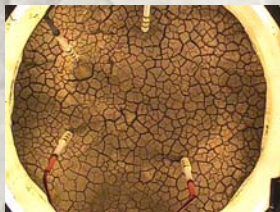
$$AAI = \frac{\rho_a A}{\rho_a B}$$



Lab study in sand filled lysimeter

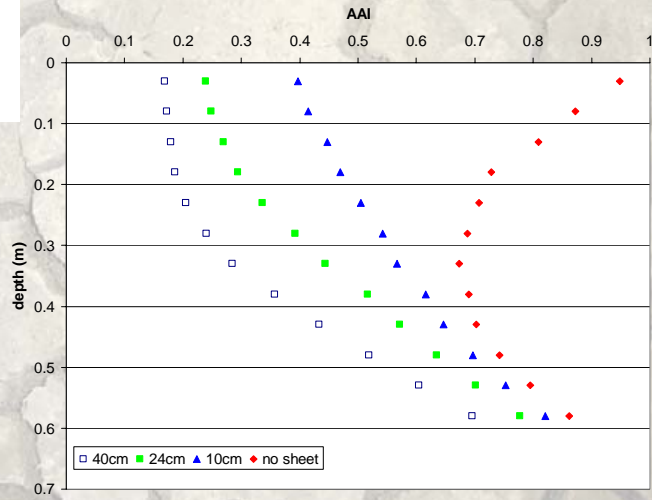
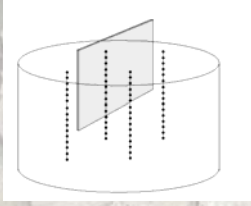


Field study at two sites in two growing periods

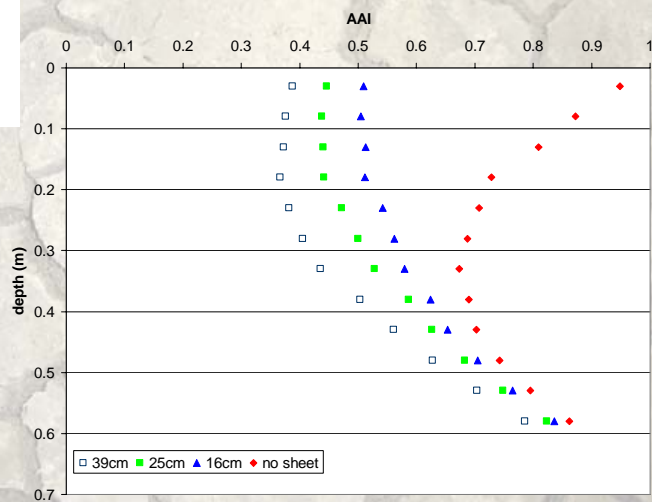
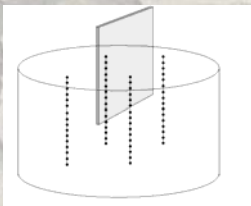


Lab study in soil filled lysimeter

Sand filled lysimeter – sheet in entire plane:

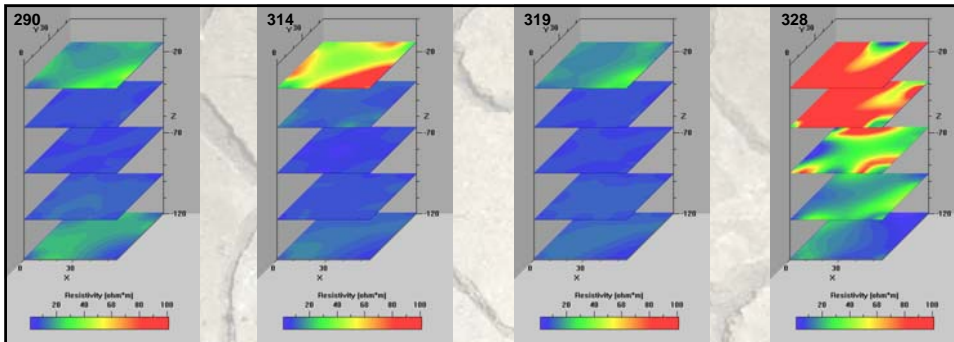


Sand filled lysimeter – sheet in part of plane:



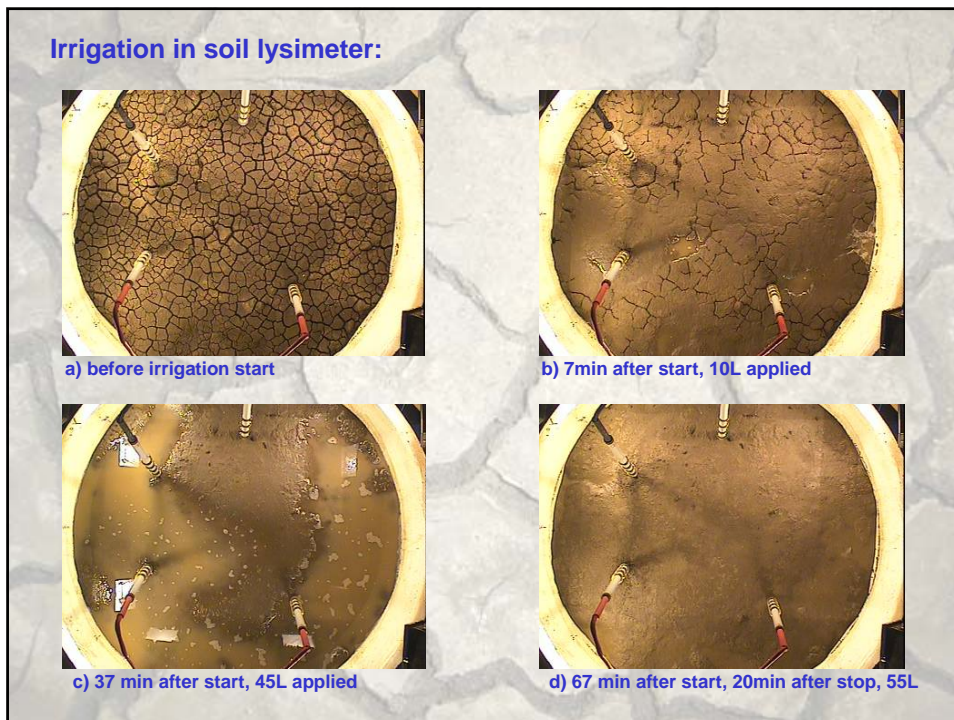
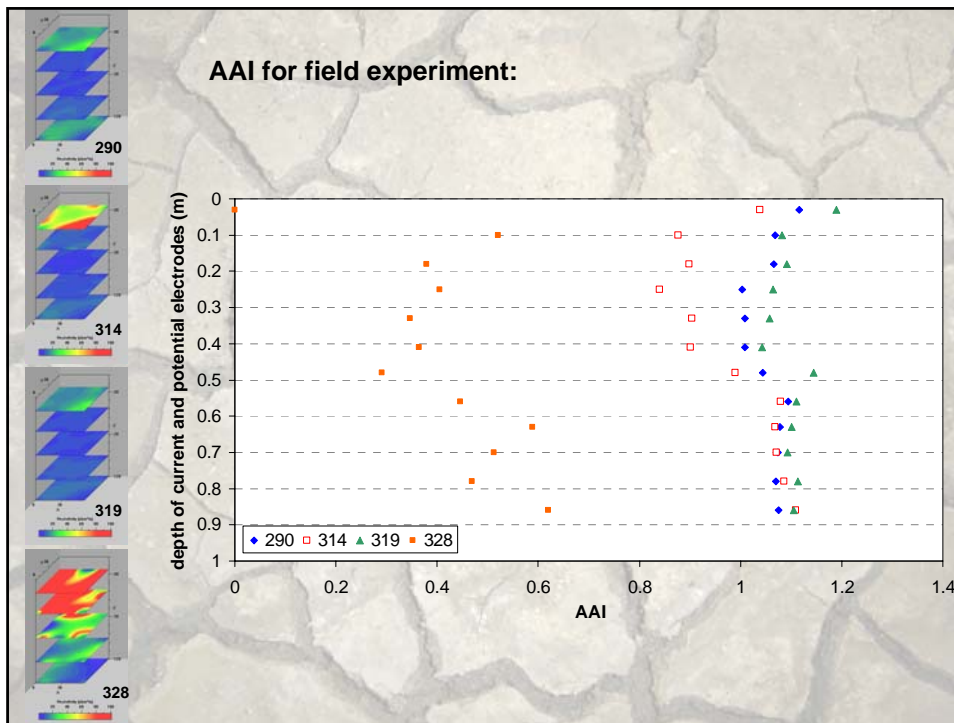


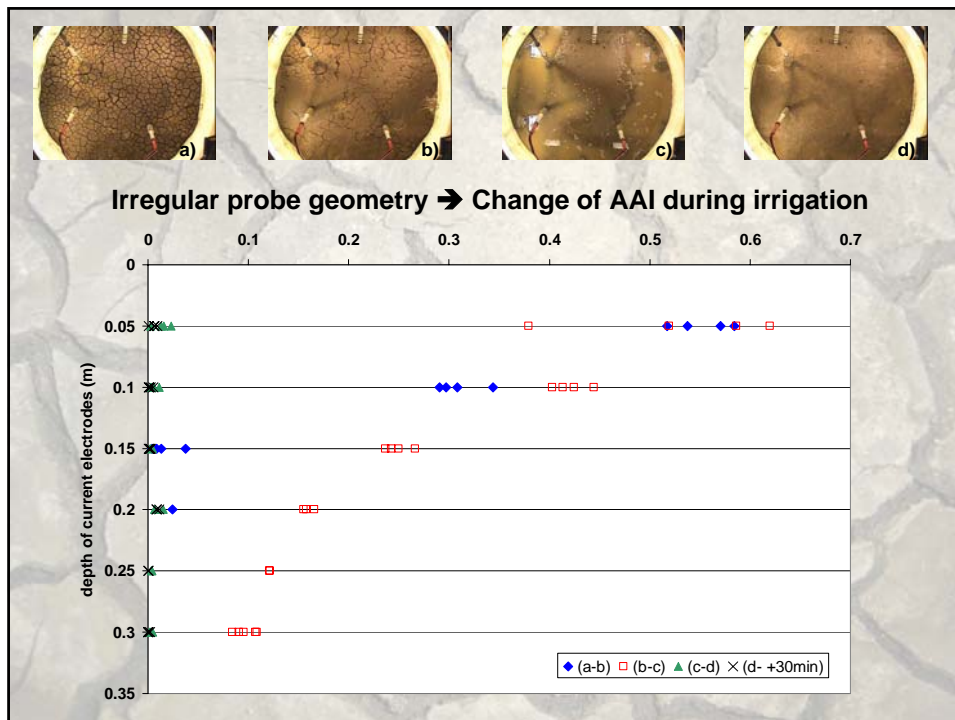
Installation of resistivity probes (1-2.11.2007)



Field trial Nov 2007- Jan 2008







Summary:

- Majority of irrigated agriculture in Australia takes place on cracking soil
- Improved understanding of crack dynamics is crucial efficient irrigation scheduling
- The AAI is a promising tool to monitor cracking depth as well crack opening and closing

Further information:

www.connectedwaters.unsw.edu.au

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