



Report of Vincent John Bidwell

Summary of evidence

- Groundwater mounding effects have not been adequately assessed
- Aqualinc model predictions of groundwater levels are unreliable for assessment of effects
- Improved predictions of groundwater levels are achievable

Recommendations for assessment of groundwater mounding effects

- Develop improved predictions of groundwater levels at local indicator wells
- Identify local effects in relation to levels in indicator wells
- Assess the feasibility and cost of mitigation

Evidence reviewed

- Julian Weir
- Hugh Blake-Manson
- Peter Callander
- Lowland Farming Group
- Leeston Rural Drainage Committee
- Walter Lewthwaite (supplementary)

Evidence of Julian Weir p.18: location of well L36/0092

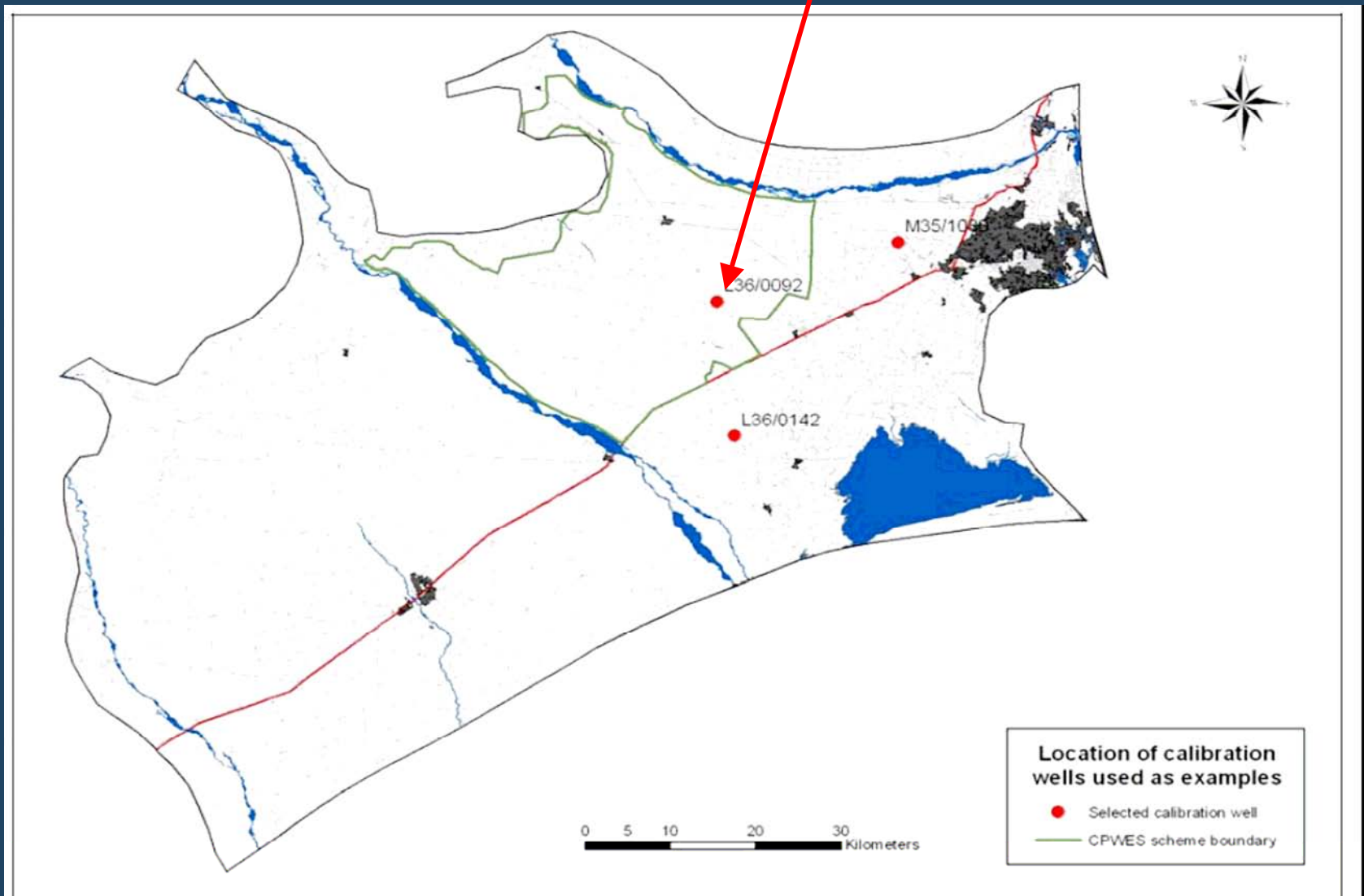


Figure 1

Evidence of Julian Weir p.19: Aqualinc model simulation L36/0092

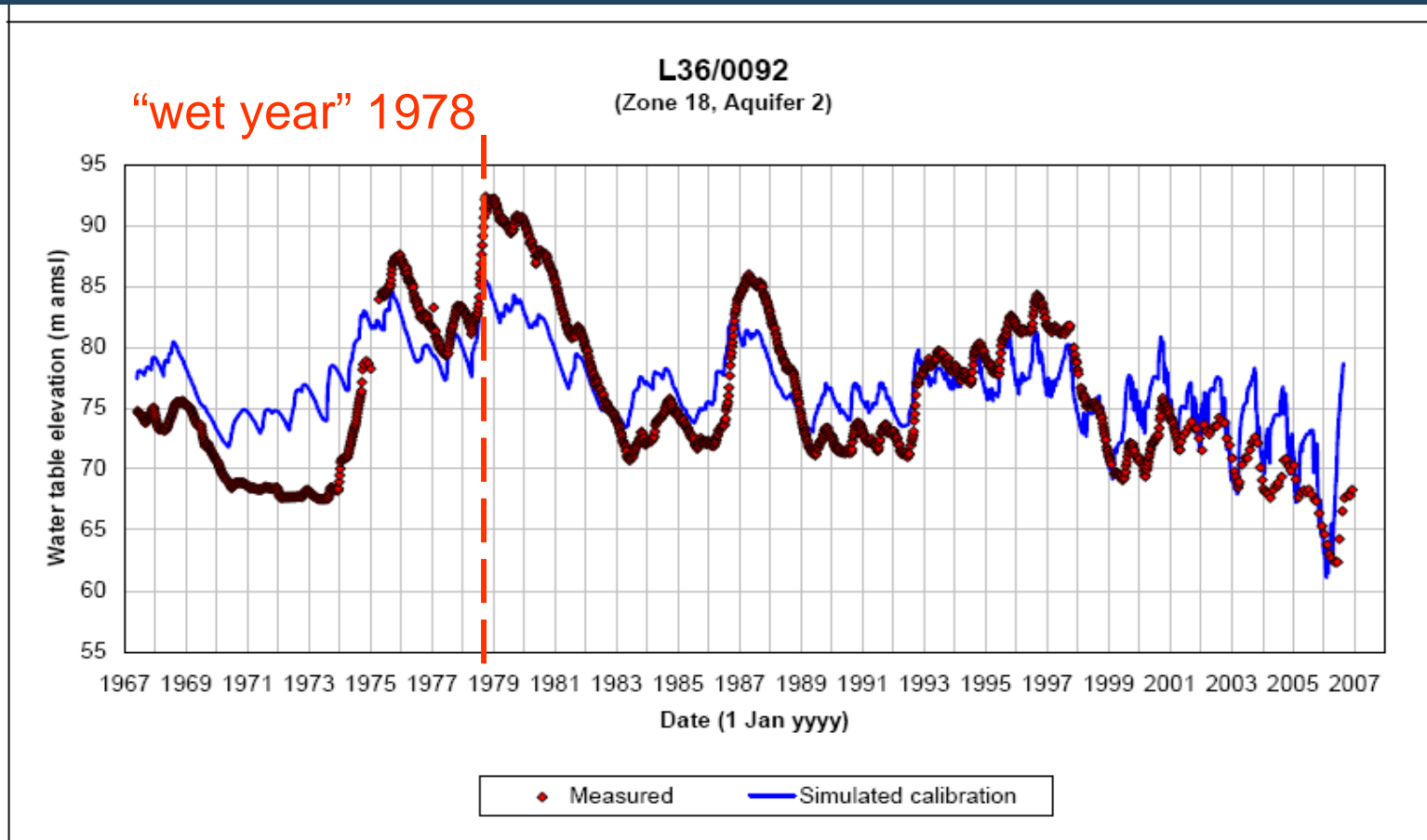


Figure 2

Model prediction of groundwater level for well L36/0092
from Bidwell et al. (1991)

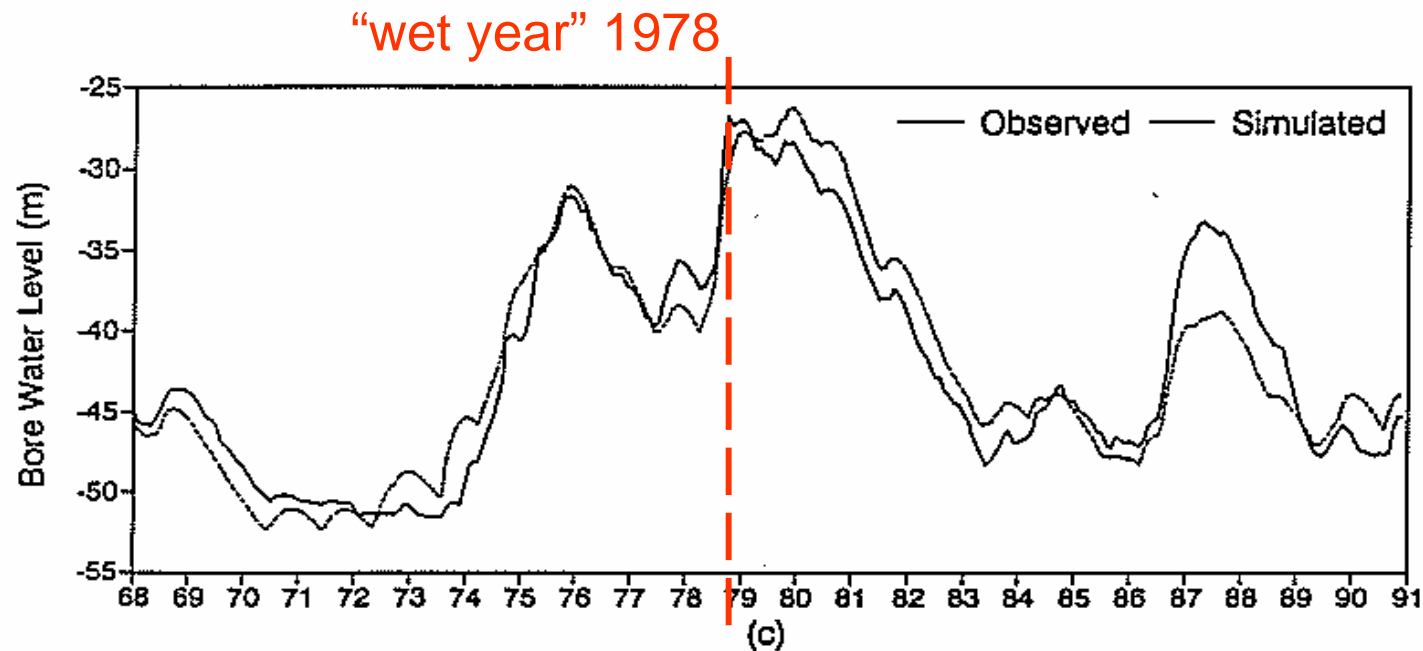


FIG. 4—The (a) water level and recharge series, (b) (1, 1, 2) simulation, and (c) (2, 1, 1) simulation, for monthly data January 1968–December 1990.

Calibration and prediction of groundwater level at well L36/0092:
Aquifer eigenmodel (V. Bidwell); land surface recharge (D. Scott)

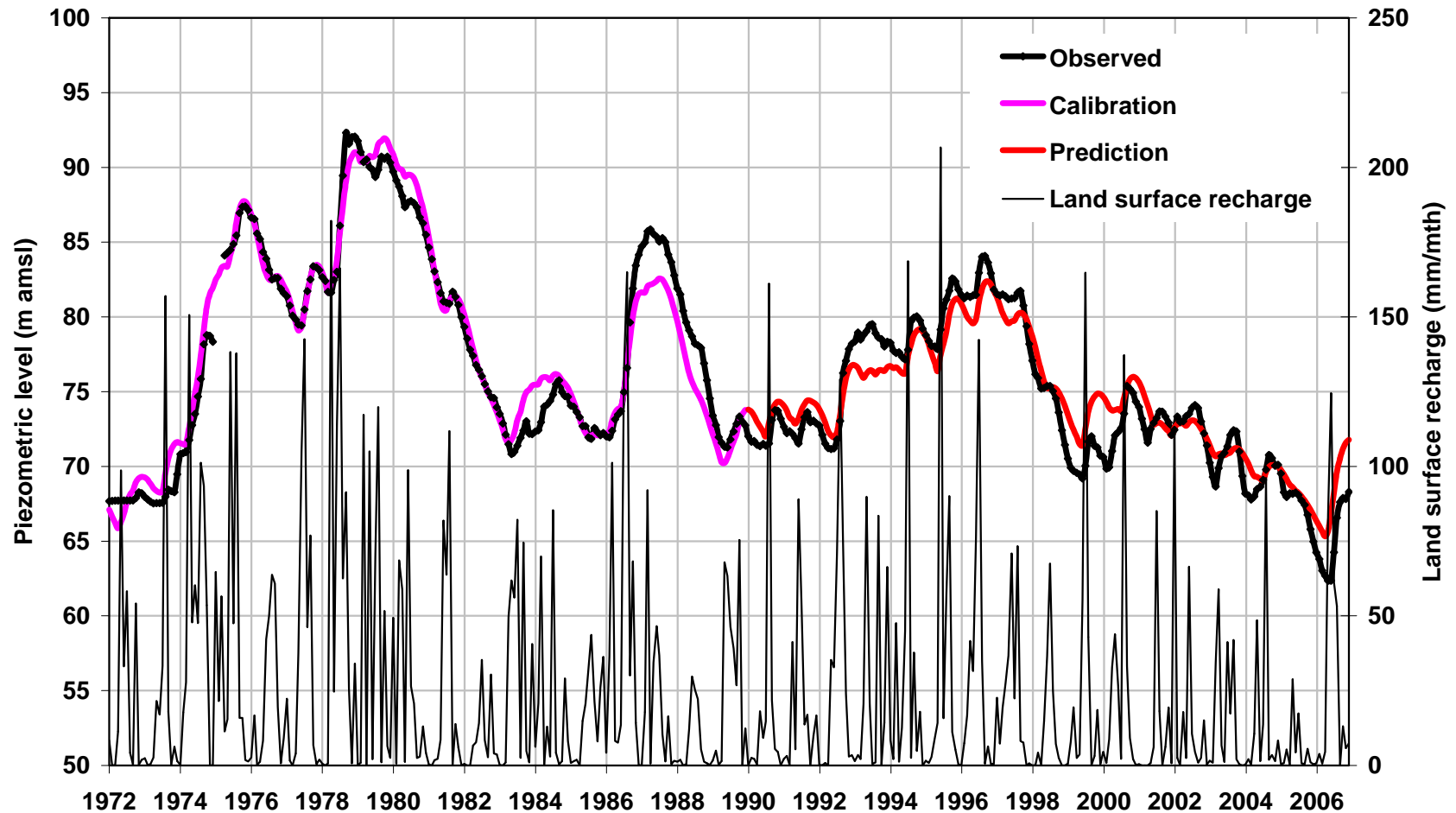
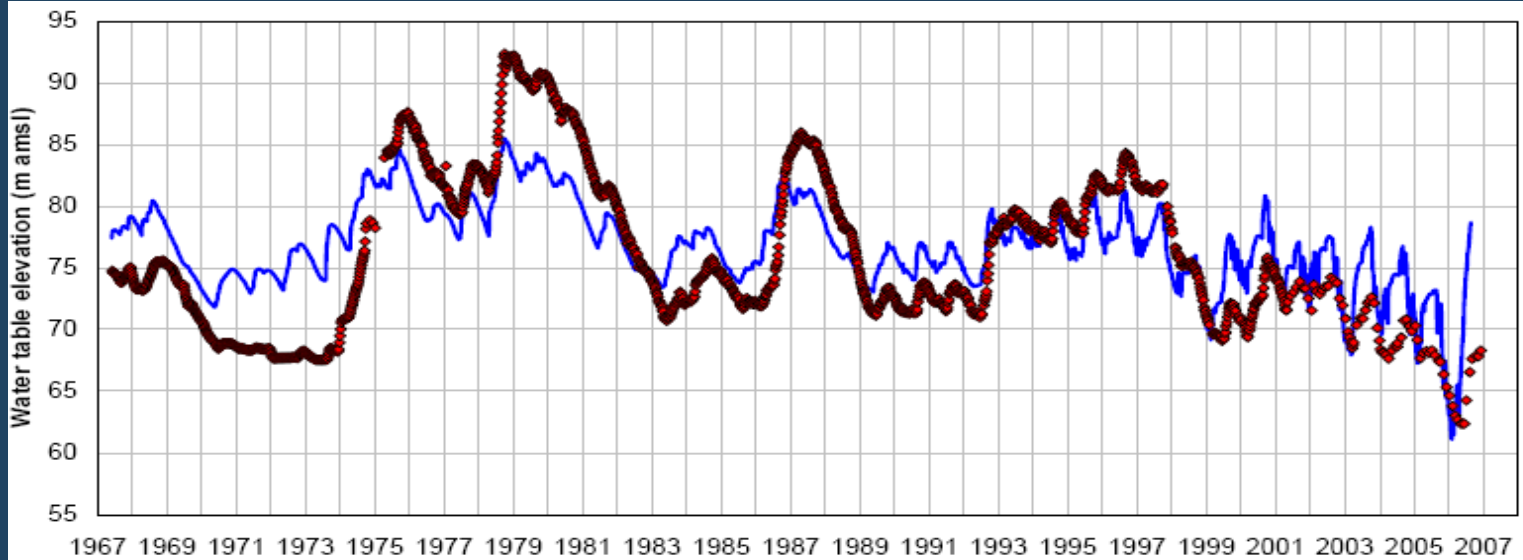


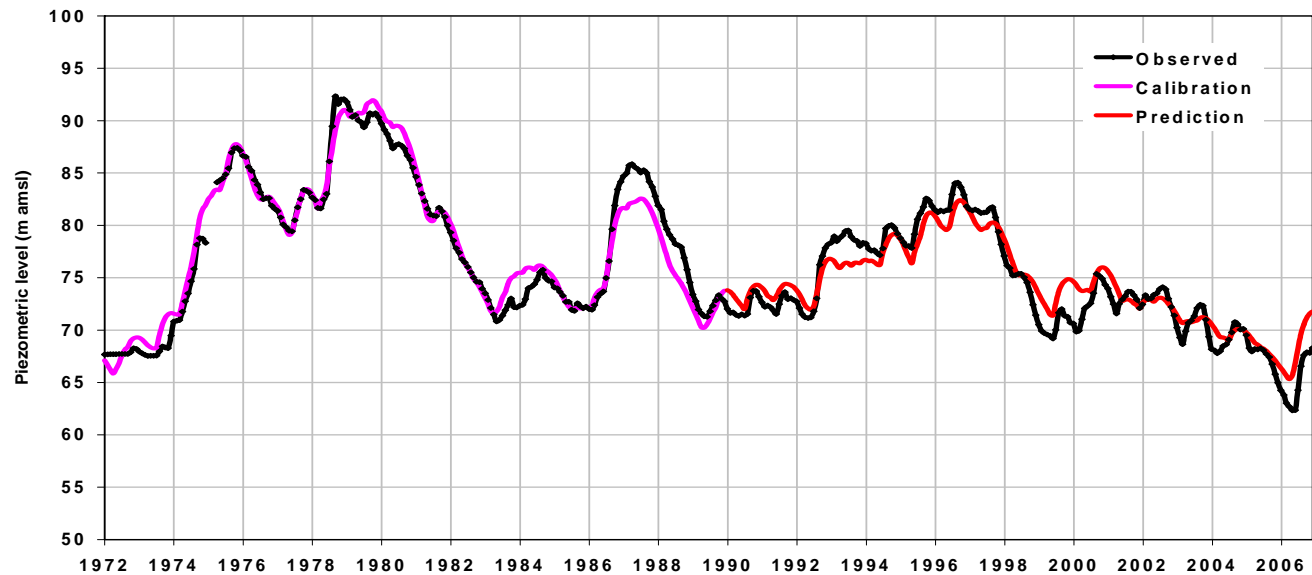
Figure 4

Improved groundwater level predictions are achievable

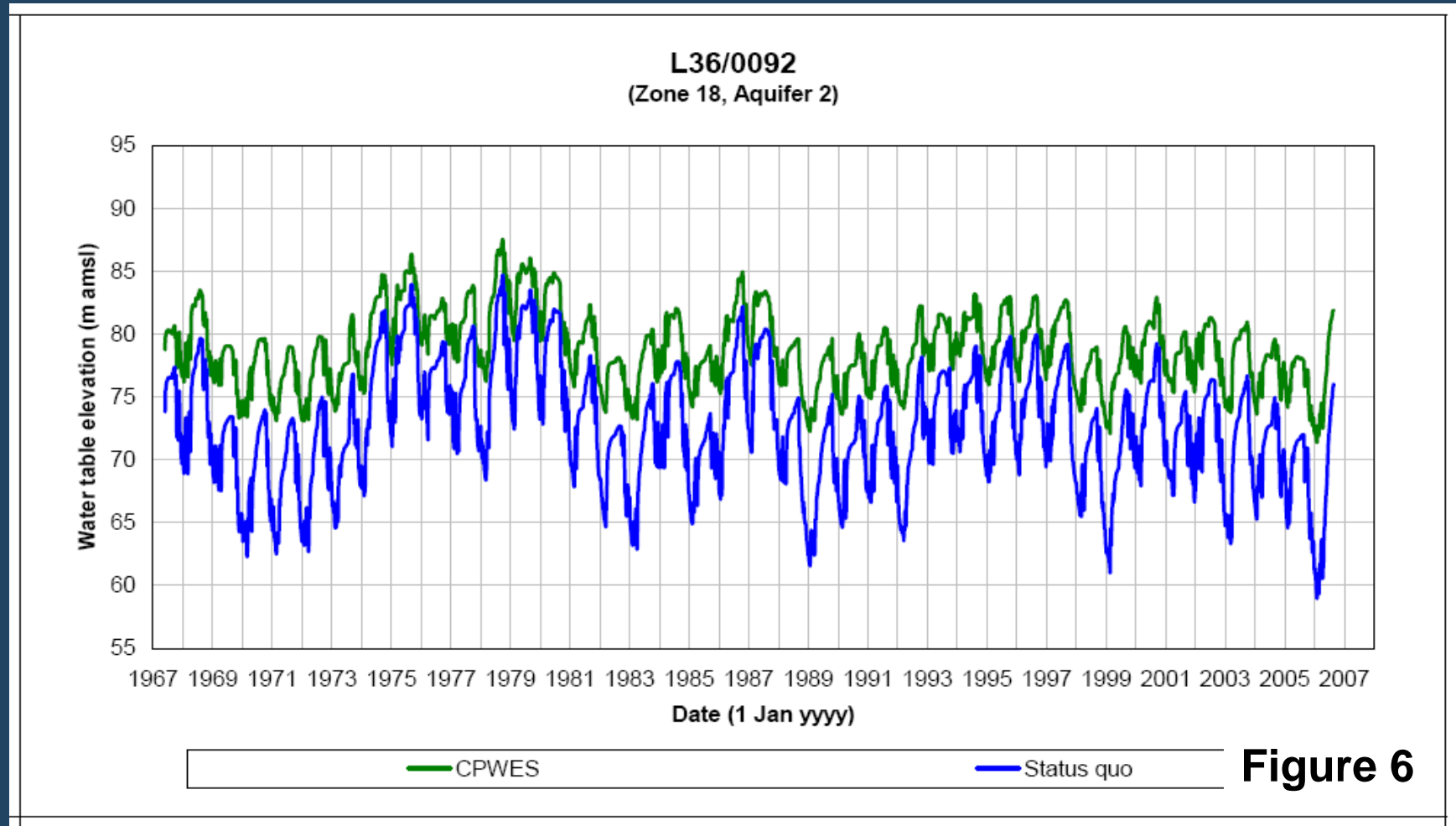
Aqualinc
Model



Eigenmodel



Evidence of Julian Weir, Appendix E, p.103: effects of “Status quo” and CPWES irrigation regimes on groundwater levels for 1967-2006



"Wet year" observation is 5 m higher than CPWES effect

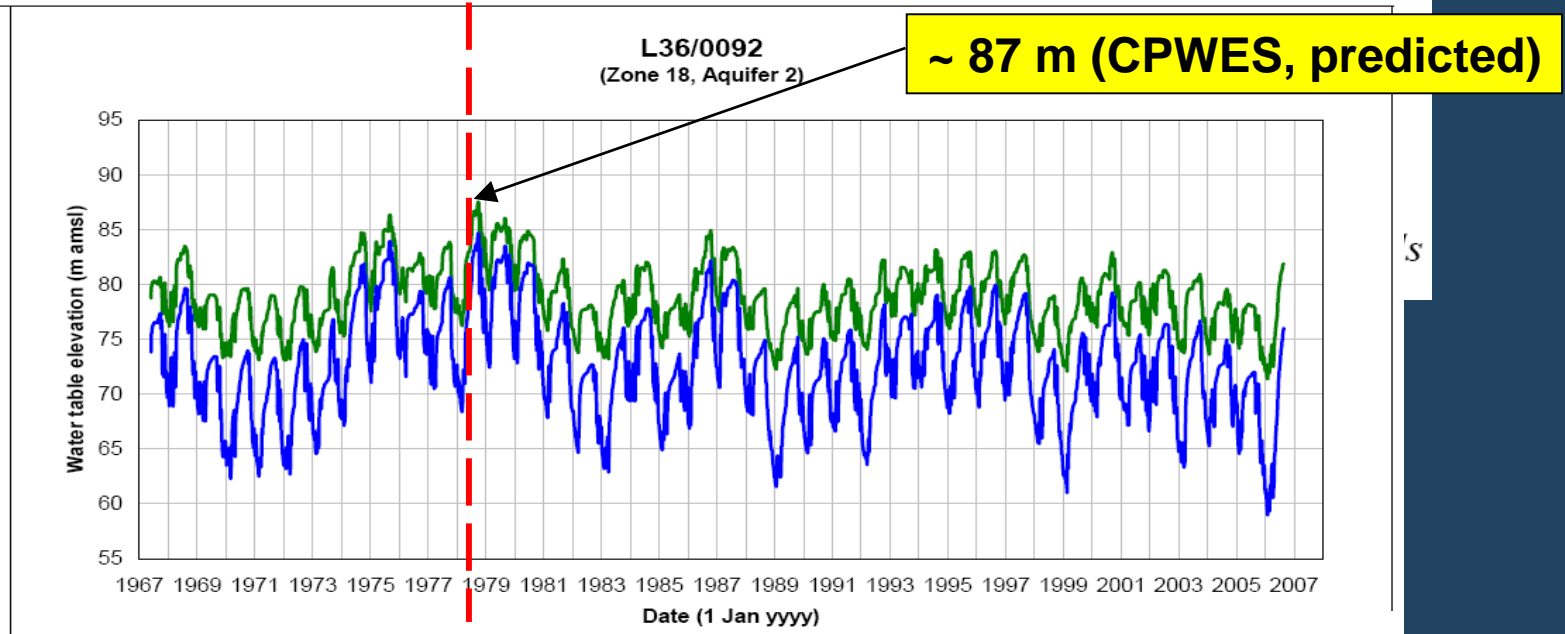
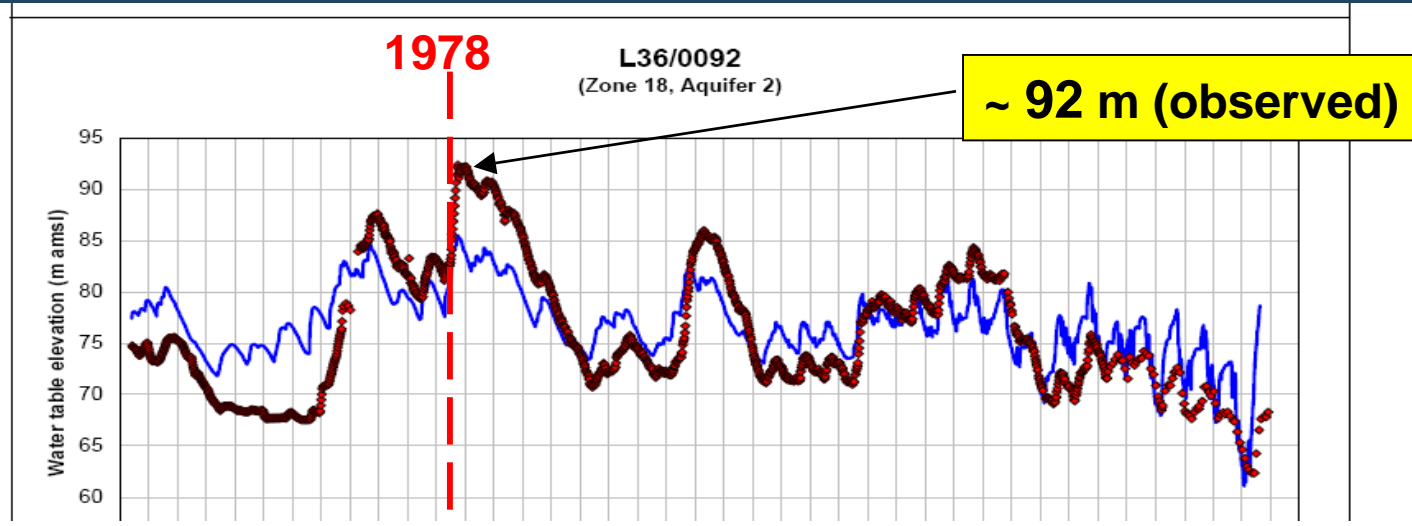


Figure 7

Evidence of Julian Weir, p. 20

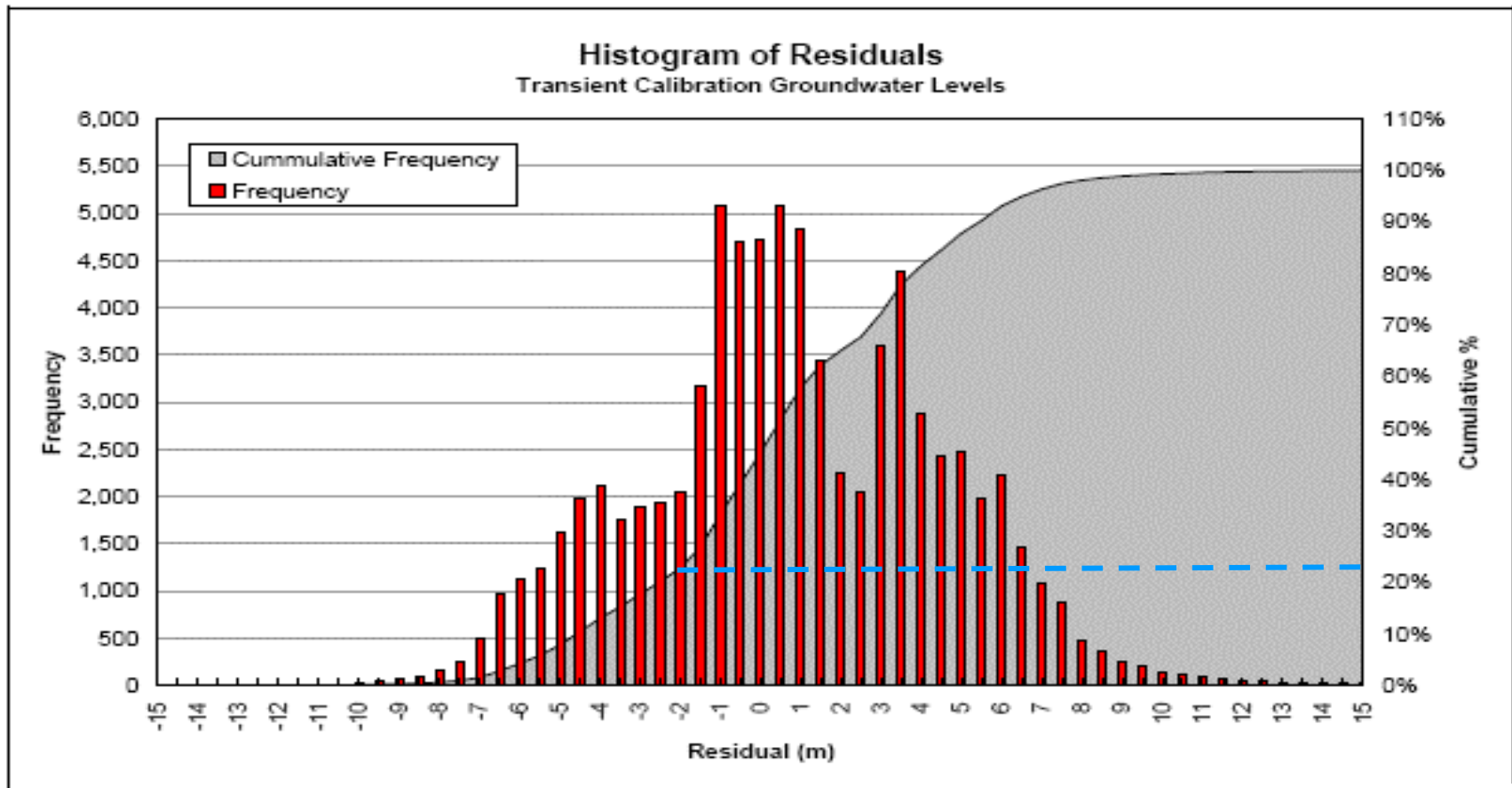


Figure 5: Histogram of transient groundwater residuals

Figure 8