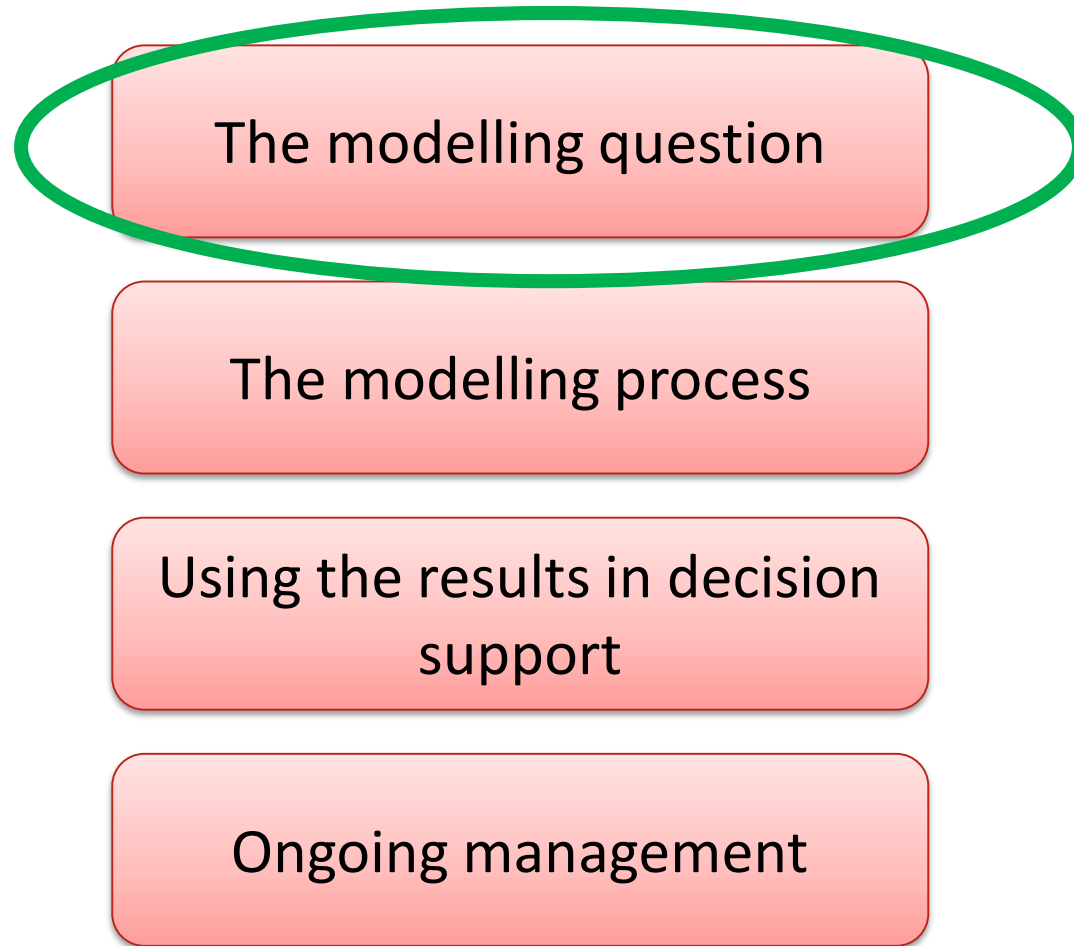


Modelling for Decision Makers

Tony Weber

alluvium

Modelling in decision making



The modelling question

- What do you want to know
 - Clear statement
 - “We want to know whether there will be enough water to supply drinking water demand during long term drought”
 - Not “Will we have enough water?”
- Have you really defined the question
 - Where, when, how, why
- What do you already know and do you really need a model
 - What value will a model add

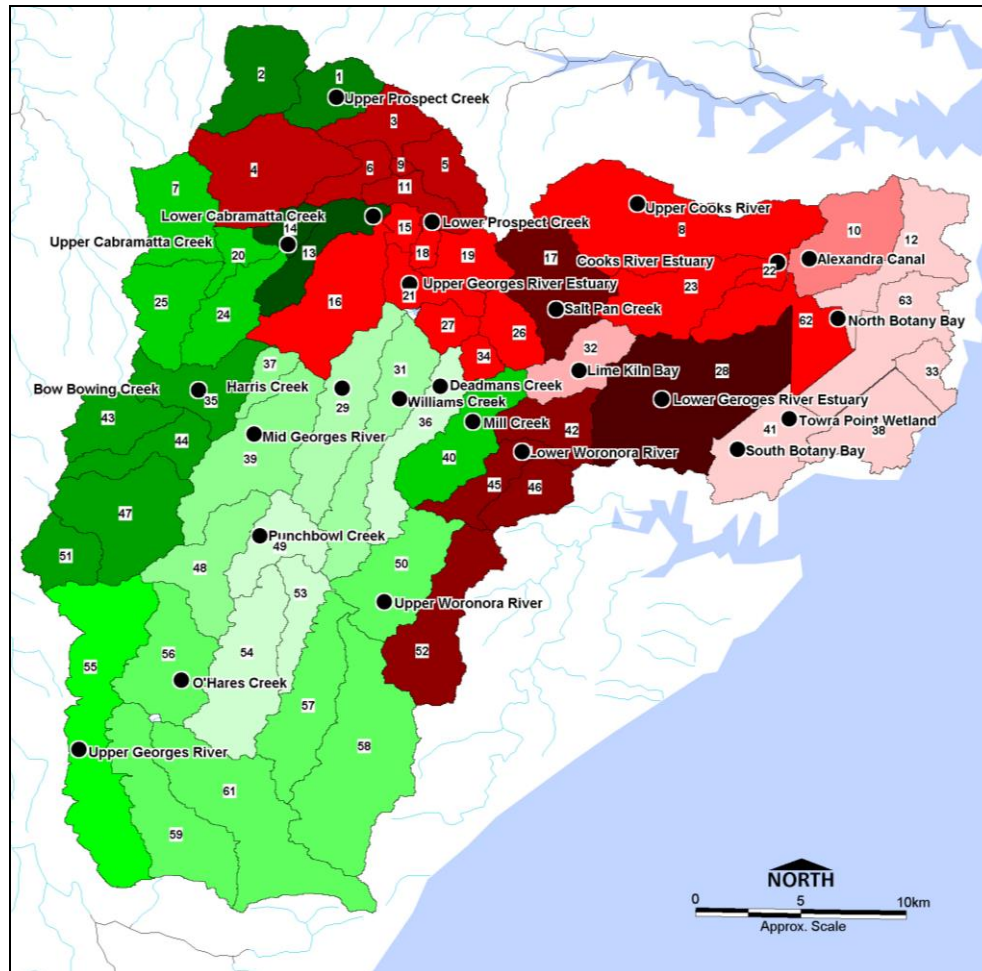
The modelling question

- We have a large range of tools to play with
- Choice depends on question
- Scale issues – temporal and spatial
- Need to clearly define what is expected of the model
- These are simply tools, and can be used in a variety of ways

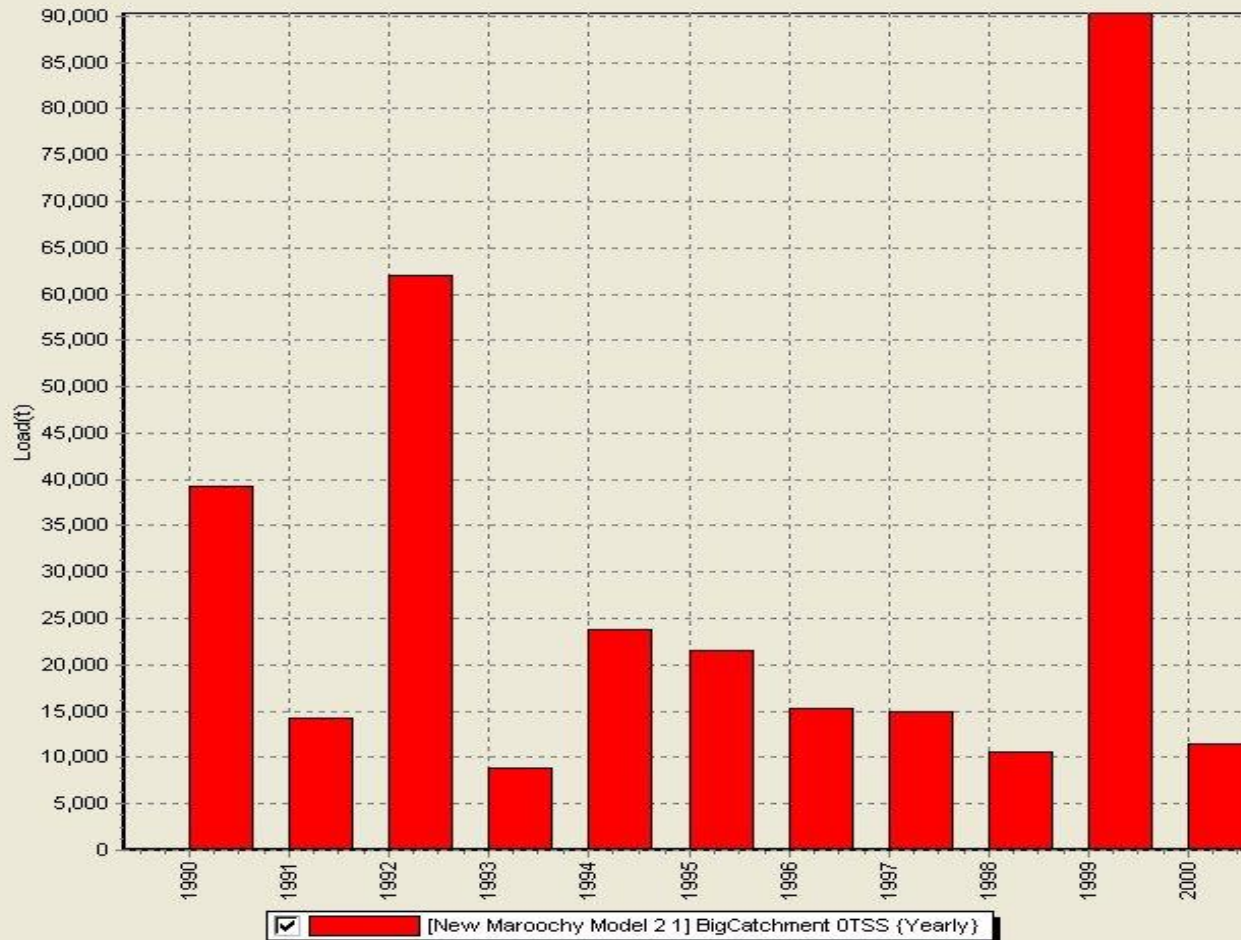
The modelling question

- Problem Definition
 - Where is the problem
 - What might be causing it
- Prioritisation
 - What should I deal with first
 - Pollutants, Landuse, Soil Types?
 - Where should I deal with first
 - Subcatchments, Streams, Storages?
- How do I fix it
 - What BMPs might work
 - Where will they work
 - What happens if only 50% adoption
- What happens if things change

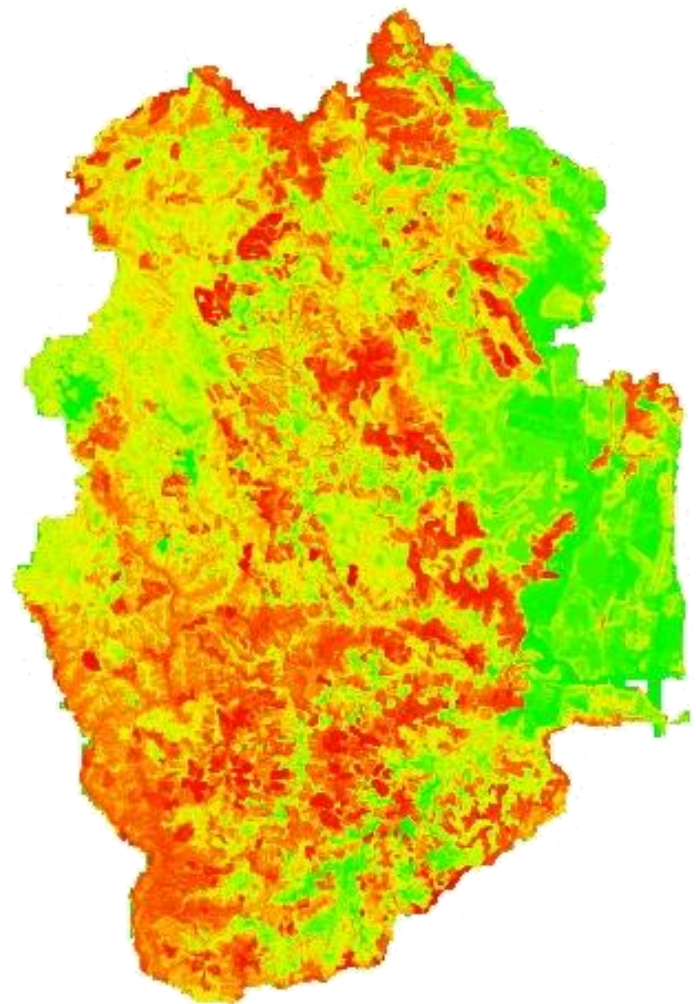
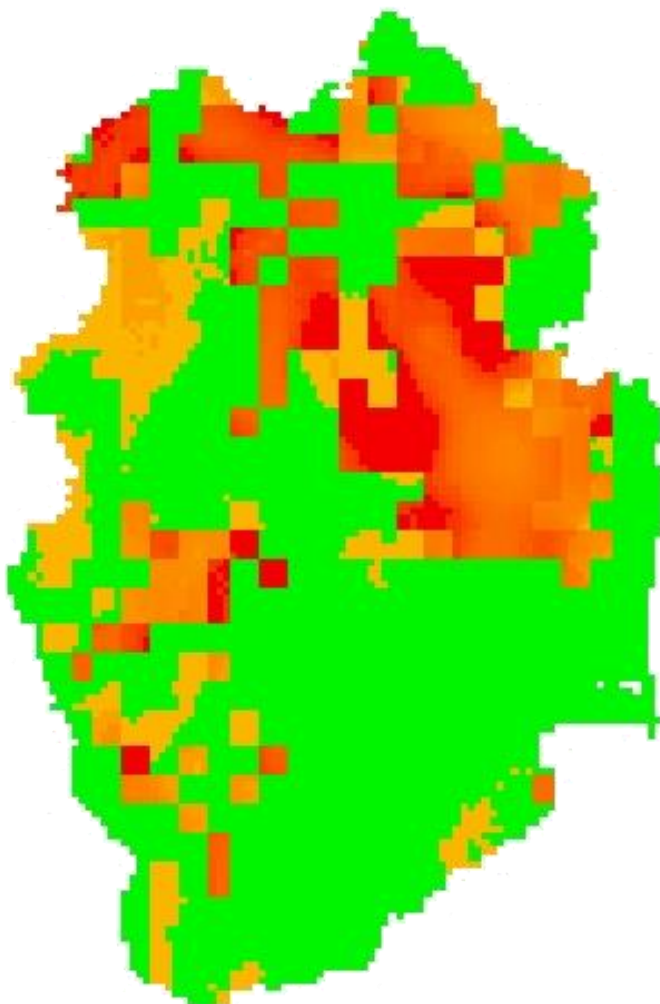
Where is the problem?



When is the problem?



What Scale





The modelling question

- Which model will do the job?
 - Availability
 - Is it freely available or do you need a licence
 - Capability
 - What can it do, but more importantly, what can't it do!
 - Capacity for use
 - Who will develop, use and maintain the model
 - Applicability to the question
 - Is it specific enough, at the right scale
 - Complexity
 - Every model should be complex enough to answer the question but simple enough to understand the results

The modelling process

- Data collection and processing
 - A lot of effort may be needed here
- Initial build
 - Is it still the right model?
- Parameterisation and calibration
 - Need enough data to do this
- Uncertainty analysis
 - Are the results real?
- Scenario development
 - Developing the systems understanding
- Model running
 - Seconds, hours, minutes, days, months
- Reporting
 - Having enough information to build credibility, but not too much that you can't understand what they are telling you

Using the results in decision support

- Who needs the information?
 - Need to provide them with the “right” information
- Who wants the decision
 - Do they know what they want
- Who will be impacted by the decision
 - Stakeholder involvement
- How sure do you need to be that it's the right decision
 - Model confidence and understanding uncertainty

Ongoing management

- Who owns the model?
- Who will maintain/update it?
- Who will use the model?
- Who will need the model results?

Conclusions

- Models are tools – they can be used in a variety of ways, not always for the way they were intended
- Need to be clear about the question
- Capacity building essential
- Know the limitations of the:
 - Tool
 - Question
 - Answer
 - Modellers!