

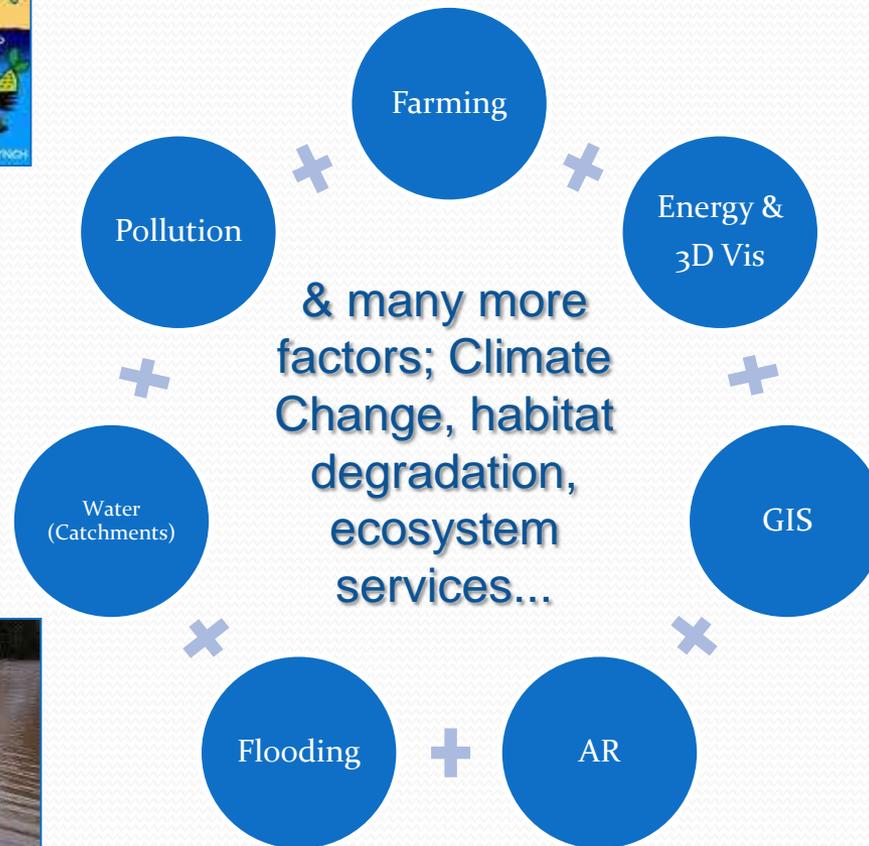
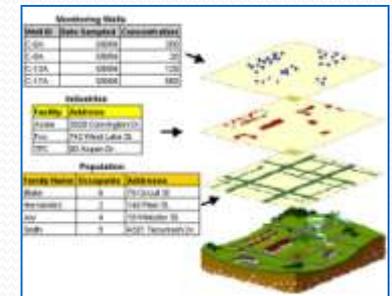
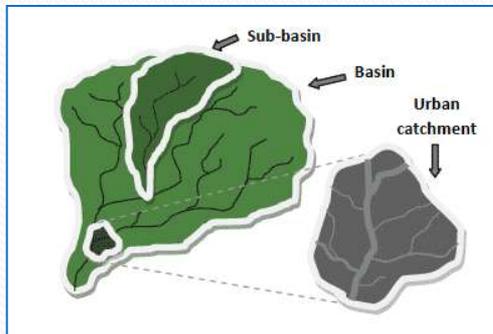
Visioning Catchment Futures

PhD Research Project

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What do all of these items have in common?



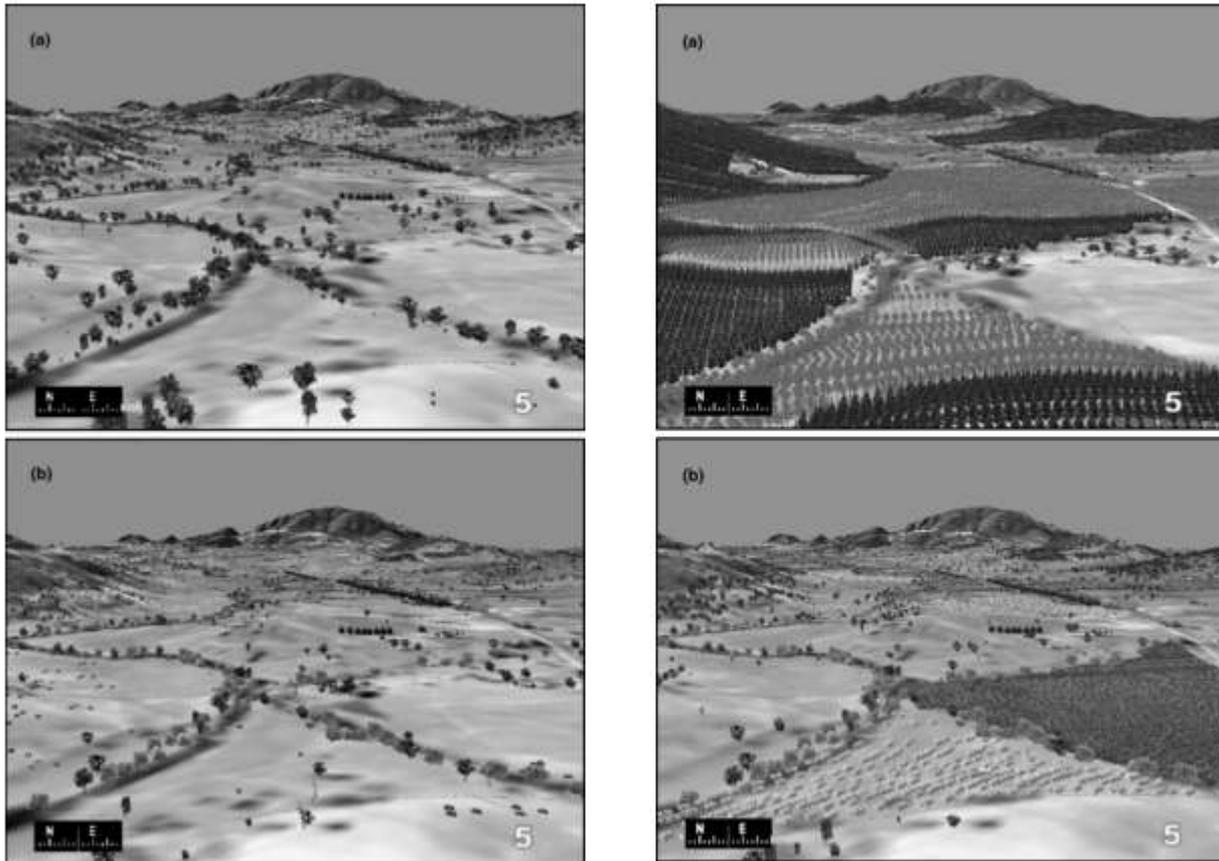


They all play a part in my
research project!

What is a Visualisation?

- It can be hard for non specialists to ‘visualise’ the future landscape, 2D and 3D visualisations are proven to offer real benefits in communicating change and facilitating discussion
- ‘Visualisations’ can be as simple as a GIS map showing where land use change might take place
- Or possibly as complex as a walk through 3D landscape in a virtual reality theatre
- Recently improved linkages between GIS and 3D have been possible due to changes in technology

Visualisation Scenarios



Taken from C. Stock, I.D. Bishop, and R. Green, "Exploring landscape changes using an envisioning system in rural community workshops," *Landscape and Urban Planning*, vol. 79, 2007, pp. 229-239.

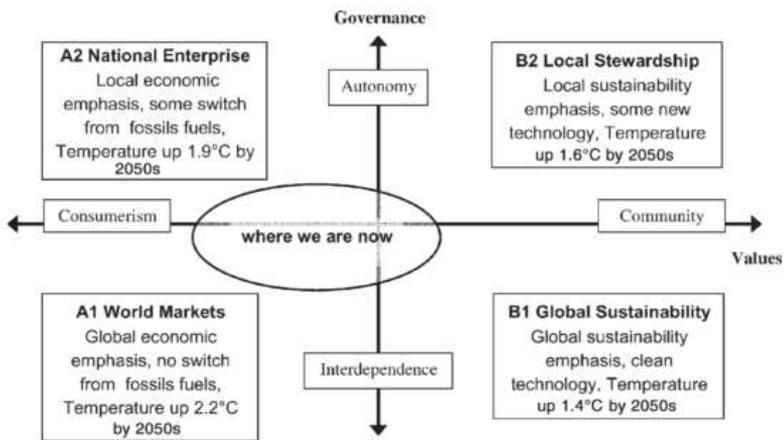


Fig. 4. Characteristics of future world development pathways (Sources: Hulme et al., 2002; Nakicenovic & Swart, 2000; SPRU, 1999).

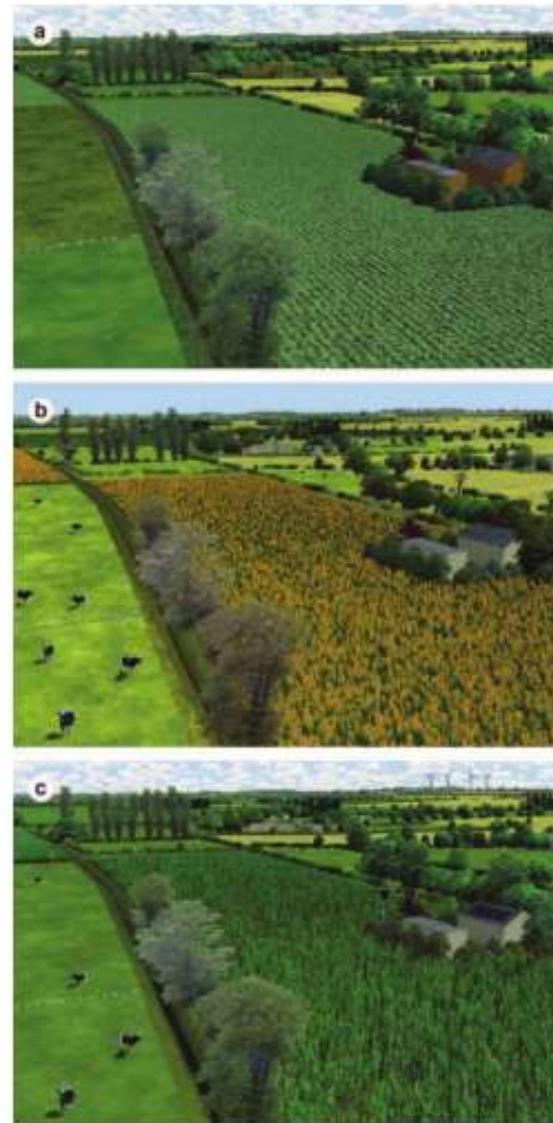


Fig. 8. Landscape visualisations from a bird's-eye perspective (viewpoint V1) (a) land use in summer 2001, (b) potential land use in 2020 (A2 scenario), (c) potential land use in 2020 (B2 scenario).

Both images taken from T. Dockerty, A. Lovett, G. Sünnerberg, K. Appleton, and M. Parry, "Visualising the potential impacts of climate change on rural landscapes," *Computers, Environment and Urban Systems*, vol. 29, 2005, pp. 297-320.

What is Augmented Reality?

- Augmented Reality isn't really 'that' new, it has been used in gaming for many years
- What is new is its use on modern Smartphone's, many which have a GPS and a camera just waiting to be used
- Currently used for location based gaming and marketing the use of AR in landscape has been written about in the literature but not (as yet) used in landscape research.



Research Themes

1. Ecosystem Services within catchments– methods to relate policy to ‘on the ground’ understanding,
2. Developing a Visioning Framework for catchment management for use as a Decision Support tool,
3. Investigating whether ‘What If?’ scenarios enable greater understanding of multifunctional landscape management and the tradeoffs which occur now and looking to the future.

GIS will be used to manage the data within the project, some research will also take place into transparency in data collection and whether the application of data standards increases user confidence in future visualisation scenarios!

Project link to River Wensum...

- Aiming to focus all research strands on the river corridor within a sub catchment of the Wensum
- Intention is to engage with the DTC stakeholder group to explore future scenarios in catchment management using visualisations, currently identifying and making contact with a variety of stakeholder groups,
- Anglian Water and the CSF Officer already contacted, interested in the project and asked to invite further responses,
- ‘Instigating Bottom up’ approach

Current research...

**“Ecosystem Services are an interesting but complex idea
- how can the idea become accessible to ordinary
people?”**

- Using a hands on visualisation method (Augmented Reality – POC complete) to encourage non academics to understand ES in the landscape and their functions
- Study area will be the Gaywood catchment which is smaller and a stakeholder group already exists and has been contacted.
- By automating the location of the ecosystem services using GIS, technique can be applied to selected recreation walks in a bigger catchment

Research 2012 onwards

“Objective is to increase the engagement and collaboration between different stakeholders involved with catchment management”

- A visioning framework will be developed, 10 steps showing how to engage interested parties, identify issues, visualise scenarios to solve those issues and communicate solutions,
- Framework can then act as a decision support tool for other catchment projects outside of academia,
- Workshop discussions between groups and stakeholders (as well as the final visualisations) will form the basis of an online scenario ‘game’ where members of the public can explore the trade-offs needed to manage the landscape in the future!

Example scenario game for energy use

The screenshot displays the 'ElectroCity' game interface. At the top, the logo 'ElectroCity' is accompanied by a city skyline and a wind turbine icon. To the right, it says 'HELLO TOMORROW | genesis ENERGY'. Below the logo is a navigation menu with buttons for HOME, GAME, REGISTER NOW, FINISHED CITIES, HOW TO PLAY, TEACHER RESOURCES, ABOUT, and FAQs.

A 'SAVE GAME' button is located in an orange bar. Below this are several utility buttons: SCREENS [QUICK KEY], OPTIONS [1], MARKETS [2], STATS [3], and HINTS [4].

The main interface features a 3D isometric map of a city grid. The map shows a river, trees, and buildings. To the left of the map is a vertical stack of resource and control panels:

- A sign that reads 'THE SLEEPY TOWN OF EDENBRIDGE'.
- A panel showing 'POPULATION 10,000' with a row of 10 yellow circles below it.
- A panel showing '\$400' with a dollar sign icon.
- A panel for 'Local Body Rates - 25%' with a slider between 'LOW' and 'HIGH'.
- Two buttons labeled 'COAL 0' and 'GAS 0'.

Below the map are two progress bars:

- 'ELECTRICITY SUPPLY' with a red-to-yellow gradient bar.
- 'ENVIRONMENT' with a grey-to-green gradient bar.

At the bottom right, there are 'ZOOM +' and 'ZOOM -' buttons, and a 'TURN 1' indicator next to a 'NEXT TURN' button.