

Environmental Modelling

Connections with maths

Career opportunities

Other degree opportunities

Advantages of having a good quantitative background

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Earth...a nice place to live



...actually, the only place to live!



...we have problems

land conversion + oxidising fossil fuel resources = changing Earth's energy budget and hence entire climate system

Depleting renewable water, soil and food resources

Mass extinction of plant and animal species

Increasing environmental toxicity

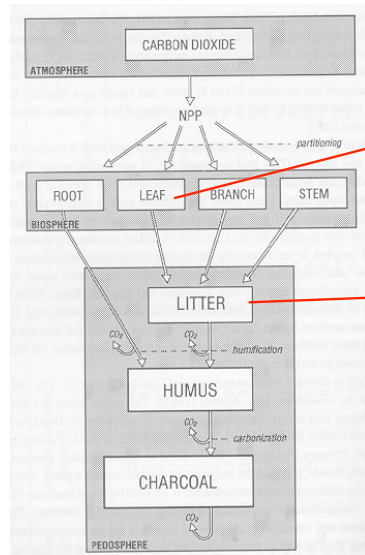
TISM!

Quantitative analysis is essential:

Estimate stock and fluxes? Rates of change?

Predict future environmental change and impacts?

e.g. model carbon stocks and fluxes changed over time using simultaneous equations



Vegetation

$$\frac{dC_{\text{leaf}}}{dt} = a_{\text{leaf}} NPP - \frac{C_{\text{leaf}}}{L_{\text{leaf}}}$$

Litter

$$\frac{dC_{\text{leaf litt}}}{dt} = \frac{C_{\text{leaf}}}{L_{\text{leaf}}} - hf_{\text{leaf litt}} \frac{C_{\text{leaf litt}}}{L_{\text{leaf litt}}} - (1 - hf_{\text{leaf litt}}) \frac{C_{\text{leaf litt}}}{L_{\text{leaf litt}}}$$

Career opportunities

Research

- CSIRO, universities, IBGP

Natural Resource Management

- MDBC, Environment Australia, Bureau of Rural Sciences
- state government agencies

Private sector

- environmental engineering
- environmental impact assessment

Links to other degrees:

- SRES, Geology, BOZO
- environmental engineering

Advantages of a maths background:

- all environmental problems at some point demand quantitative data analysis and modelling
- you become the essential member of a research or project team

