Model-data integration at the Eucalyptus Free-Air CO$_2$ Enrichment experiment (EucFACE)

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Ideally, model-data integration should take place throughout the course of an experiment, not just at the end. Model runs in advance of an experiment can help identify the most critical uncertainties and be used to help design measurement campaigns to address these uncertainties. Feedback of data to models during the experiment promotes careful archiving of data, identifies data gaps, aids the development of new hypotheses and helps target experimental work to maximise its scientific value. In this talk I will describe the model-data integration approach taken for a Free-Air CO$_2$ Enrichment experiment at a mature broadleaf evergreen woodland growing on low-phosphorus soils (EucFACE). I will describe how the use of ecosystem models before and during the experiment is helping to provide new insights into the effects of CO$_2$ enrichment on carbon, water and phosphorus cycling in this ecosystem, and outline our vision for how this new information can be implemented in models more broadly.