



Large-Scale Modelling to Support Decision-Making in Scotland

Gary Polhill

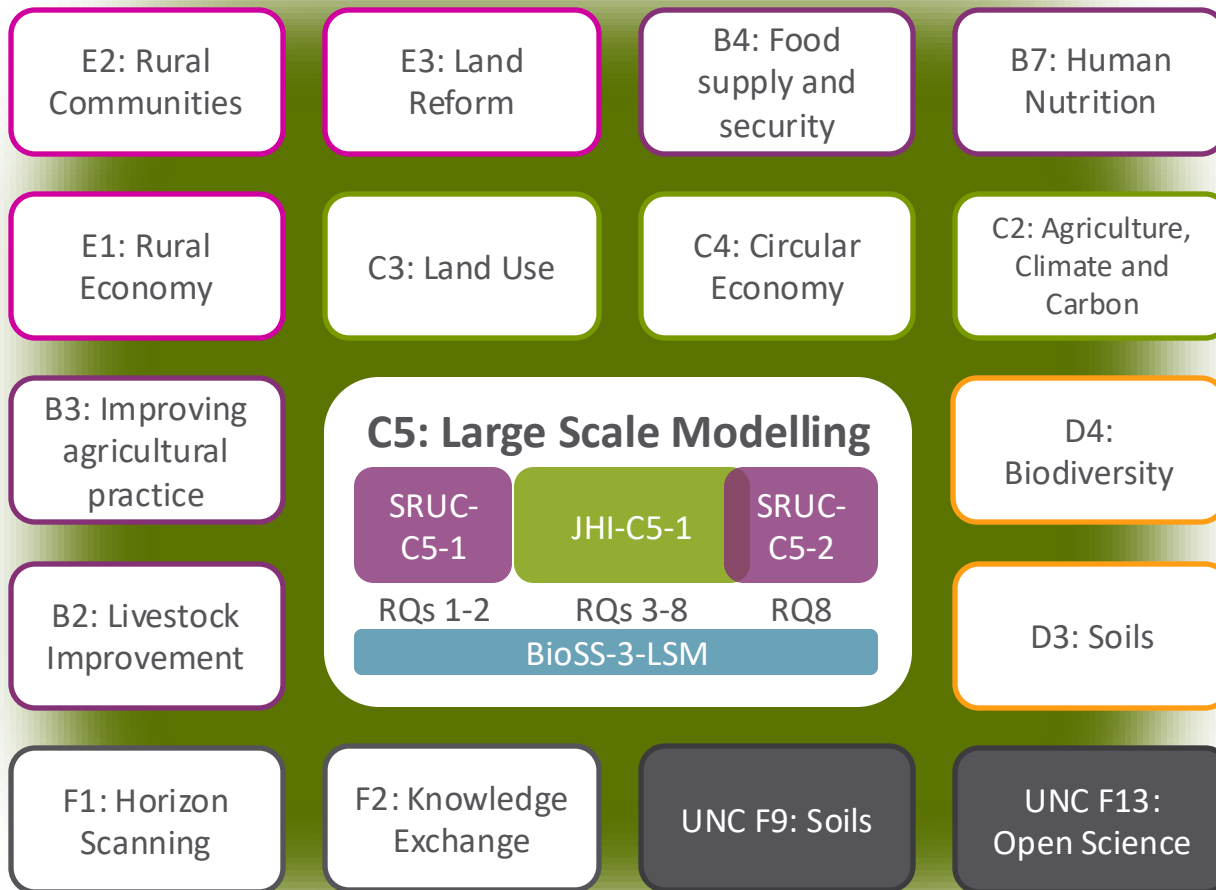


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Context in Strategic Research Programme



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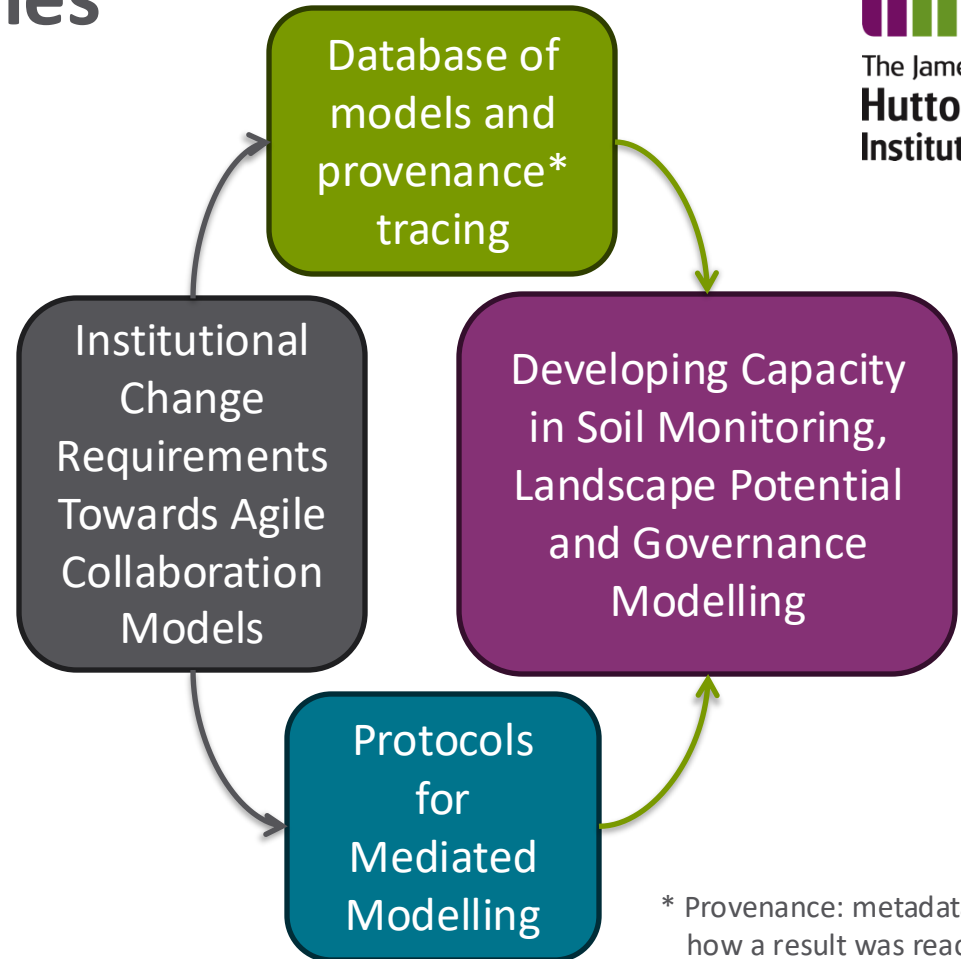


JHI-C5-1: Basic principles



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- Objective:
 - to conduct research in support of providing
 - integrated and transparent models, datasets and tools for analysis of
 - rapid-response, policy-led, rural social-environmental scenarios at the
 - whole-of-Scotland scale
- Developing capacity

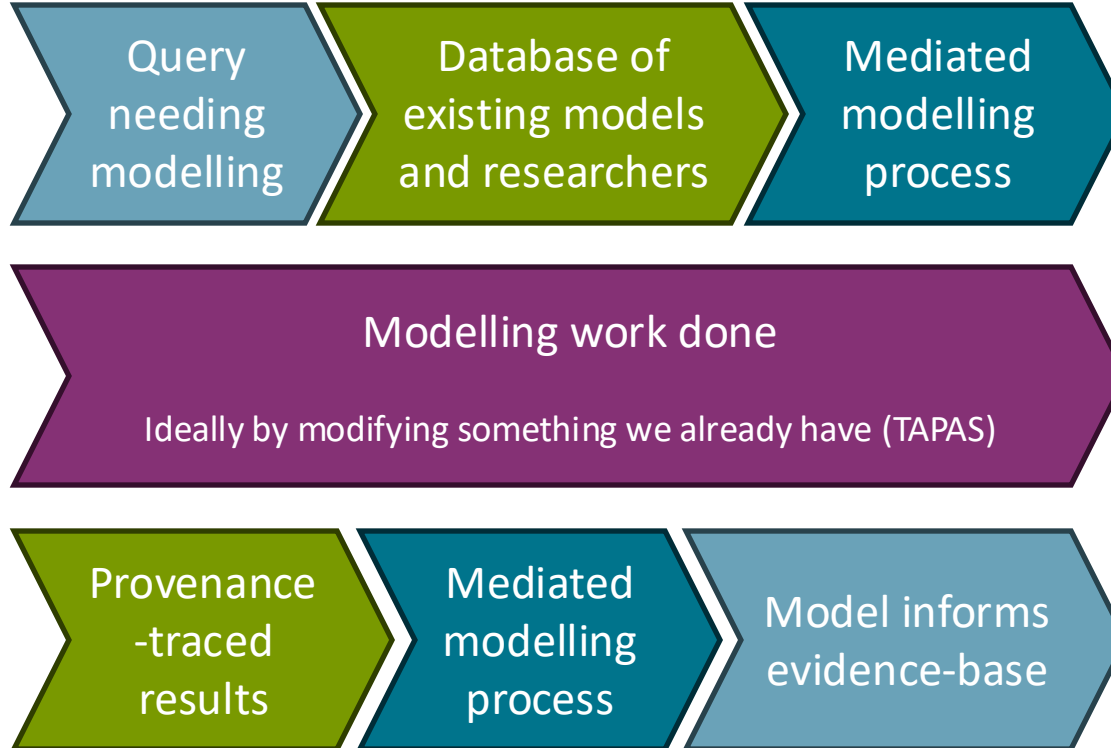


* Provenance: metadata on how a result was reached

Modelling in support of policy: vision



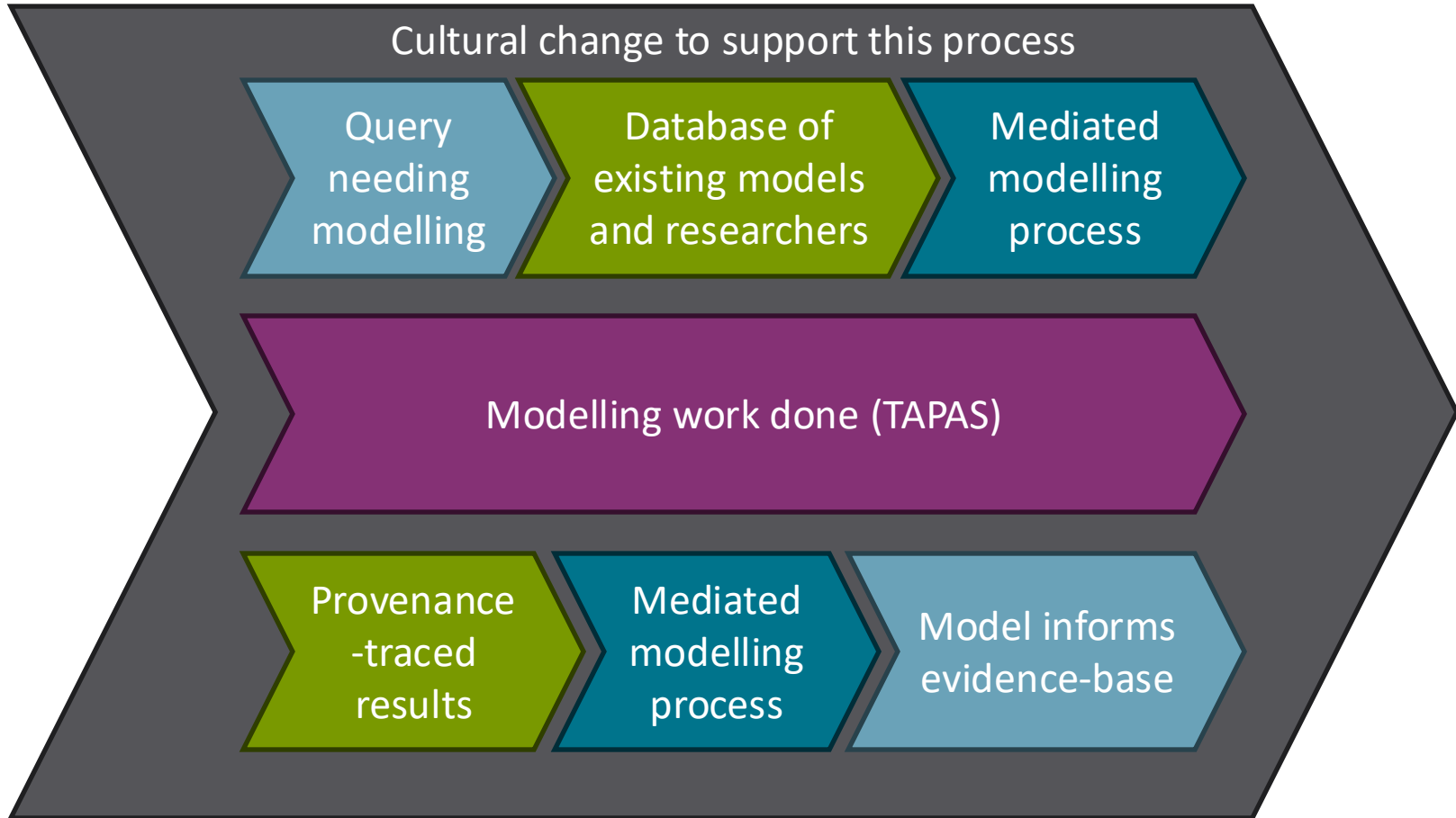
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Modelling in support of policy: vision



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Modelling in support of policy: vision

Cultural change to support this process

- It should be OK to ask us about a model of potential impact
 - It should be OK for us to say it cannot be used
 - Provided we give good reasons
- We should feel and *genuinely be* able to clear commitment from a team together to respond to such a query
 - It should be OK (and quick and easy) for us to delay, revise or cancel commitments in other work to make this happen
 - It should be OK for us to say we're too busy!
 - But it should also be OK (and *possible*) for others to use our model
- It should be OK for us to ask how much time you have to collaborate with us
 - It should also be OK for you to say, "None! But could you do it in 10 minutes?"
- It should be OK for us to ask if there's any money!
 - It should also be OK for you to say, "No! But could you do it if we gave you £1000?"
- It should be OK for the (quickly conducted) modelling work not to be of the highest *scientific* quality – though we'd follow good practice
 - It should be OK for the model to be wrong!
 - "all models are wrong" (Box 1976, p. 792)
- It should be OK for any eventual decision not to follow any course indicated by the modelling results



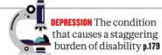
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More than 300 people perished in the earthquake that struck the medieval centre of L'Aquila.

RISK ASSESSMENT

Scientists cleared of quake deaths

subject to frequent, mostly low-magnitude tremors known as seismic swarms. Residents were alarmed by a local amateur earthquake predictor's claims that he had evidence of an impending quake, although geologists dismissed his methods as unsound.

A commission of experts met on 31 March 2009 to advise the government. According to the prosecution, a press conference after that meeting — attended by the acting president of the commission, volcanologist Franco Barberi of the University of Rome 'Roma Tre', and by Bernardo De Bernardinis, then deputy director of the Italian Civil Protection Department — conveyed a reassuring message that a major earthquake was not on the cards. Moreover, in a television interview recorded shortly before the meeting but aired after it, De Bernardinis said that "the scientific community tells me there is no danger because there is an ongoing discharge of energy" during the seismic swarms.

As a consequence, according to the prosecution, when the earthquake struck on 6 April, 29 people chose to stay indoors and died as their homes collapsed. All members of the expert commission were found guilty of manslaughter in October 2012, after a 13-month trial that transfixed the international scientific community.

In addition to De Bernardinis, Selvaggi and Barberi, the other defendants were Enzo Boschi, former president of the National Institute of Geophysics and Volcanology in Rome;

Modelling in support of policy: vision



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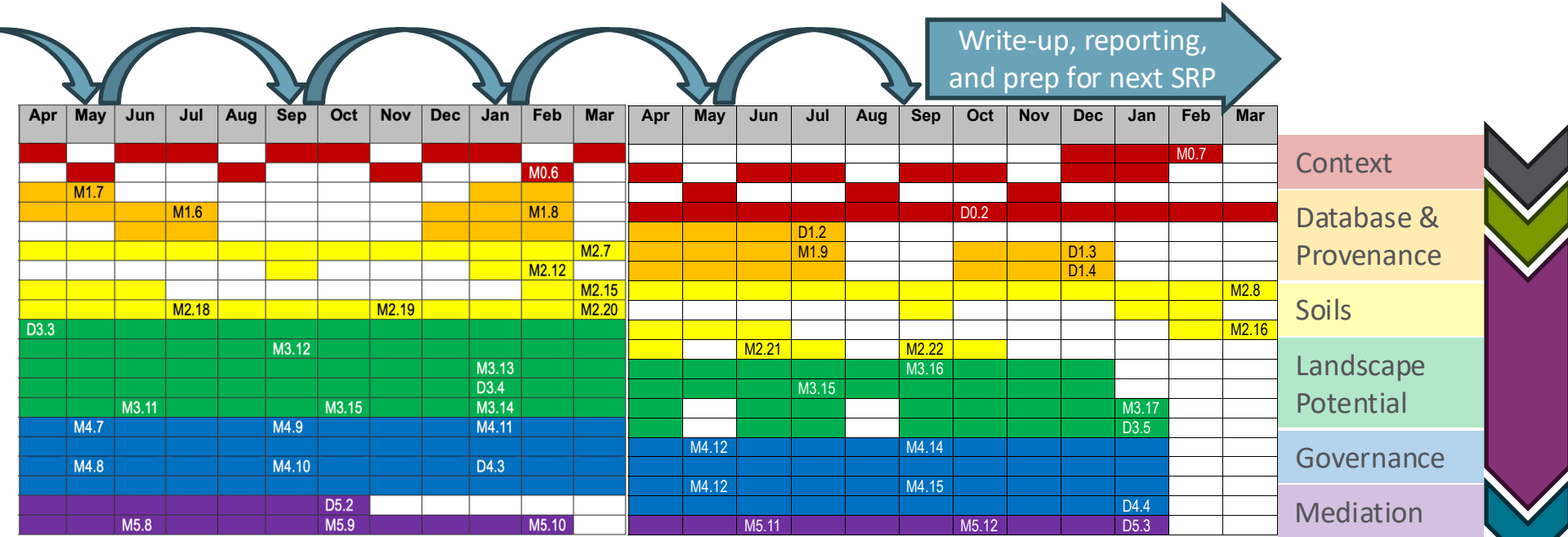
Cultural change to support this process

- It should be OK to ask us about a model of potential interest
 - It should be OK for us to say it cannot be used
 - Provided we give good reasons
- We should feel and *genuinely be* able to clear commitments and bring a team together to respond to such a query
 - It should be OK (and quick and easy) for us to delay, revise or change commitments in other work to make this happen
 - It should be OK for us to say we're too busy!
 - But it should also be OK (and *possible*) for others to use our models instead!
- It should be OK for us to ask how much time you have available to collaborate with us
 - It should also be OK for you to say, "None! But could you do it anyway?"
- It should be OK for us to ask if there's any money!
 - It should also be OK for you to say, "No! But could you do it anyway?"
- It should be OK for the (quickly conducted) modelling work not to be of the highest *scientific* quality – though we'd follow good practice
 - It should be OK for the model to be wrong!
 - "all models are wrong" (Box 1976, p. 792)
- It should be OK for any eventual decision not to follow any course indicated by the modelling results



Years 4 and 5 of JHI-C5-1

- 4-5 four-month iterations planned
 - Time (theoretically) set aside to work on your problems...
 - ...which we can also use for our own research



This workshop...



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- Get to know the diversity of work in the large-scale modelling area
 - And the people undertaking the research
- Identify opportunities for us to collaborate in various domains
 - Supporting agriculture across the food value chain in uncertain times
 - Systems approaches and simulation for disease control
 - Landscape-level habitat restoration
 - Development of rapid-response capabilities to answer policy queries
 - A soil monitoring framework for Scotland
- Develop the foundations of future work in the longer term