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Spatial diagnosis of catchment water quality: using multiple lines of evidence

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SUMMARY

Targeting actions to improve water quality and designing monitoring to evaluate the effectiveness of those actions are challenges faced by catchment managers the world over. Both tasks require an understanding of how a catchment 'works' in terms of sediment and nutrient delivery into the stream network. This can be translated into five key questions.

1 Which nutrients or sediments contribute to water quality problems?
2 What is their origin?
3 Where in the catchment are their source areas?
4 Along which hydrological pathways are the materials transported to the waterways?
5 When are these processes likely to occur?

This chapter describes how multiple lines of evidence can be used to focus on these questions. A literature review and case study in the Duck River catchment in north-western Tasmania identified a range of different and often complementary types of information that could be used. These include water quality monitoring over space and time, tracer studies and various types of modelling. It was found that these approaches had different strengths as