

IDEAS conceptual model for Integrated Catchment Management

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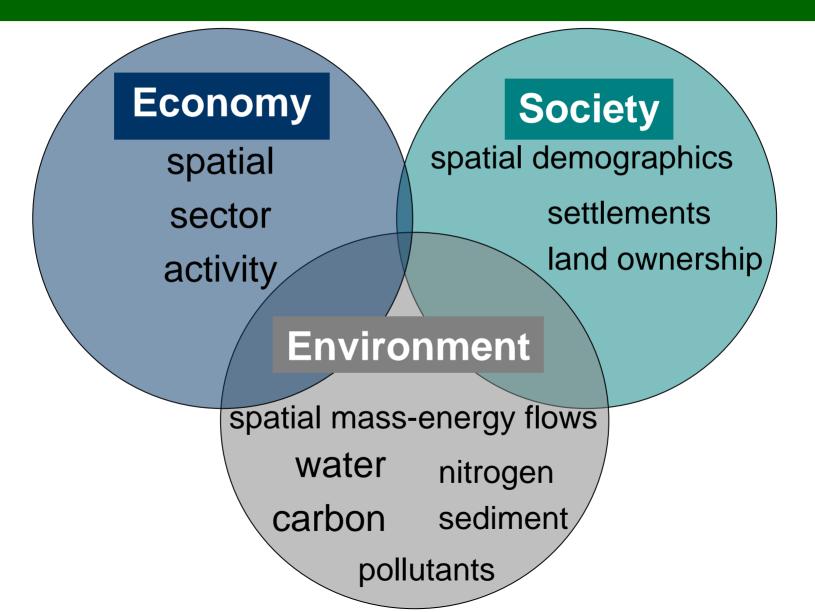
IDEAS

- Integrated
- Dynamic
- Environmental
- Assessment
- System

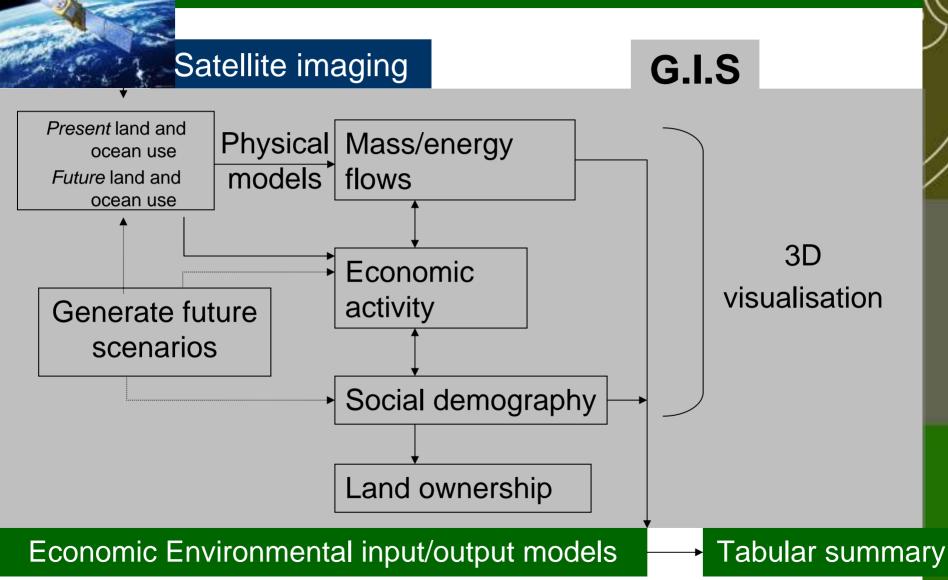
Required attributes

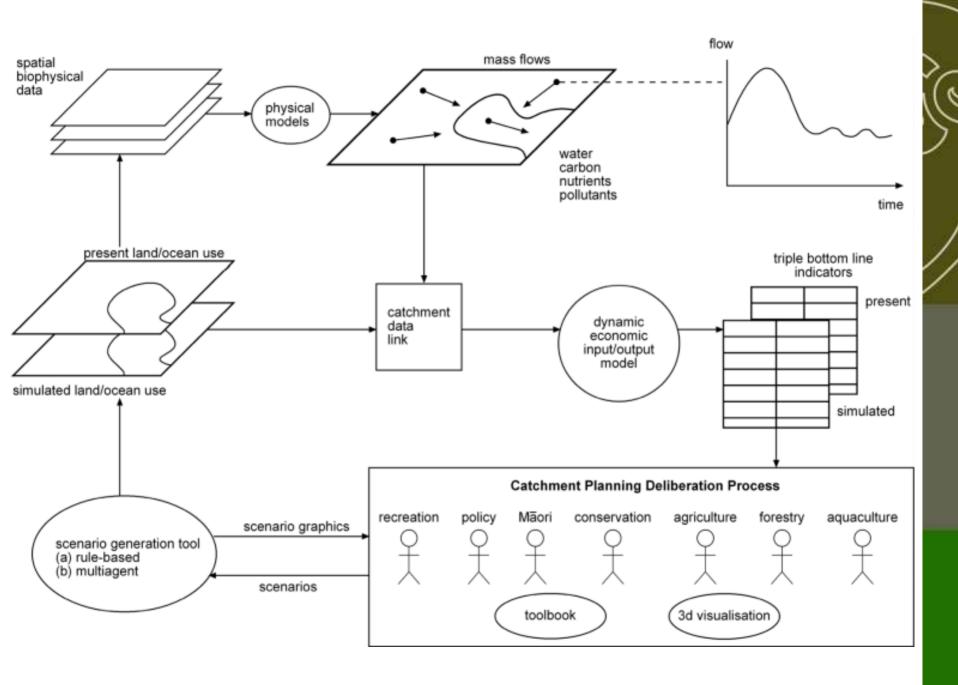
- Triple bottom-line approach
- Collaborative learning process
- Assessment of future catchment scenarios
- Dynamic

Triple bottom-line approach

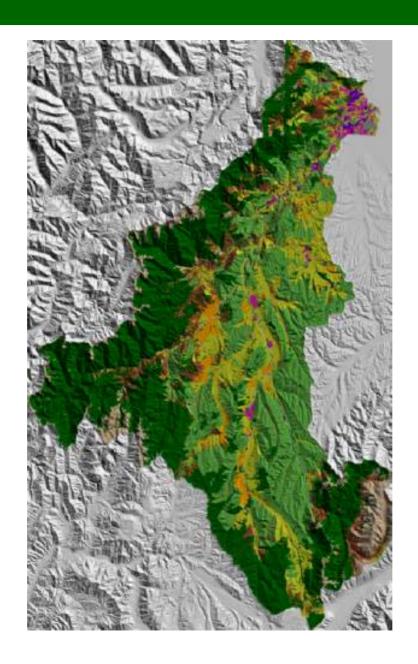


Dynamic assessment of catchment scenarios

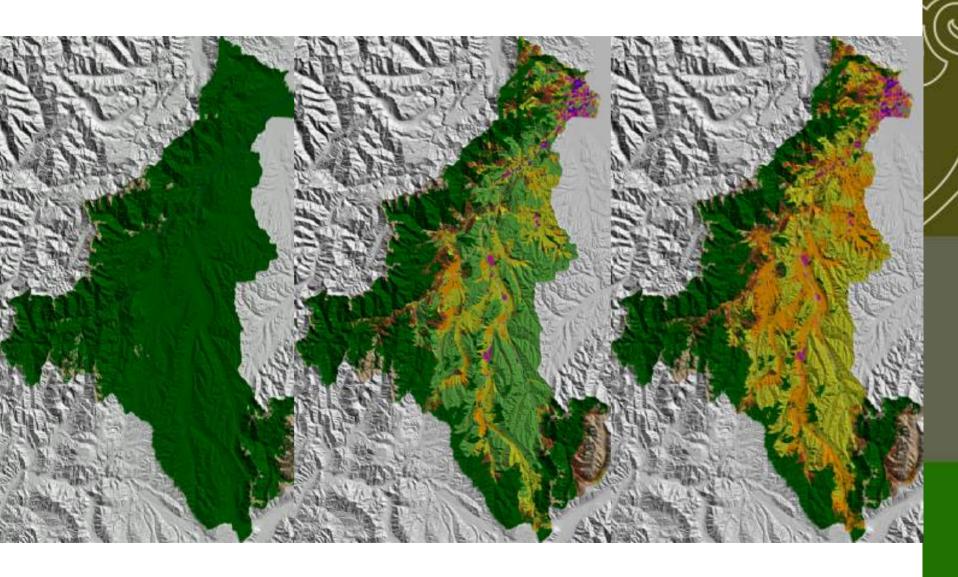




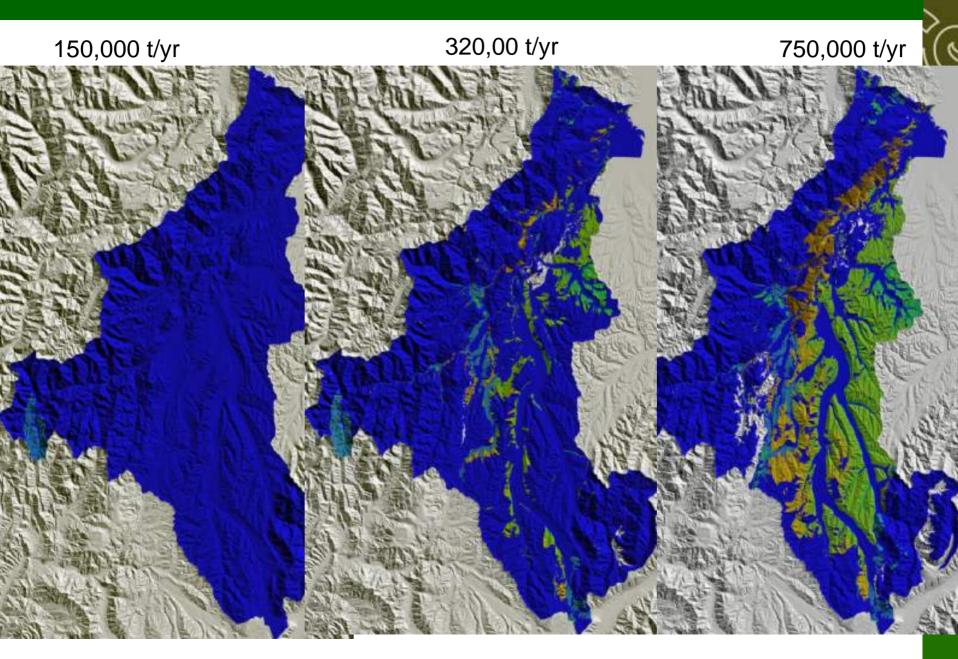
Present land-based economic sectors from satellite

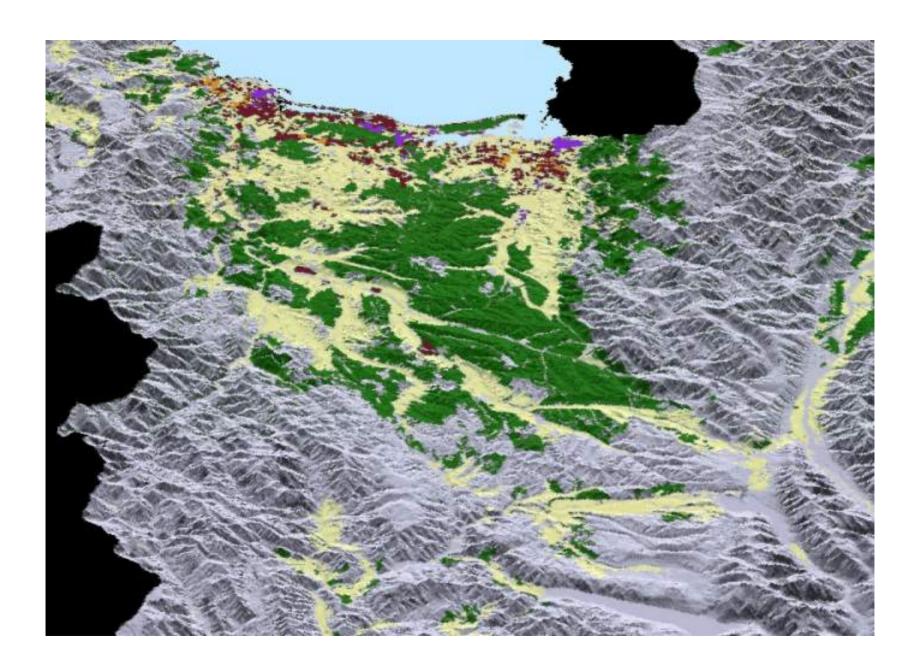


Natural – Present – Intensive land use scenarios



Sediment flow associated with land use scenarios





Ecosystem service	Coefficient	Units	Limits	
Water provision	Volume of water provided from sector per hectare per year	m³/ha/yr	Total water provision is the difference between total rainfall (in m³/ha/yr) and total water use	
Water use	Volume of water used by sector per hectare per year	m³/ha/yr	Total water use should not exceed a threshold required by trout	
Groundwater use	Volume of groundwater used by sector per hectare per year	m³/ha/yr	Total groundwater use should not exceed groundwater recharge	
Nitrogen waste	Mass of nitrogen exported from sector to sea per hectare per year	tonnes/ha/yr	Total nitrogen exported to sea should be less than maximum threshold set by aquaculture sector	
Phosphorus waste	Mass of phosphorous exported from sector to sea per hectare per year	tonnes/ha/yr	Total phosphorous exported to sea should be less than a threshold set by aquaculture	
Biological pollution	Faecal bacteria counts exported from sector to sea per hectare per year	number/ha/yr	Total faecal counts should be less than a given threshold set by aquaculture	
Sedimentation	Volume of fine sediment exported from sector to sea per hectare per year	tonnes/ha/yr	Total fine sediment delivered to sea should be less than a given threshold	
Gravel supply	Volume of gravel exported from sector to sea per hectare per year	tonnes/ha/yr	Total coarse sediment delivered to sea should be greater than gravel extraction by a set amount.	
Carbon sink	Net carbon sink for sector per hectare per year	tonnes/ha/yr	Net carbon sink for catchment should be zero	
Biodiversity	Number of endemic animal and plant species per hectare	number/ha	Total number of endemic species in catchment should be greater than a threshold	

Industry/Sector	Biophysical indicator	Economic indicator	Social indicator
Agriculture	Area of agriculture (ha) Water take (m³/yr)	Gross output (\$) Operatingsurplus (\$)	Job numbers (FTE)
Horticulture	Area of horticulture (ha) Water take (m³/yr)	Gross output (\$) Operating surplus (\$)	Job numbers (FTE)
Forestry	Area of forestry	Gross output (\$) Operating surplus (\$)	Job numbers (FTE)
Aquaculture	Suspended sediment yield (kg/s) Nutrient yield (kg/s) Faecal counts (number/s)	Gross output (\$) Operatingsurplus (\$)	Job numbers (FTE)
Conservation/ recreation	Area of conservation estate (ha) Number of endemic species Fish numbers	Administration cost (\$)	Visitor days Tramping days Hunter days Fisher days

Table 4. Proposed triple-bottom-line indicators of future scenarios

