

Atlantis Course Universidad de Concepción

Day 3 - Geometry

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CSIRO Ocean & Atmosphere
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Scales (and distribution) of each process and component

- spatial
- temporal
- biological resolution
- process resolution

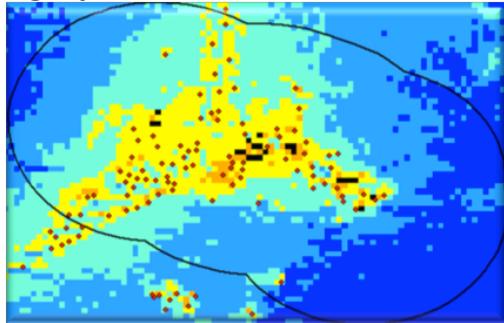


Scales: Spatial resolution

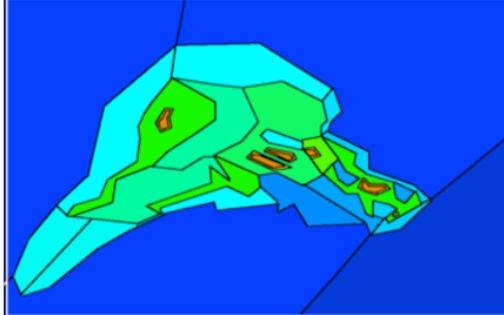
High resolution

- Conceptually
- Cell definition
- Inefficient
- Hard to fill

High spatial resolution



Low spatial resolution



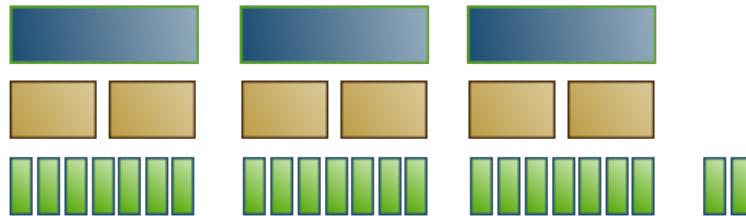
Scales: Spatial resolution



- Lower variance shown through time and space
- Less heterogeneous environment and fewer refugia
- Increased self-simplification of trophic web
- Loss of spatial segregation of predator/prey
- Increased boundary condition effects
- Altered predictions of response to perturbation

Scales: temporal resolution

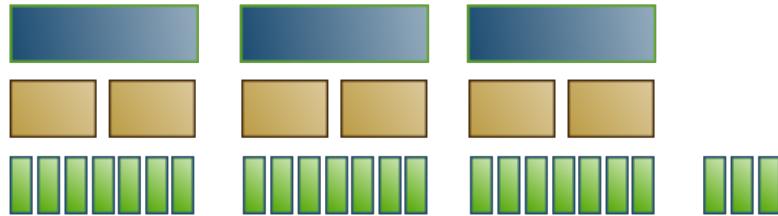
- 6, 12, 24 hours
- Adaptive time-steps (for stability)



- Mix-n-match

Scales: temporal resolution

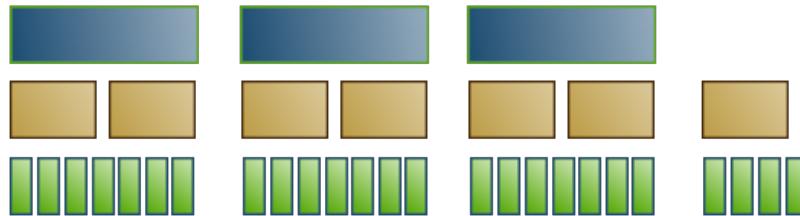
- 6, 12, 24 hours
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- Mix-n-match

Scales: temporal resolution

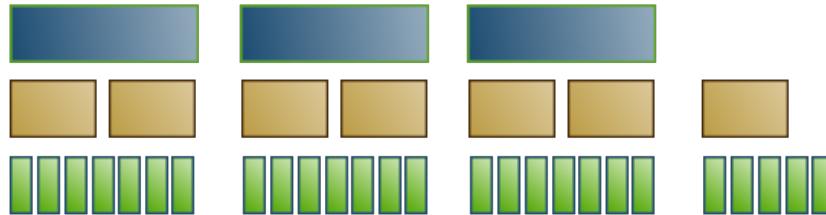
- 6, 12, 24 hours
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- Mix-n-match

Scales: temporal resolution

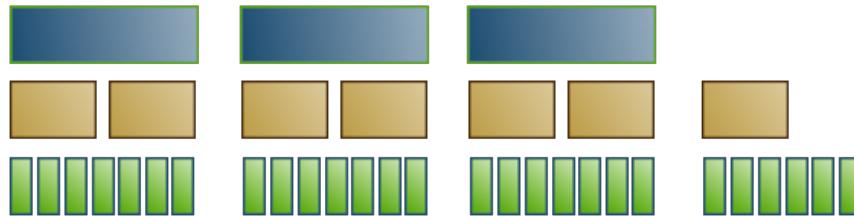
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Scales: temporal resolution

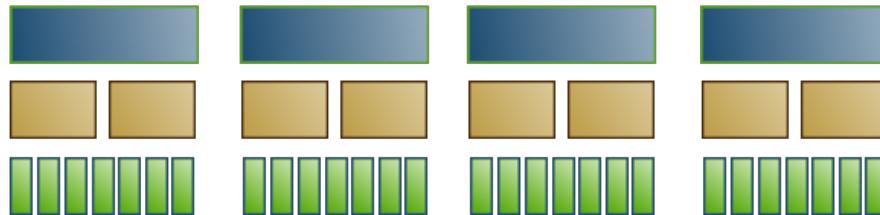
- 6, 12, 24 hours
- Adaptive time-steps (for stability)



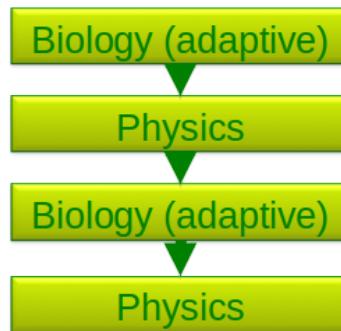
- Mix-n-match

Scales: temporal resolution

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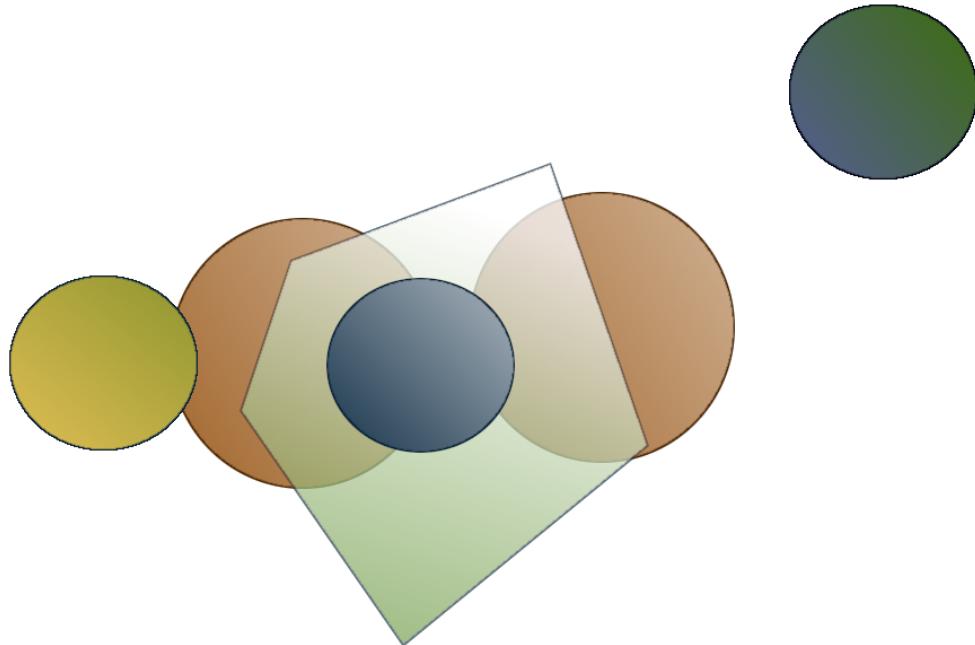


- Mix-n-match



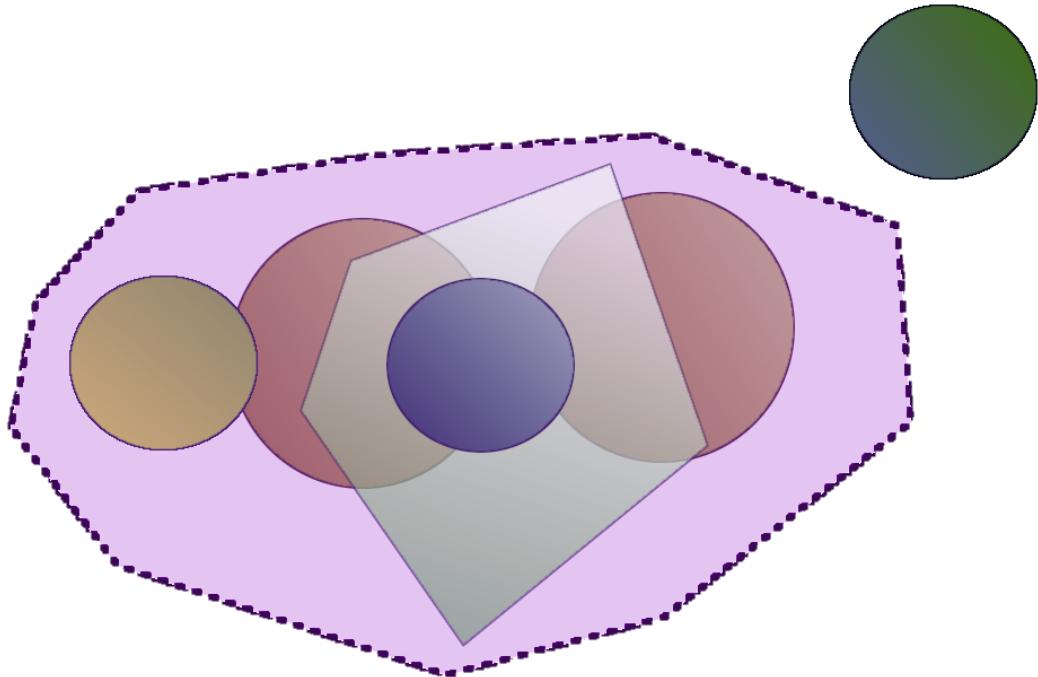
Horizontal bounds: What to include, what to leave out

- allow for transients?



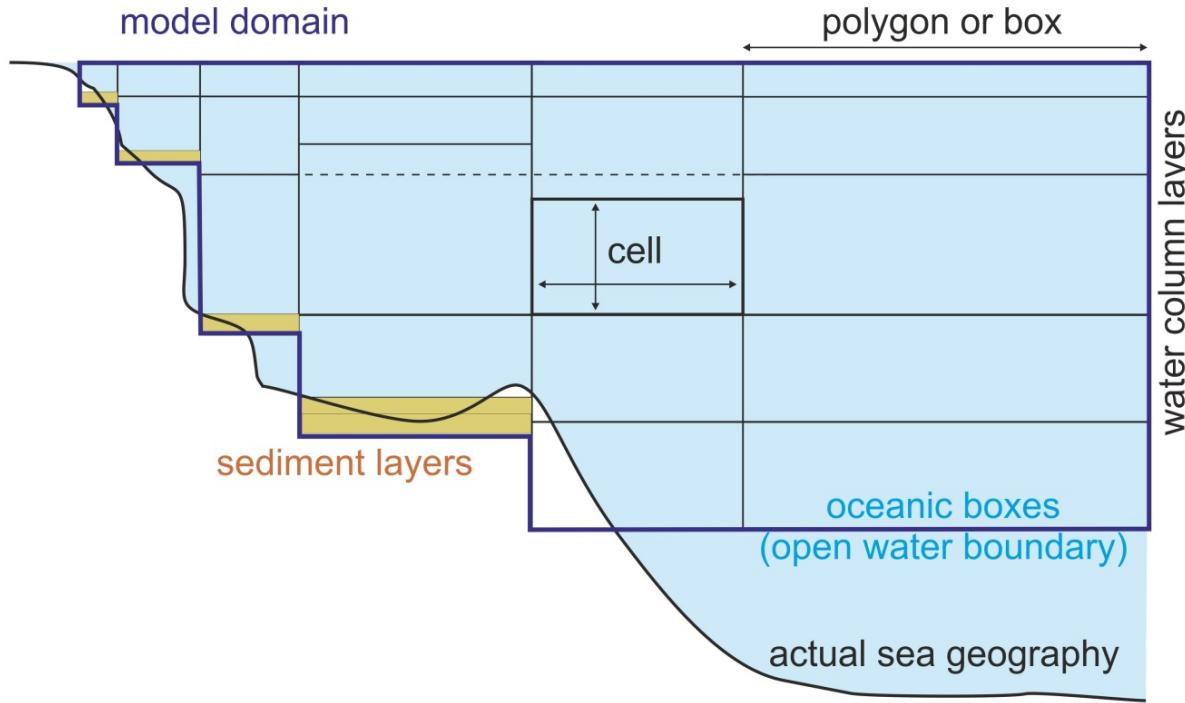
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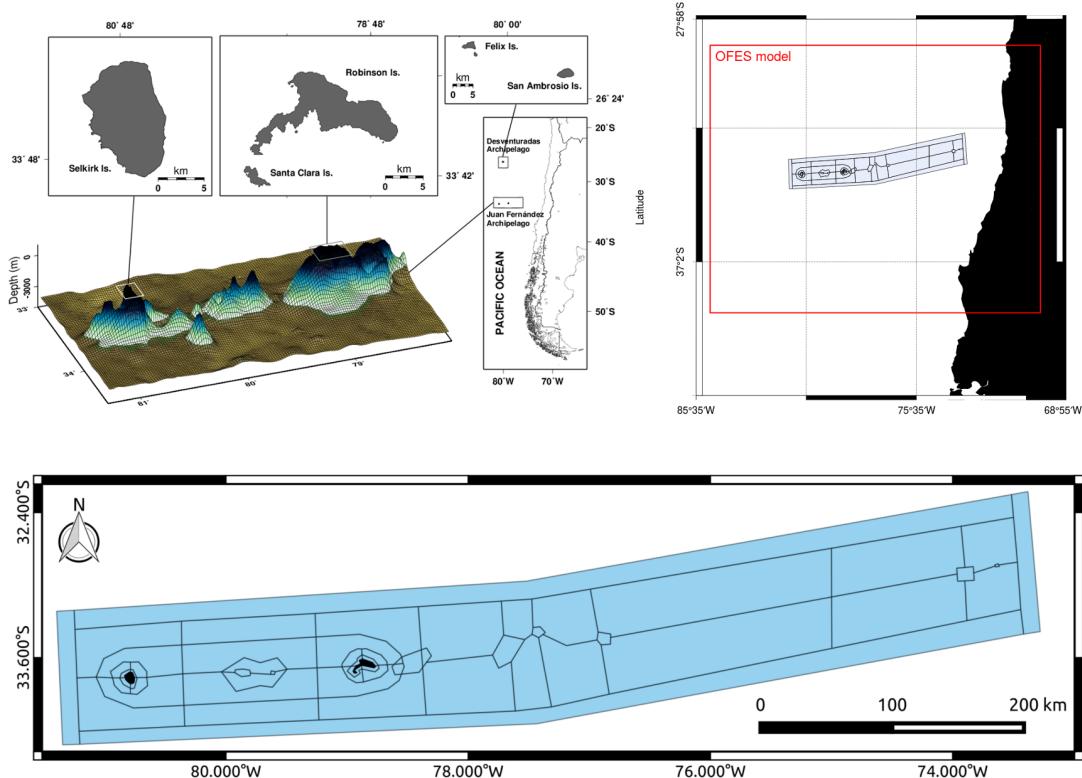


Vertical bounds: Cross section of an Atlantis model

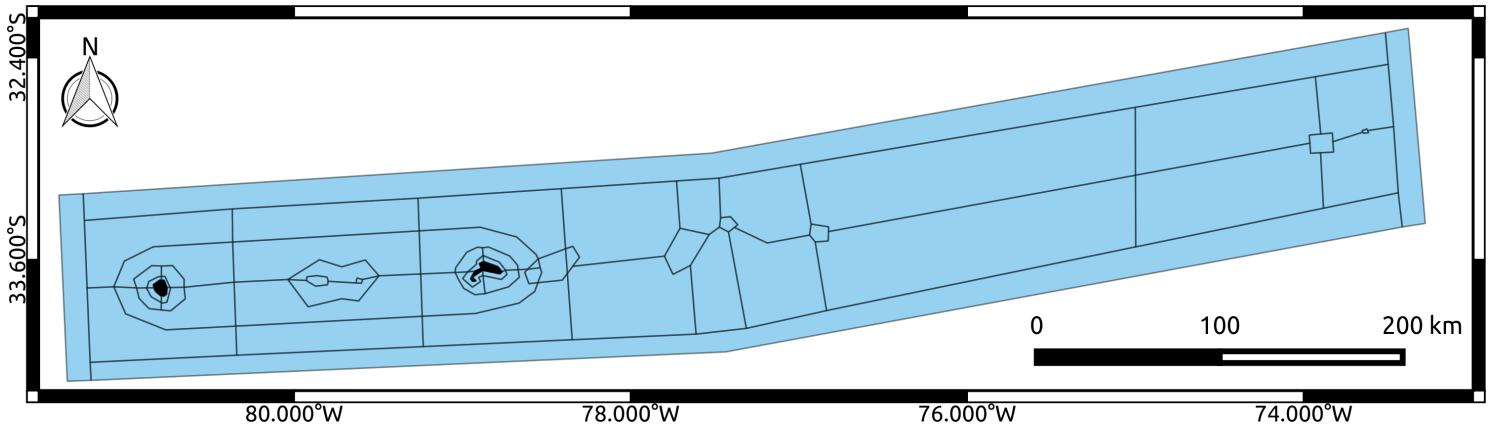
- Water column and sediment layer



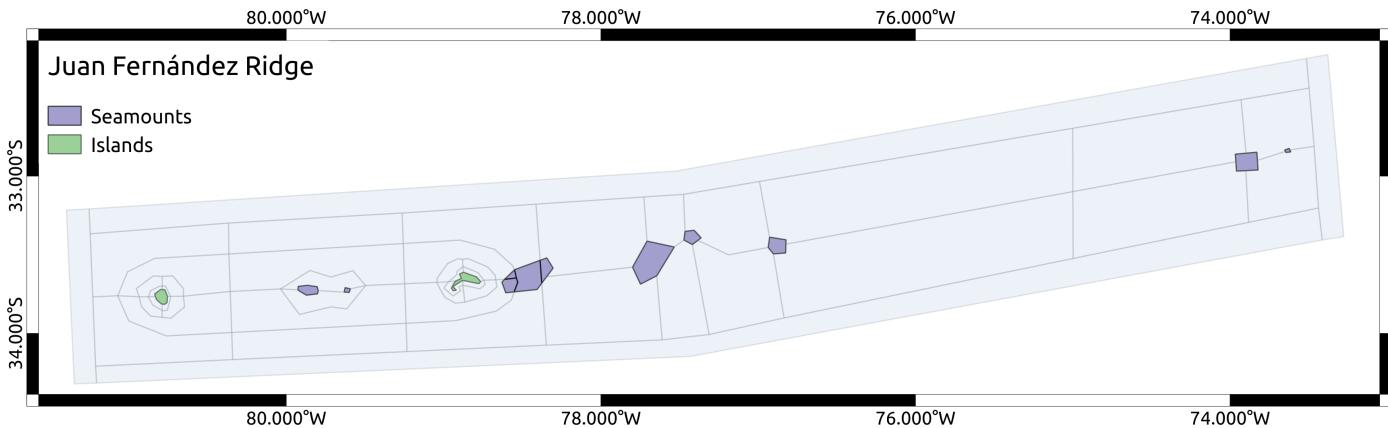
Example: Juan Fernández Ridge Ecosystem



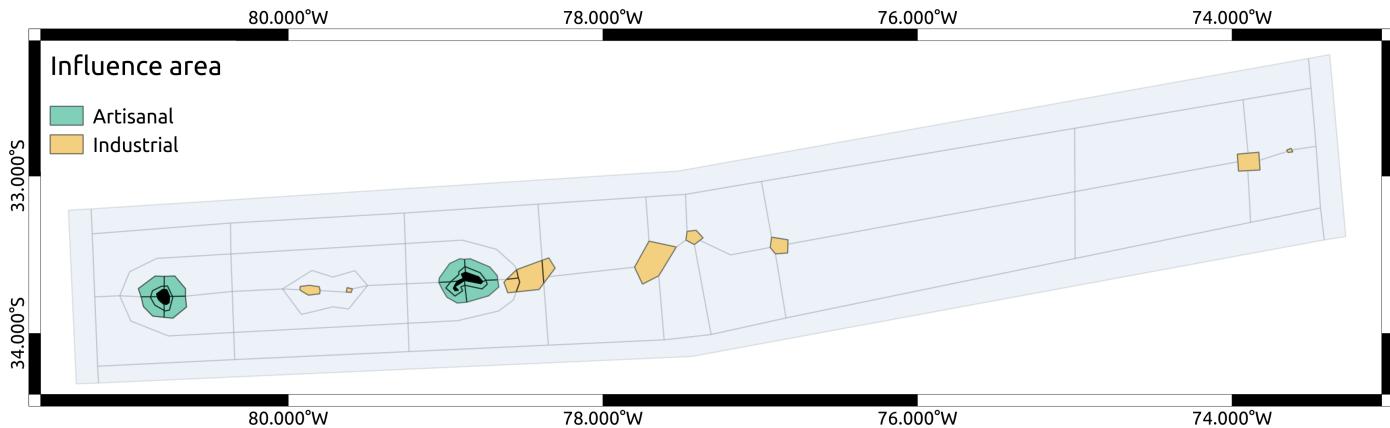
Example: Juan Fernández Ridge Ecosystem



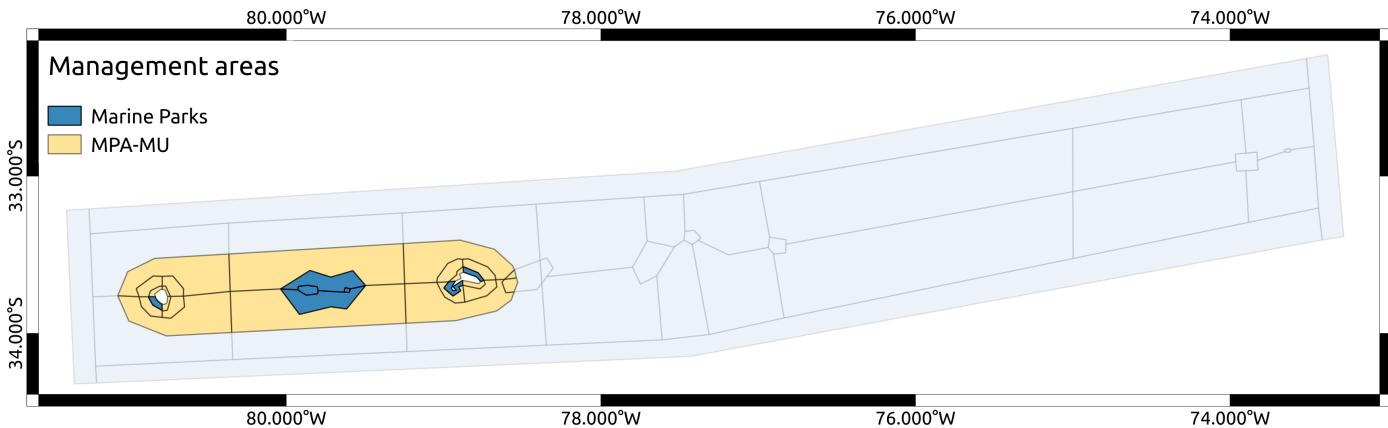
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Thank You

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