

Changes in methane lifetime in response to pine plantation reforestation

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Oral Submission to the Select Committee for the
Climate Change Response (Zero Carbon)
Amendment Bill

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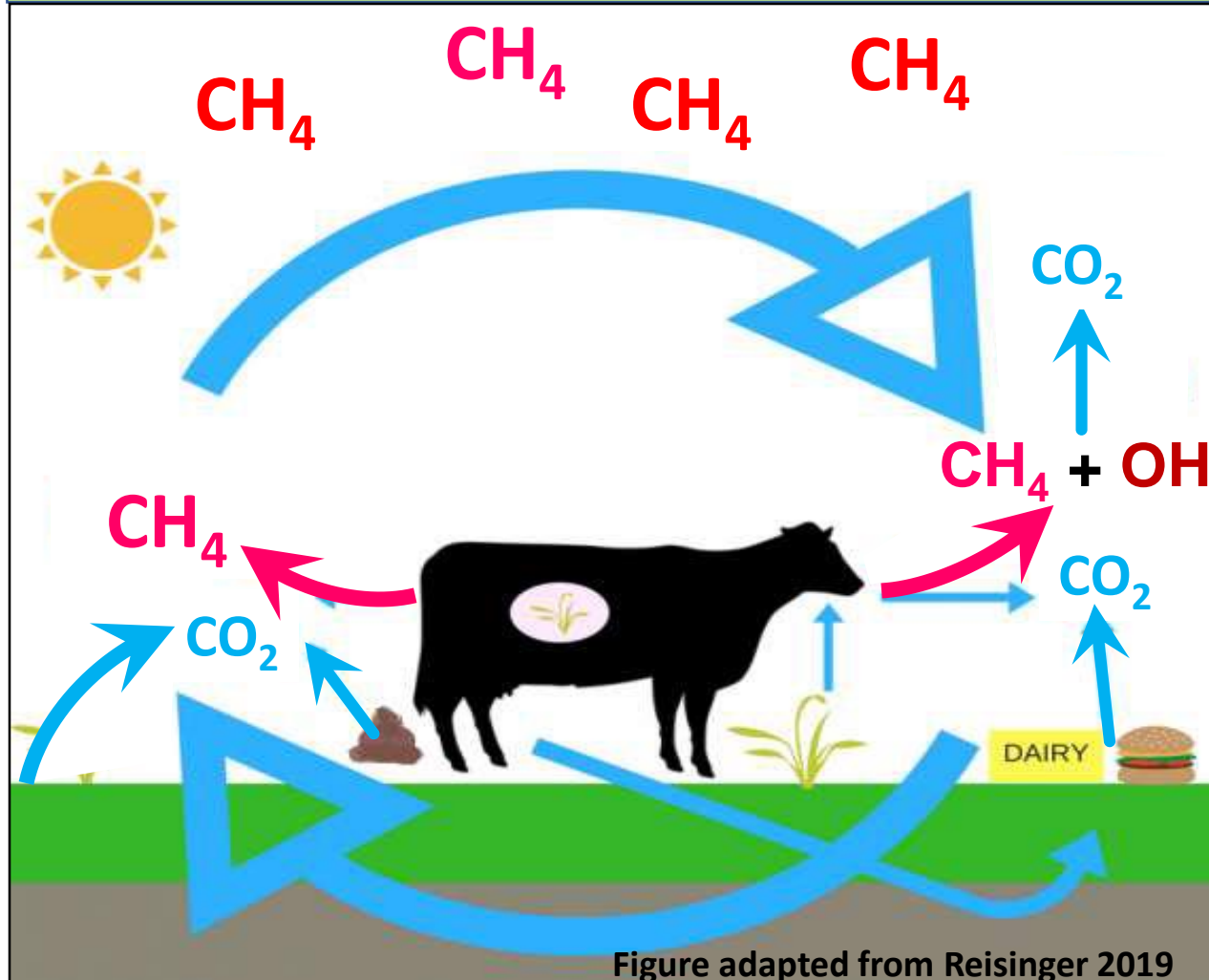


Methane (CH₄) cycle in the air

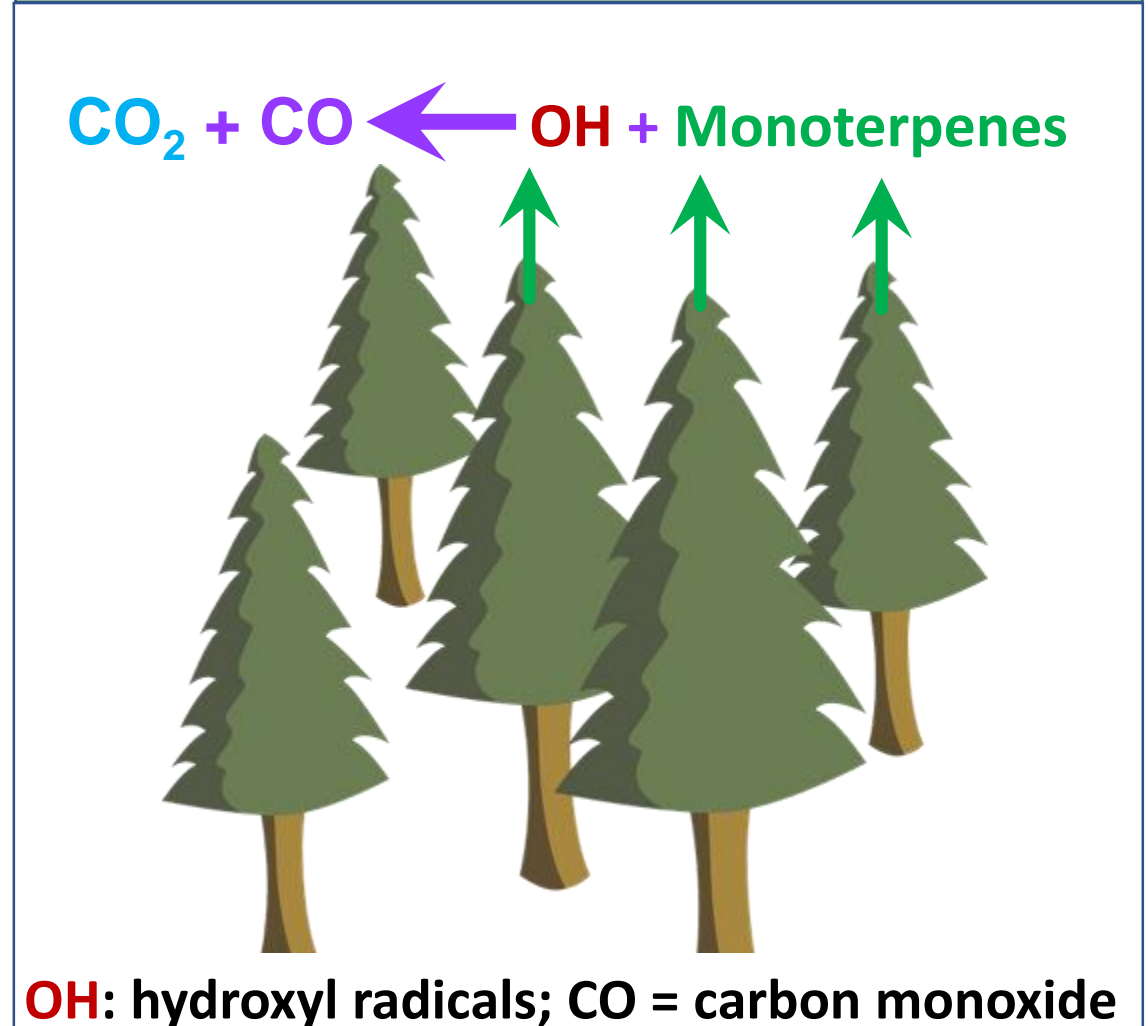
Methane lifetime is governed by hydroxyl radical concentration

Monoterpenes mop up methane busting hydroxyl radical

Methane emission from ruminants

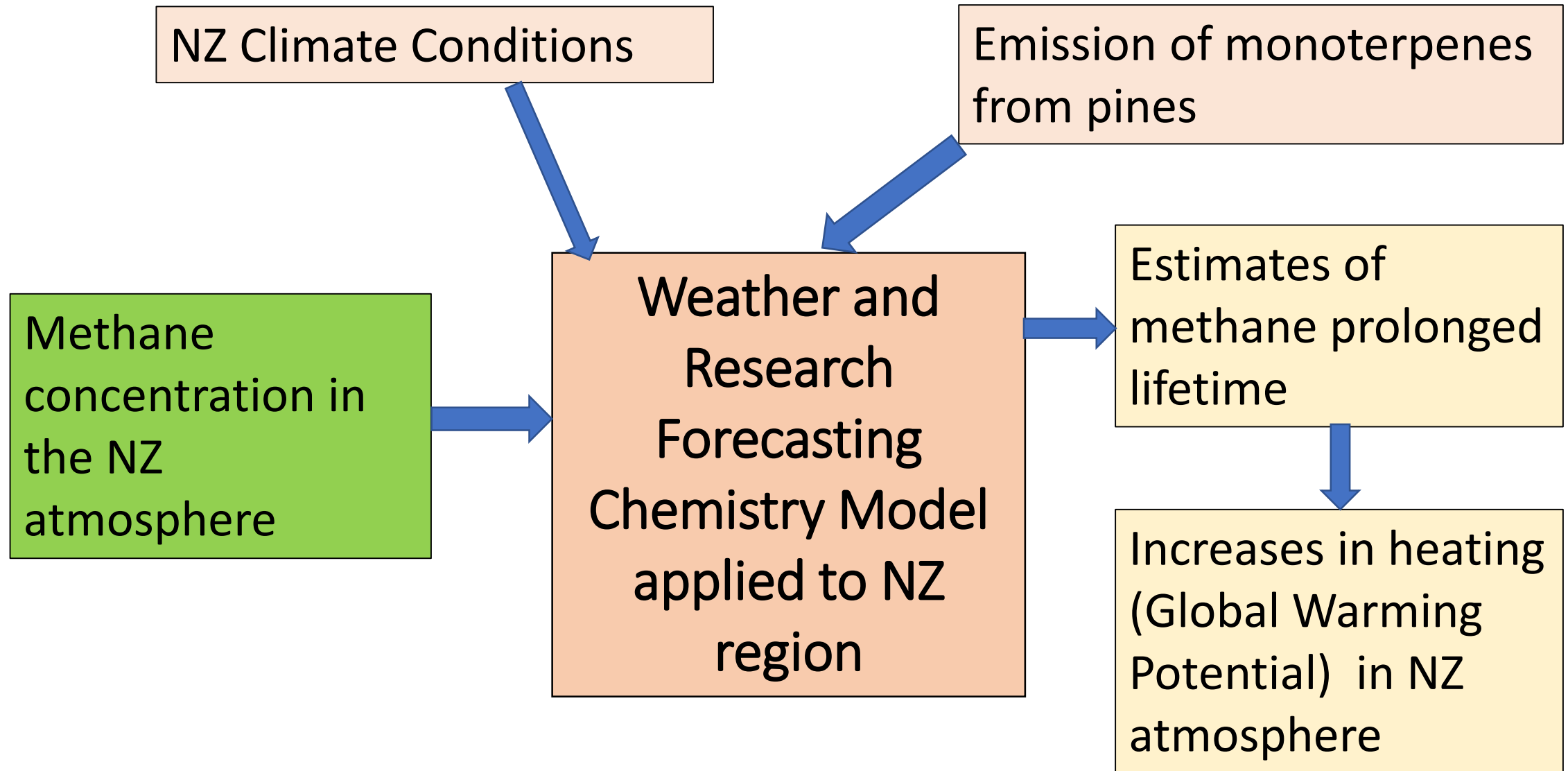


Monoterpenes prolong methane lifetime



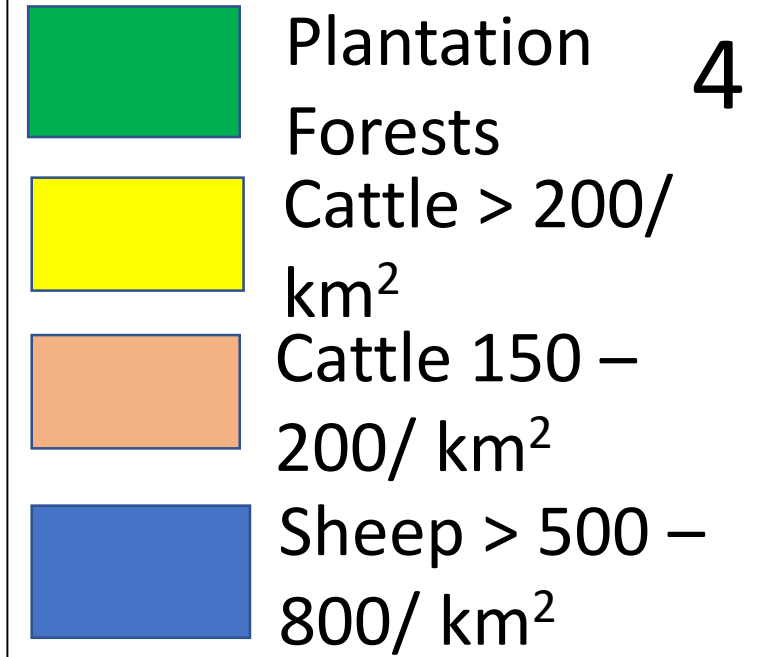
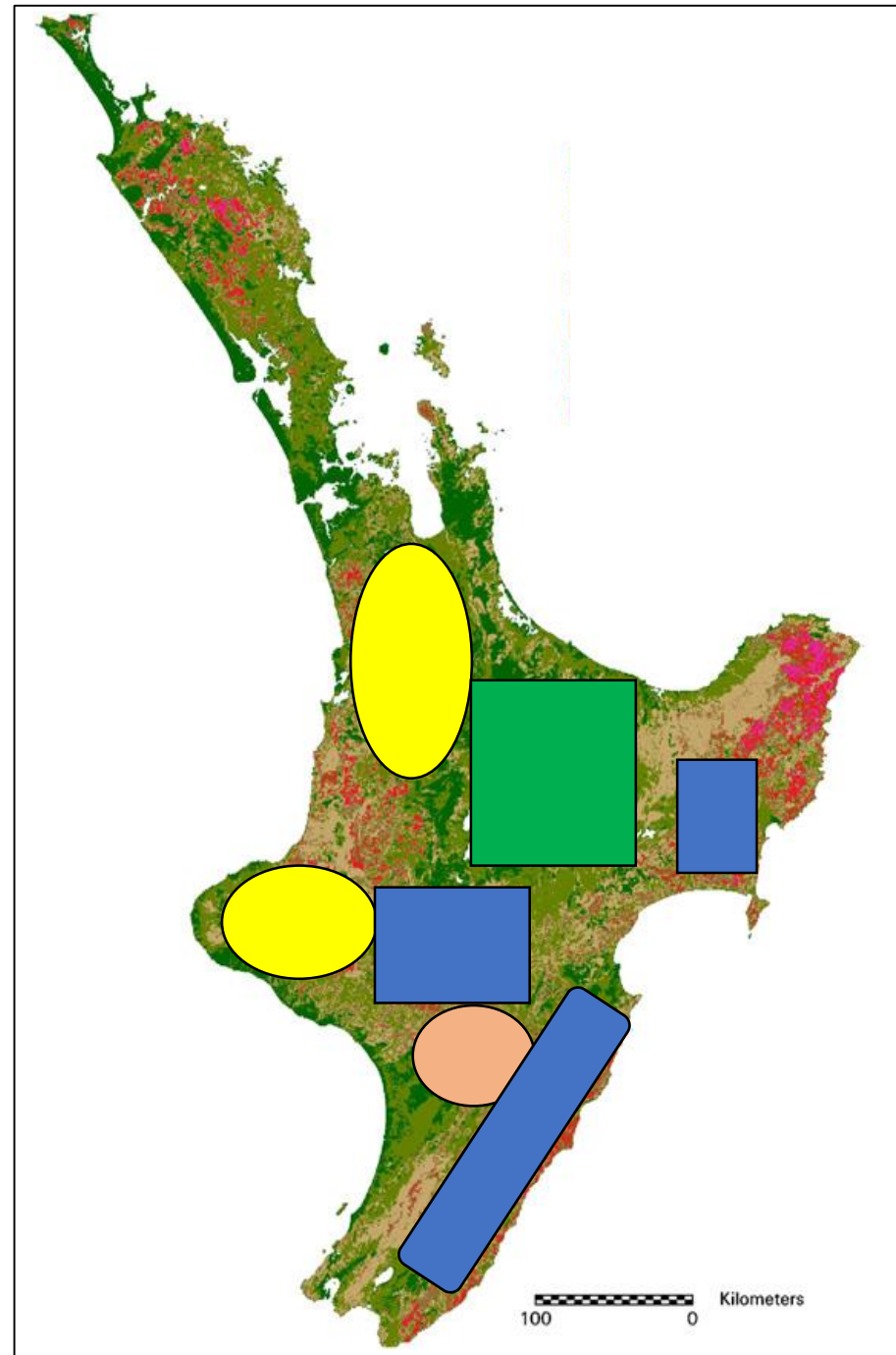
What we did

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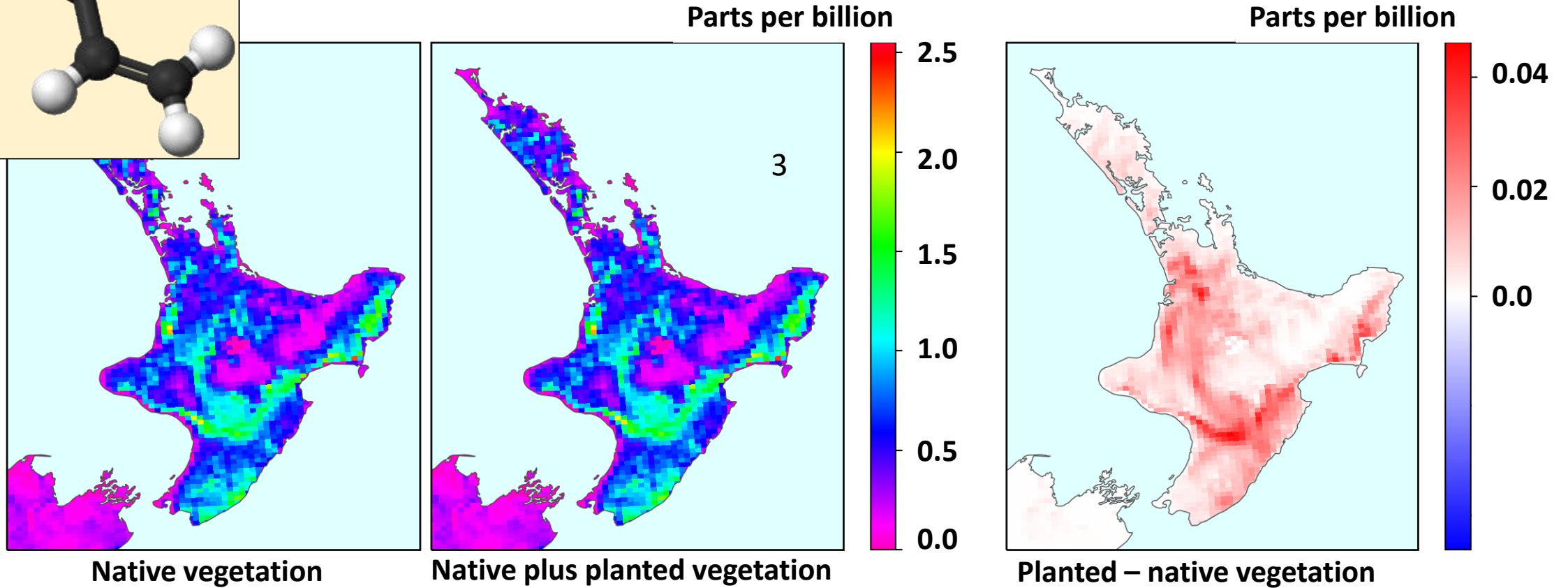
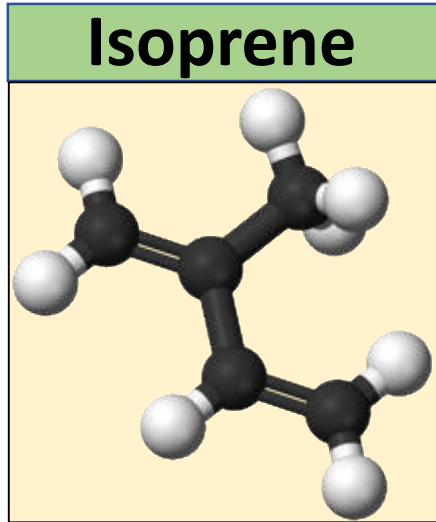
North Island

Main livestock (sheep and cattle) and plantation forestry areas

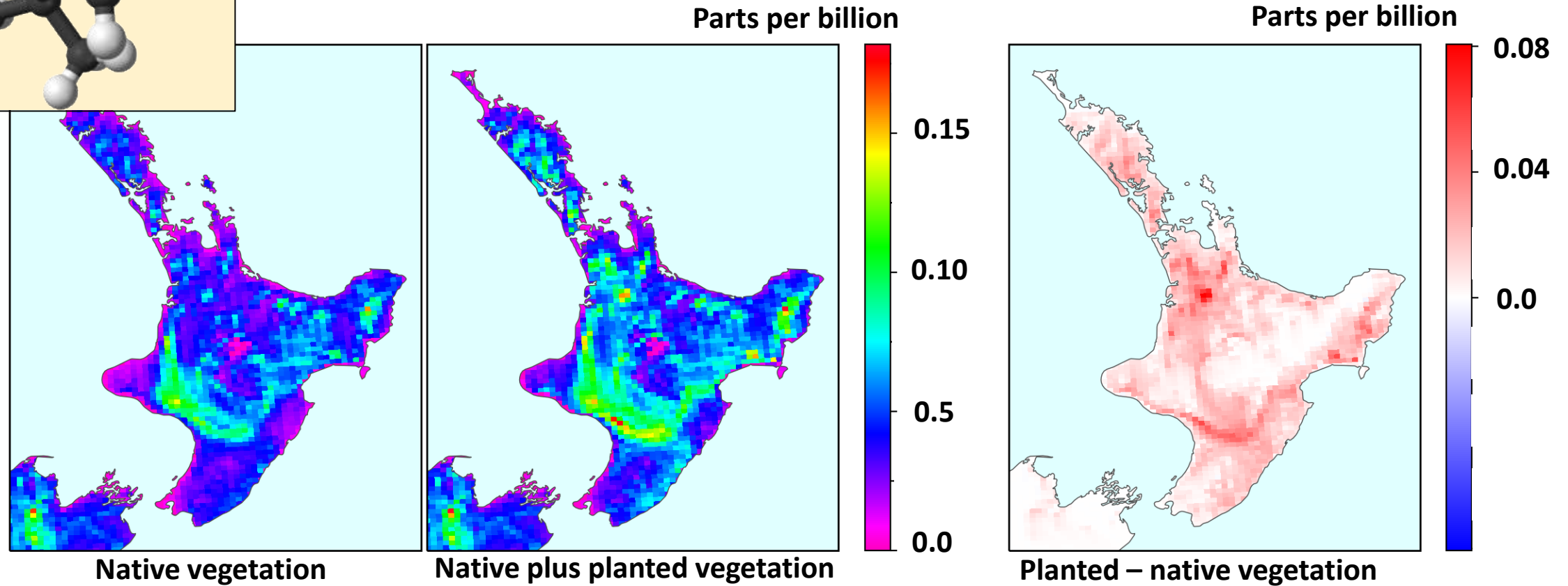
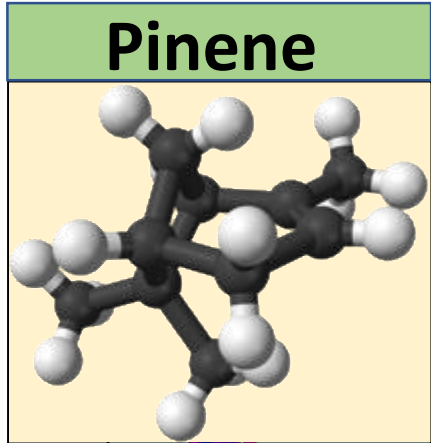


- Livestock are the main emitters of methane
- Pine plantations emit monoterpenes which prolong methane lifetimes.

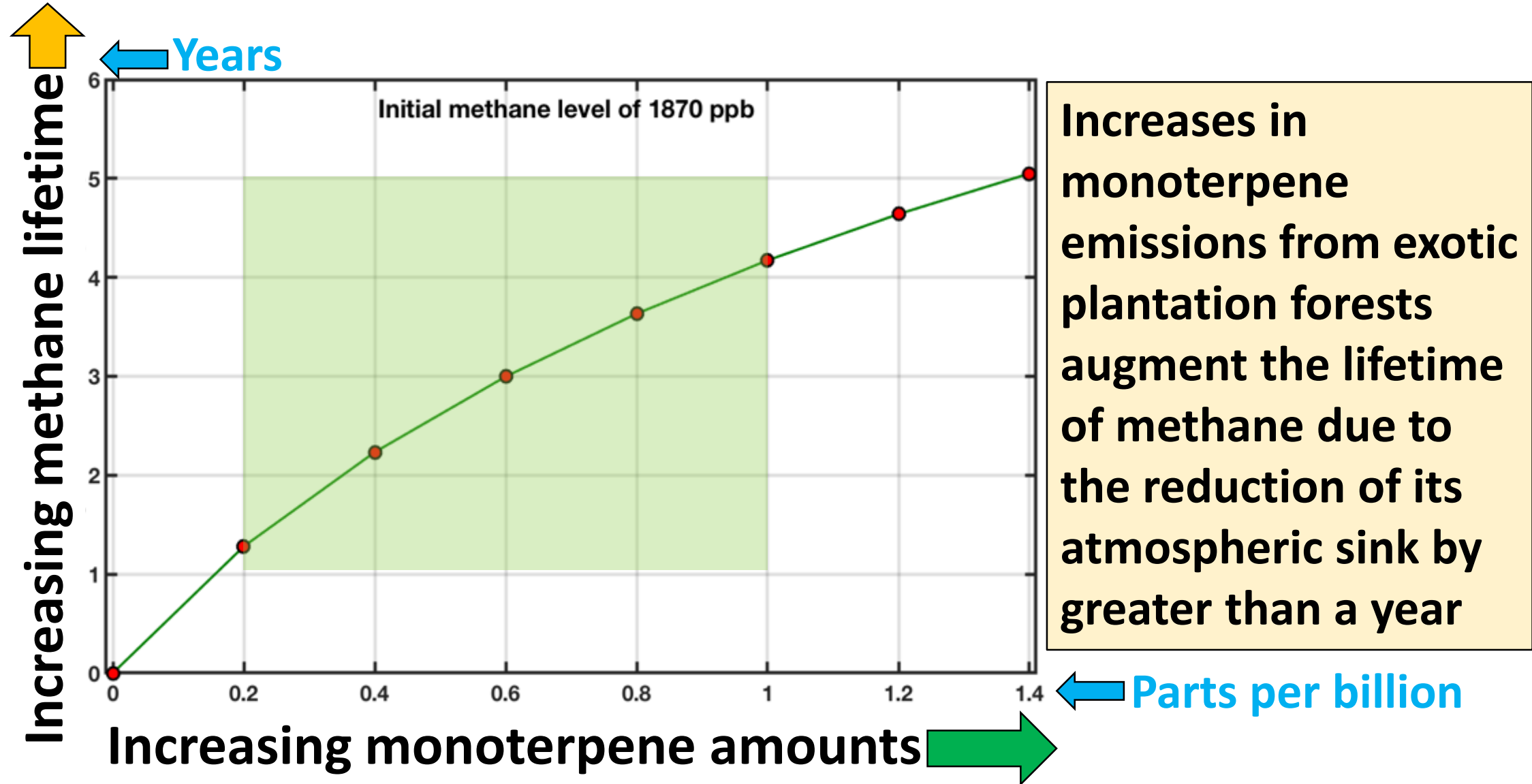
Ambient isoprene levels due to emissions from vegetation



Ambient pinene levels due to emissions from vegetation



Changes in methane lifetime



The bottom line

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Methane in NZ atmosphere Lifetime 12.4  15.0 years

Global Warming (heating) Potential₂₀ 84  111 (+32%)

Methane's share of NZ GHG emissions 42%  50%

Monoterpenes from pine forest indirectly increase the lifetime of methane

