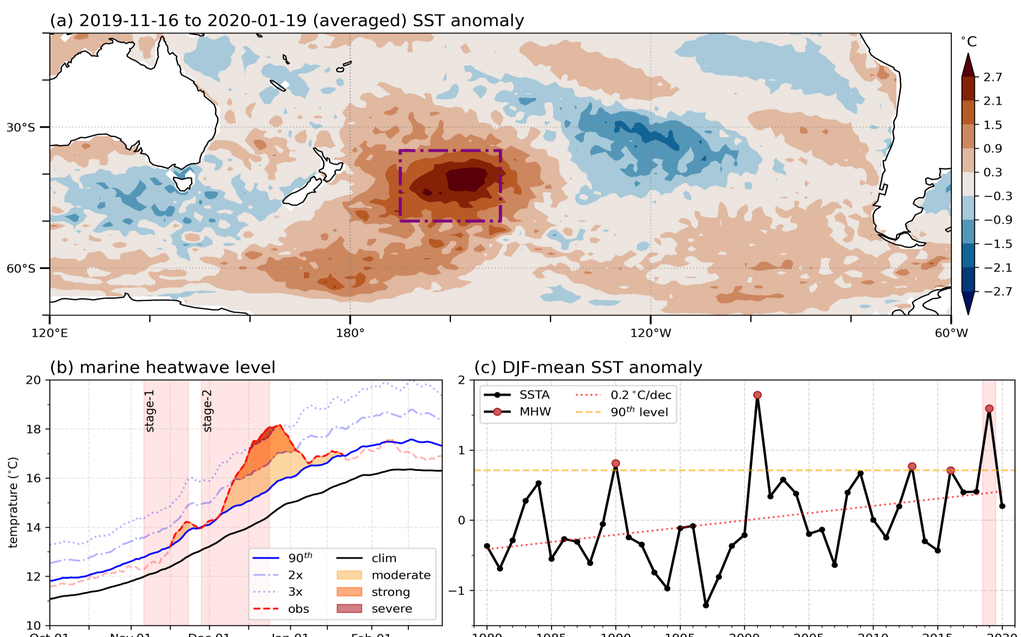
In addition to stationary systems, recurrent synoptic waves also trigger ocean extremes.

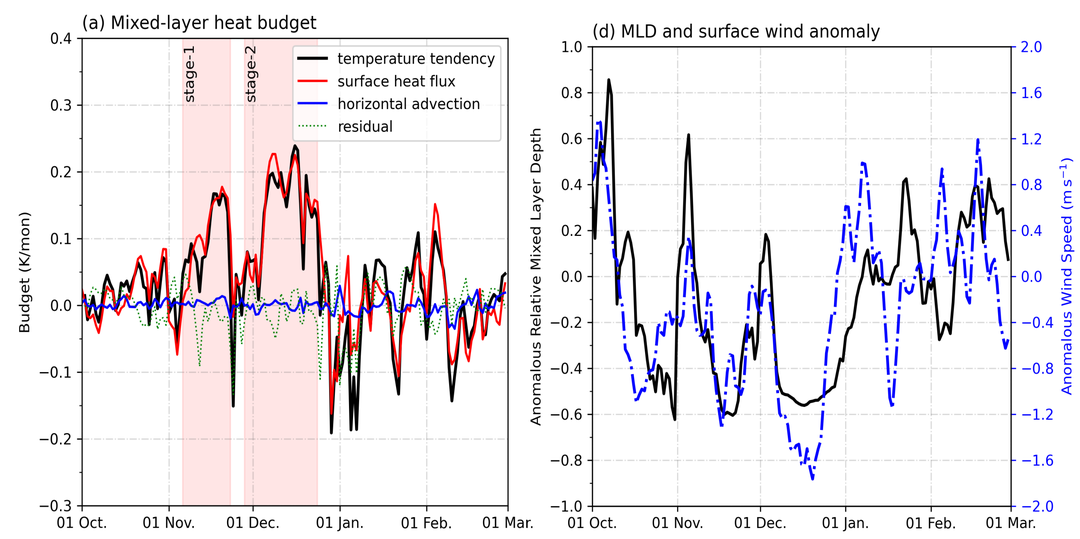
Severe Marine Heatwave Instigated by Recurrent Synoptic Waves

Background: A severe Marine Heatwave (MHW) showed up east of New Zealand around the Christmas 2019 and persist for about two months.

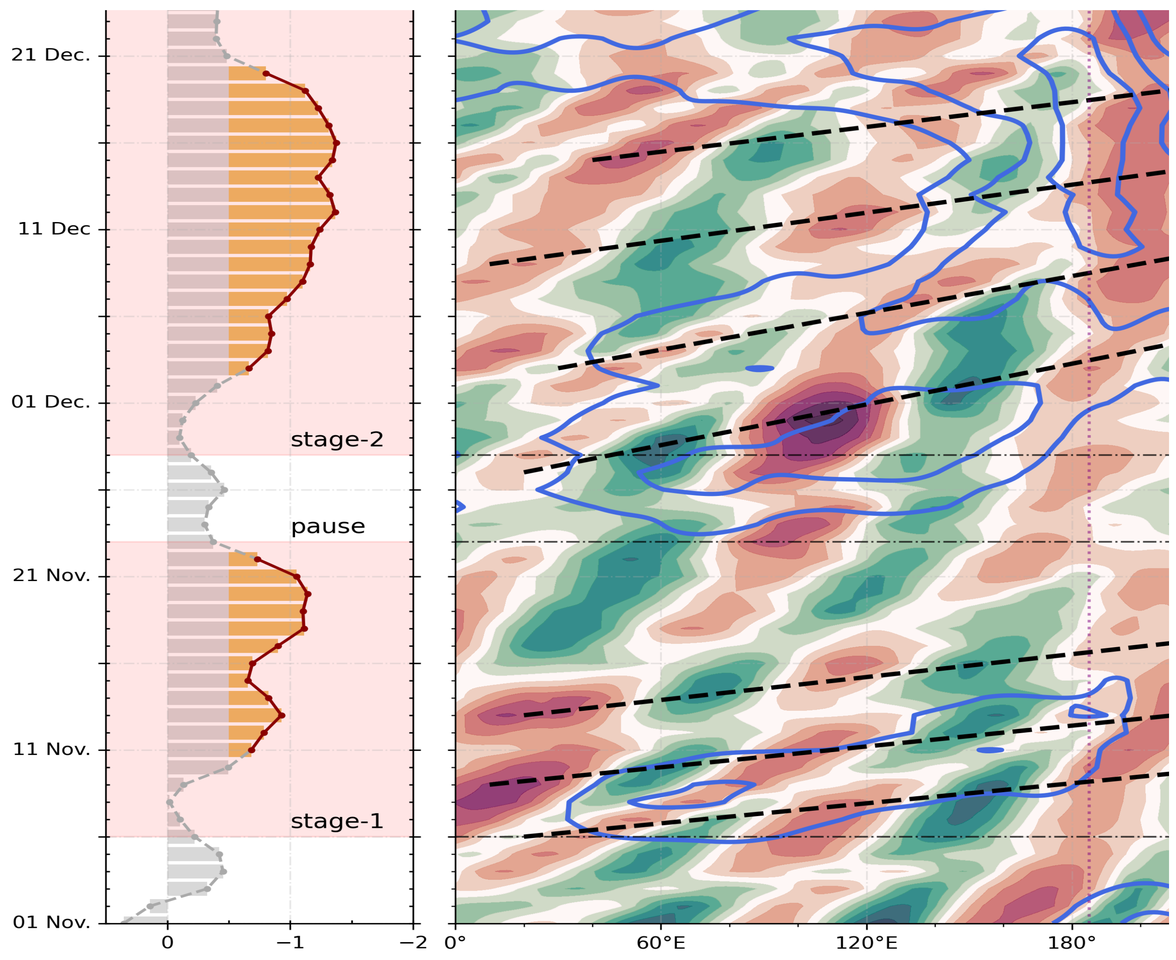
Severe MHW: After two stages of generation was the second warmest on record.



Heat Budget: Warming effect of increased surface heat flux amplified by shallow mixed layer.



Recurrent Rossby Wave Packets Trigger MHWs



1 The negative wind anomaly is generated by a persistent **high-pressure system** around 180°

2 This long-lasting system was formed by many **transient individual waves** (black lines)

3 Distinct **recurrent Rossby wave packets** (blue contours) were observed during both generation stages

Outlook: A strong atmospheric blocking event occurred at the end of the recurrence. Was there a connection between the blocking and the recurrent waves? What role did the blocking play?

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