Results and findings of the South Pacific Sea Level and Climate Monitoring Project

15th April 2010
FIG, Sydney

Bill Mitchell, James Chittleborough
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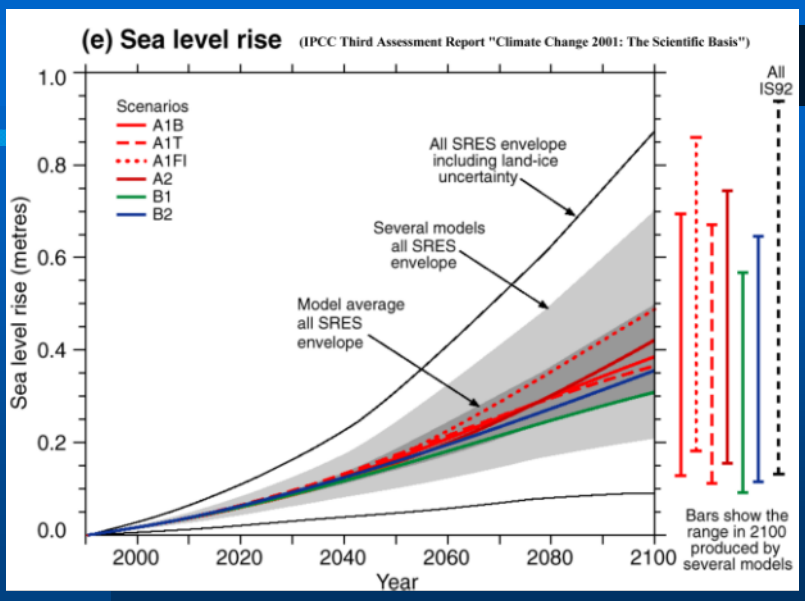
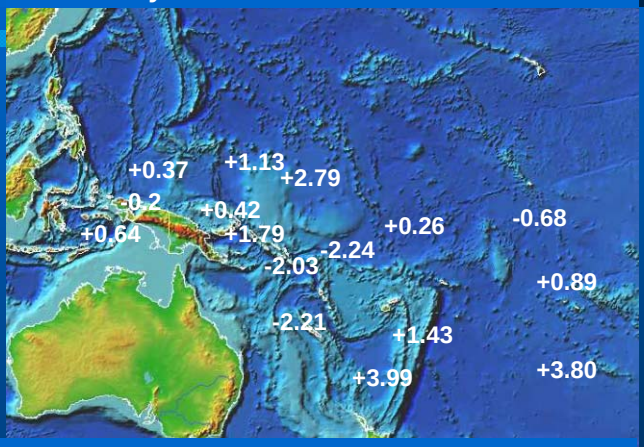


Previous Next

Relative sea level trends (mm/year) for gauges with records longer than 20 years on the University of Hawaii Sea Level Centre archive

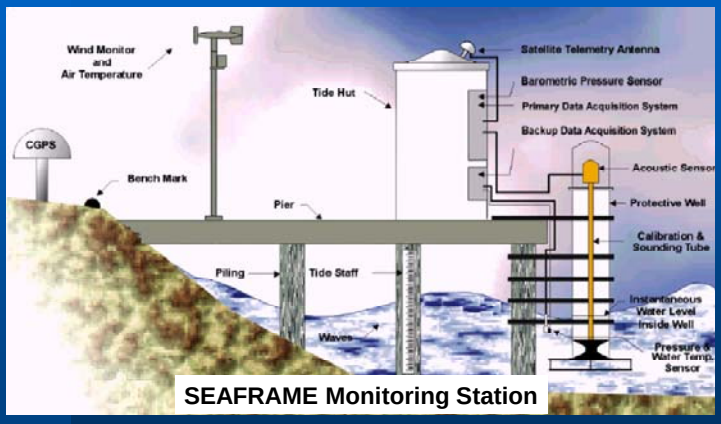


Average relative sea level trend is +0.63 mm/year
Regional coherency?

Previous Next

Australian and South West Pacific Sea Level Monitoring Projects

Instrumentation



SEAFRAME Monitoring Station

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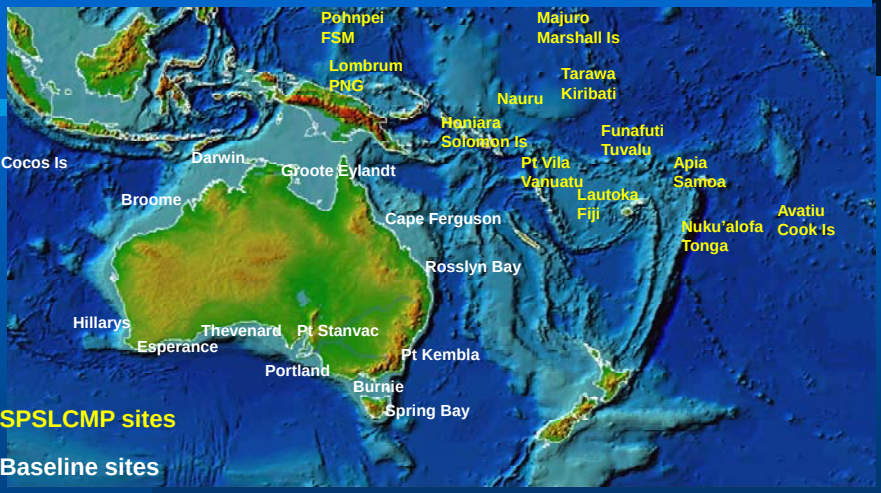
SEAFRAME sites in Australia and the Southwest Pacific



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Australian and South West Pacific Sea Level Monitoring Projects

Data streams

Future direction

1. new data loggers Telemet 320
   no transmissions via MTSAT
2. Iridium at some stations for duplex communication
3. one minute data will be transmitted to Melbourne
   and repackaged onto the GTS using CREX
4. possible to go down to one second data
5. more stations but for tsunami monitoring
6. for climate monitoring still use acoustic sensors for sea level
   but supplemented with radars
7. new network monitoring tools such as NETMON
8. global websites such as IOC/GLOSS

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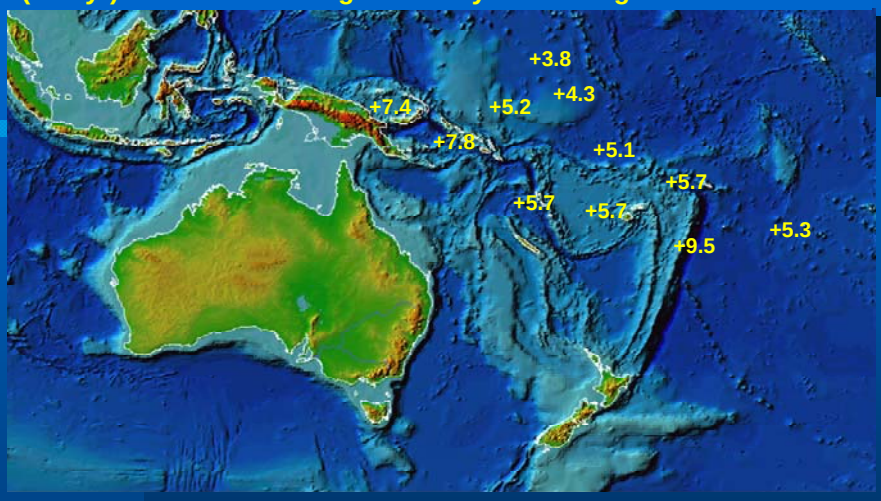
Observed sea level trends at SEAFRAME sites in the south Pacific (mm/yr) since records began in early 90s through December 2009



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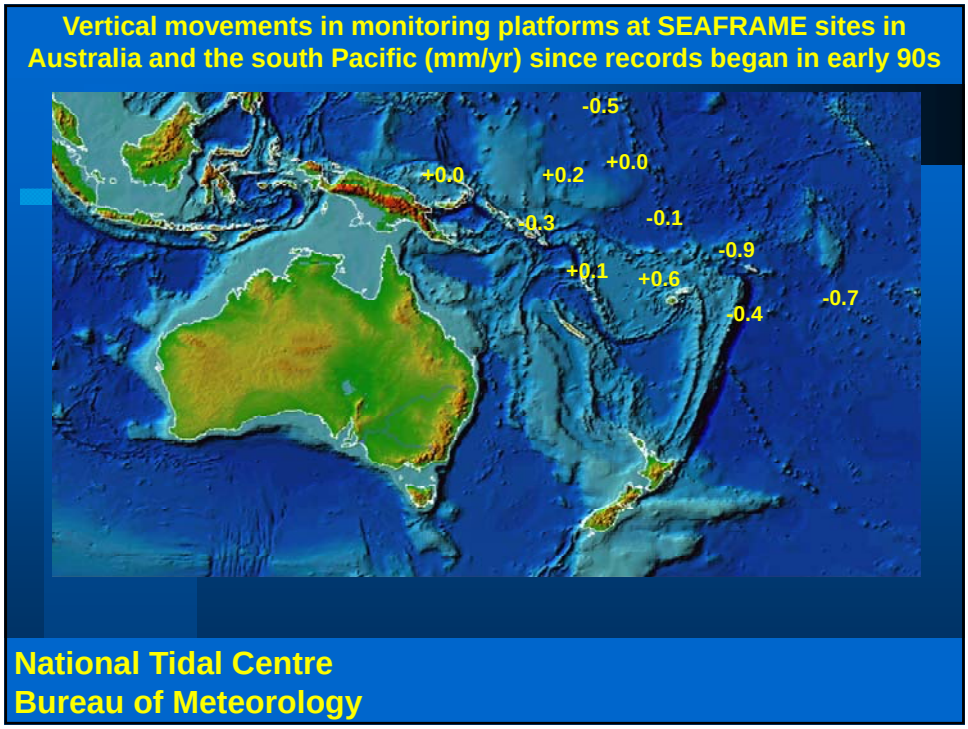
Vertical movements in monitoring platforms at SEAFRAME sites in Australia and the south Pacific (mm/yr) since records began in early 90s
-0.5
+0.0
+0.0
+0.2
-0.1
-0.3
-0.9
+0.1
+0.6
-0.7
-0.4
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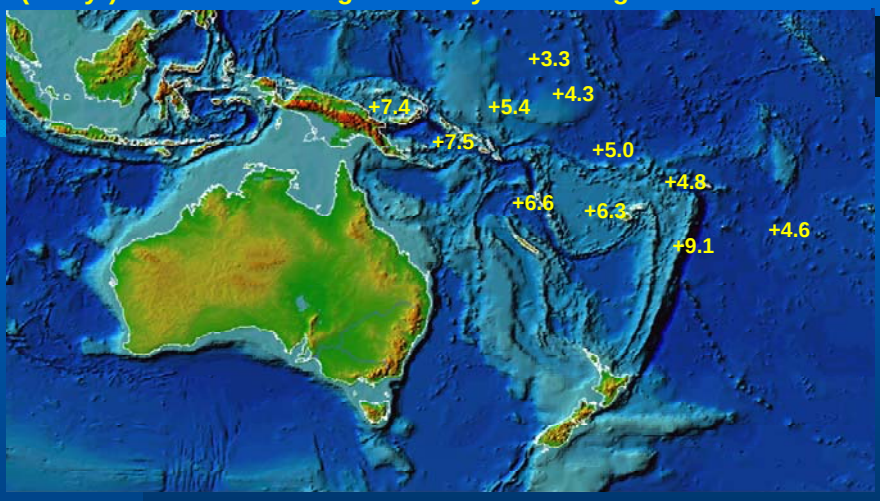
Relative sea level trends at SEAFRAME sites in the south Pacific (mm/yr) since records began in early 90s through December 2009



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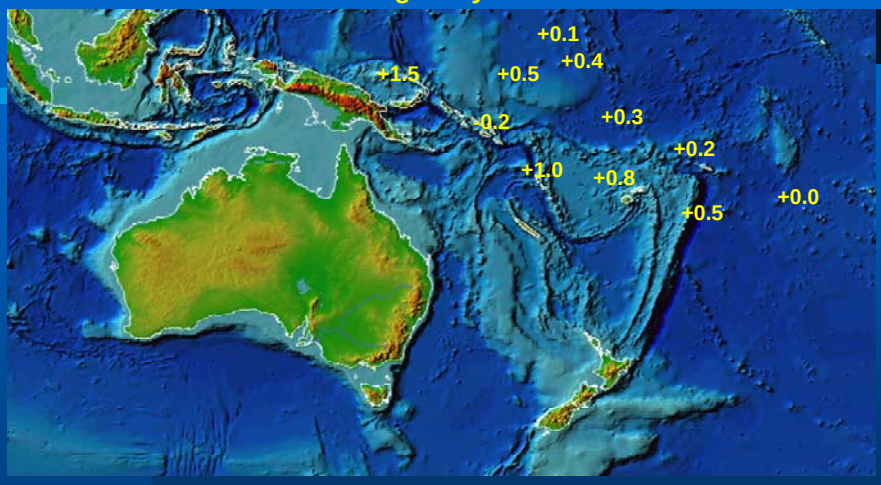
Contributions to trend by atmospheric pressure at SEAFRAME sites in the south Pacific (mm/yr) since records began in early 90s through May 2008



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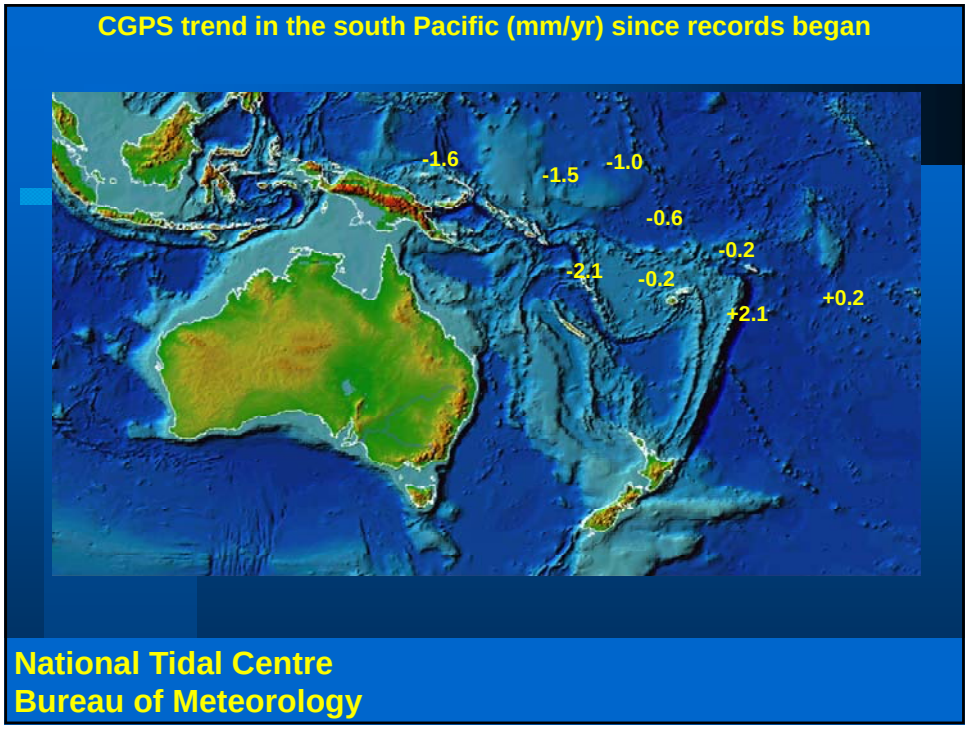
CGPS trend in the south Pacific (mm/yr) since records began
-1.6
-1.5
-1.0
-0.6
-0.2
-2.1
-0.2
+2.1
+0.2
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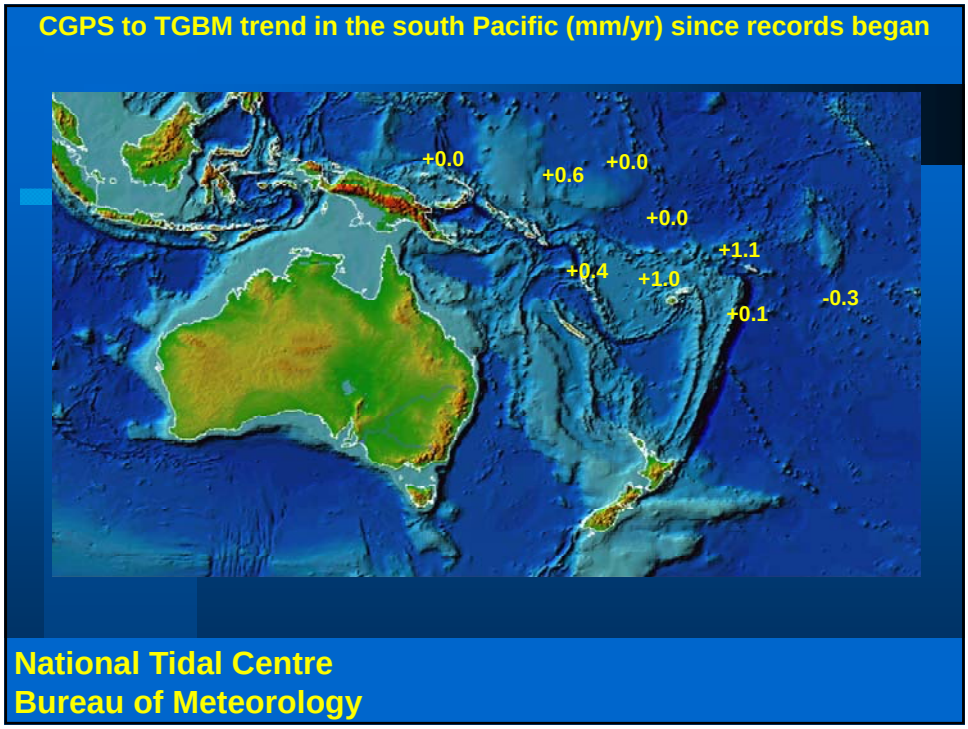
CGPS to TGBM trend in the south Pacific (mm/yr) since records began
+0.0
+0.6
+0.0
+0.0
+1.1
+0.4
+1.0
-0.3
+0.1
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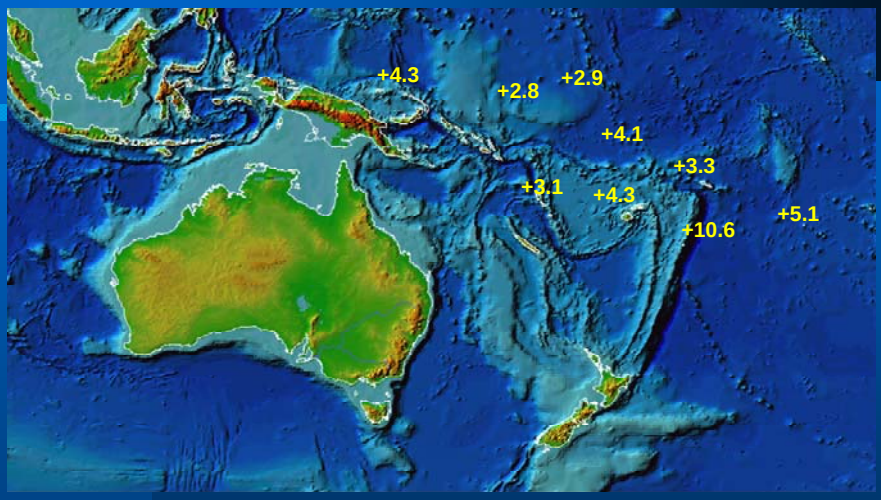
Absolute sea level trend changes in the ITRF at SEAFRAME sites in the south Pacific (mm/yr) since records began



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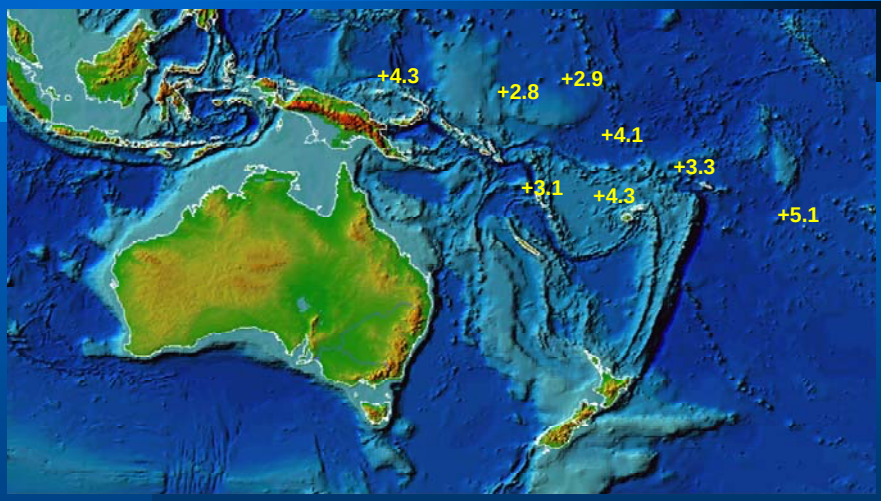
Absolute sea level trend changes in the ITRF at SEAFRAME sites in the south Pacific (mm/yr) since records began



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Conclusions

Absolute trends are all positive with values between +3.1 and +5.9 mm/yr

Vertical movements of platforms must be monitored accurately

Atmospheric pressure changes are significant contribution to sea level trends

Absolute rates are in general higher than those over the previous century but longer term records are needed before secular trends are quantified

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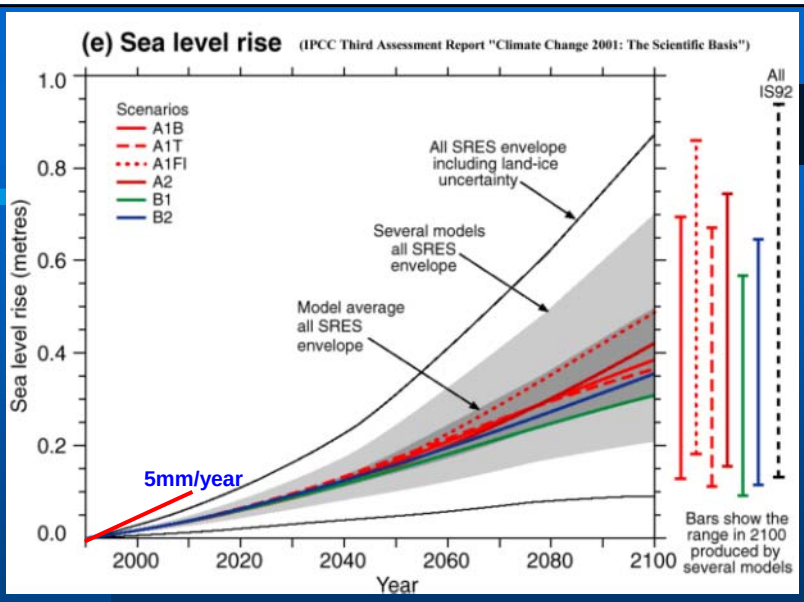

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