Near-Inertial Waves!!!!

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with
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SST anomaly induced by Typhoon Ioke
Where does it matter?

Based on fully coupled CCSM4 integration with NIW parameterization

Jochum et al. 2013

Precipitation!

0.34 TW

0.68 TW
If you cannot measure it, model it!

CESM, 0.25 degree AGCM, 0.1 degree OGCM: 0.43 TW

based on output from Small et al. 2014
The 23W/12N Buoy

(a) Wind stress at 12n23w (N/m²)

(b) NI u-velocity component at 12n23w (cm/s)

(c) Wind work at 12n23w (mW/m²)

(d) Cumulative wind work at 12n23w (J/m²)

Figure 5.38: Wind speed for R26 (black) and H10 (red) in November 2013. R26: ERAinterim H10: operational forecast

Ringaard, 2014

PIRATA
ERAIinterim
NCEP
CORE-II

Pillar et al 2018
RIGHT is an H2020 proposal to obtain funding that will allow us to quantify the impact of meteorological events on ocean mixing and, and oceanic events on convection. It combines observations, LES, and GCMs from both ocean and atmosphere.

It will deliver 2 GCMs without ITCZ biases.
Conclusions

- NIW are an overlooked process in GCMs, and they have have a controlling influence on tropical precipitation

- there is too few data to move beyond the current state of understanding

- reanalysis products cannot be trusted

- modelling centers need to commit to incorporate our results

- RIGHT promises a future without ITCZ biases