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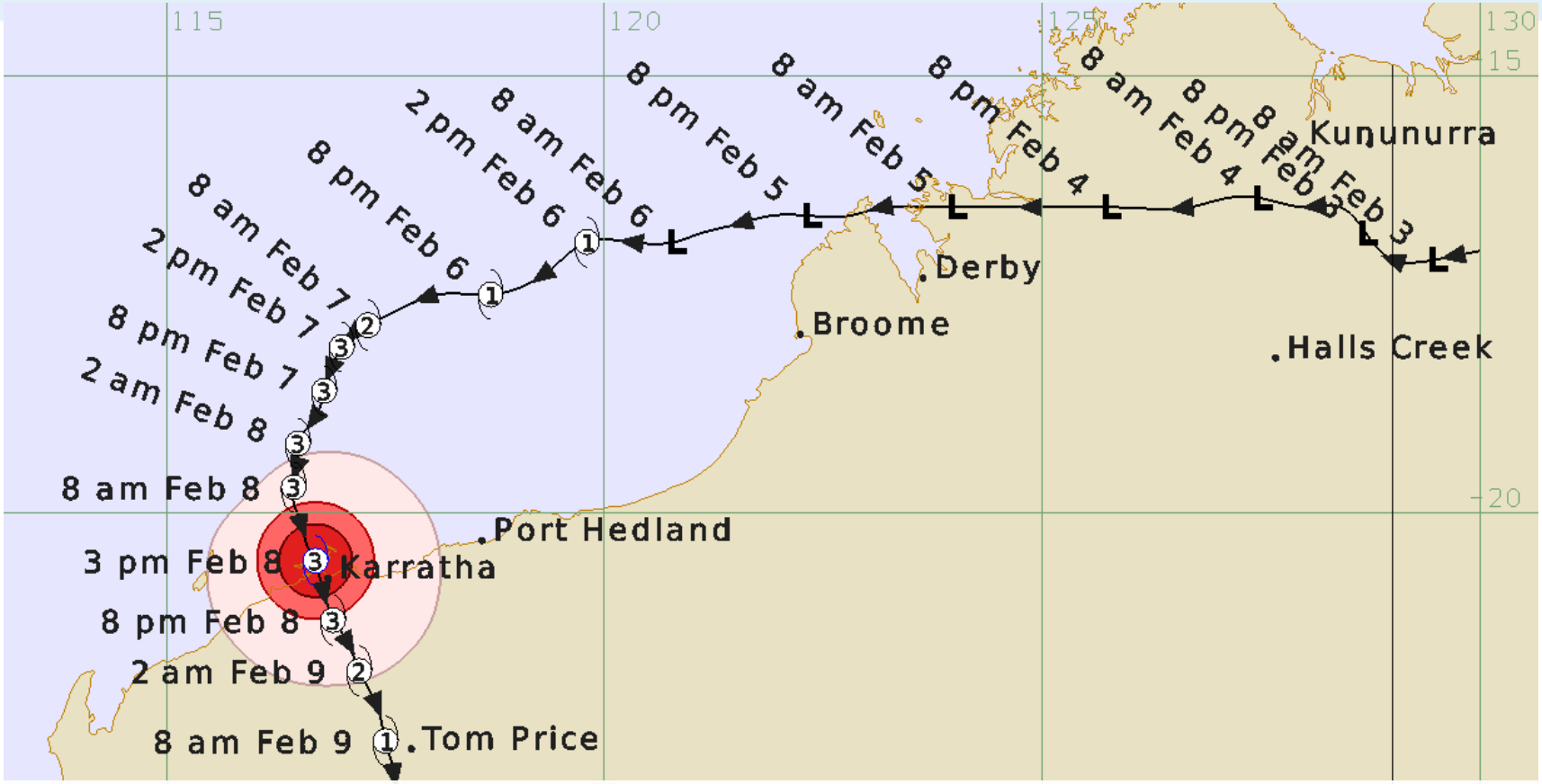
Some forecasting highlights from TC Damien
VLAB 26 Feb 2020
impact, satellite and models



Joe Courtney, Bureau of Meteorology Perth

Socrative: socrative.com Room: TCDAMIEN

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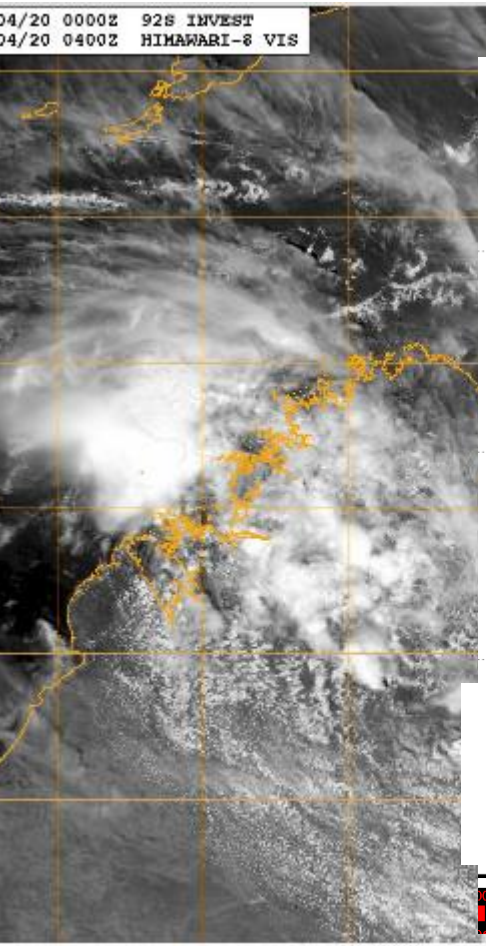
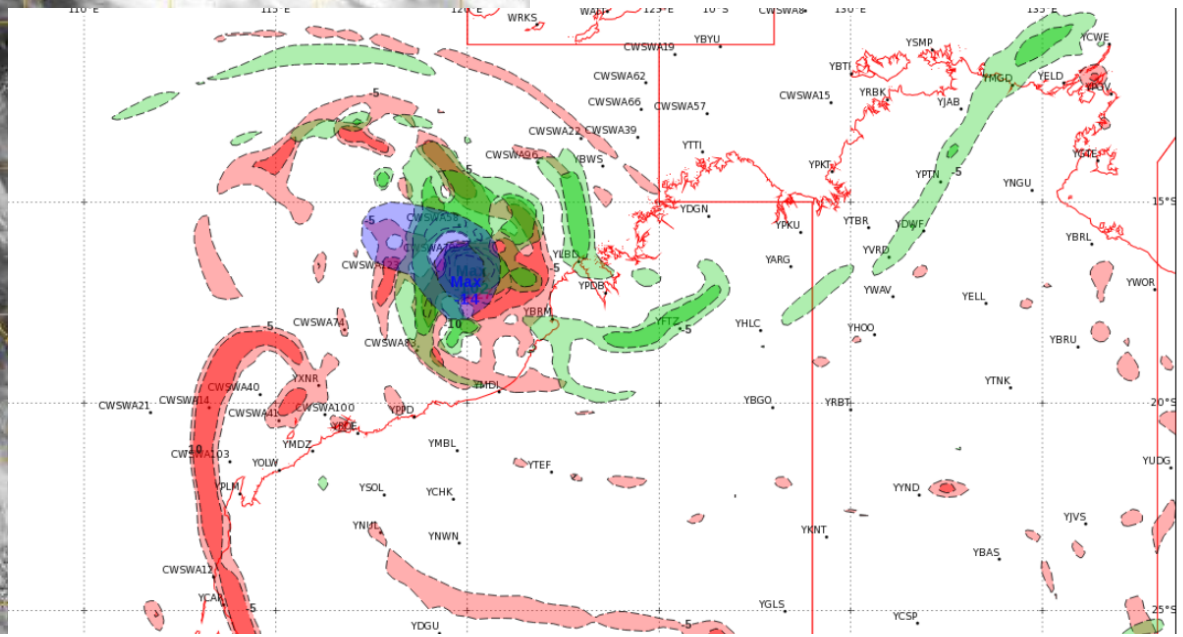
Genesis: origins overland 4 Feb
Demands for early forecasts from industry

No convective structure but defined circulation;

NWP reliant: Looking at vorticity at different levels





T+48h EC vorticity at
850 (red) 500(green) 300 (blue)

SHOW model viewer here

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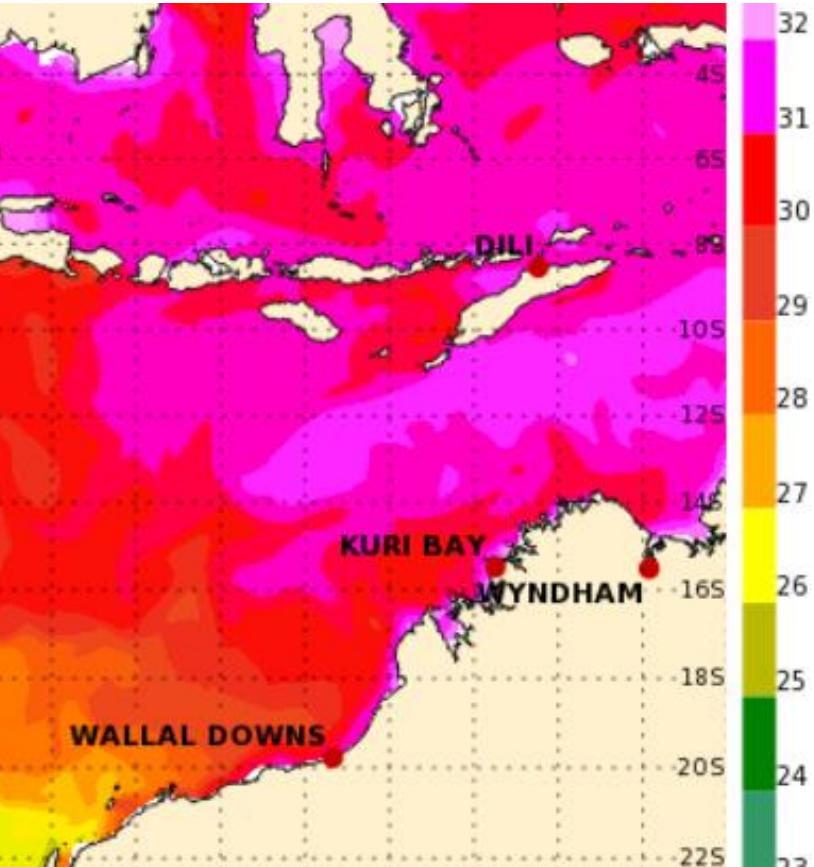
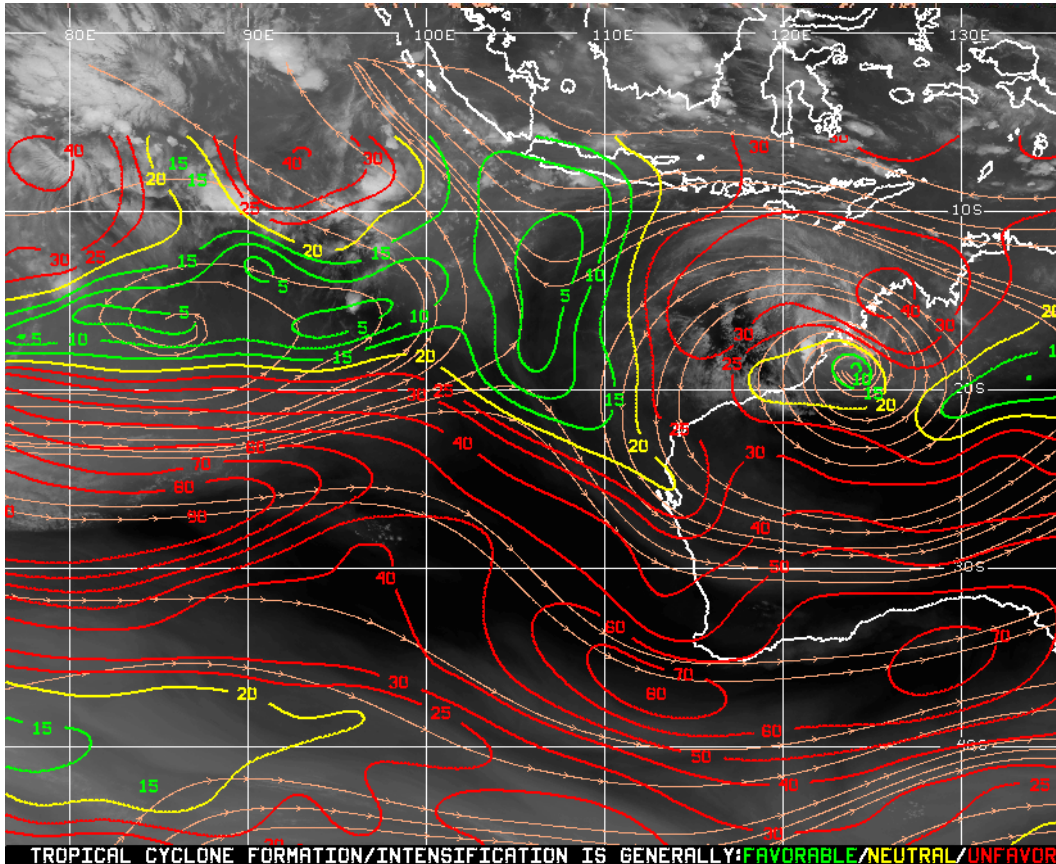
How quickly will it develop: environmental influences:

SST: >30C; upper divergence; mod E'ly shear(CIMSS);

Moist (WV/TPW)





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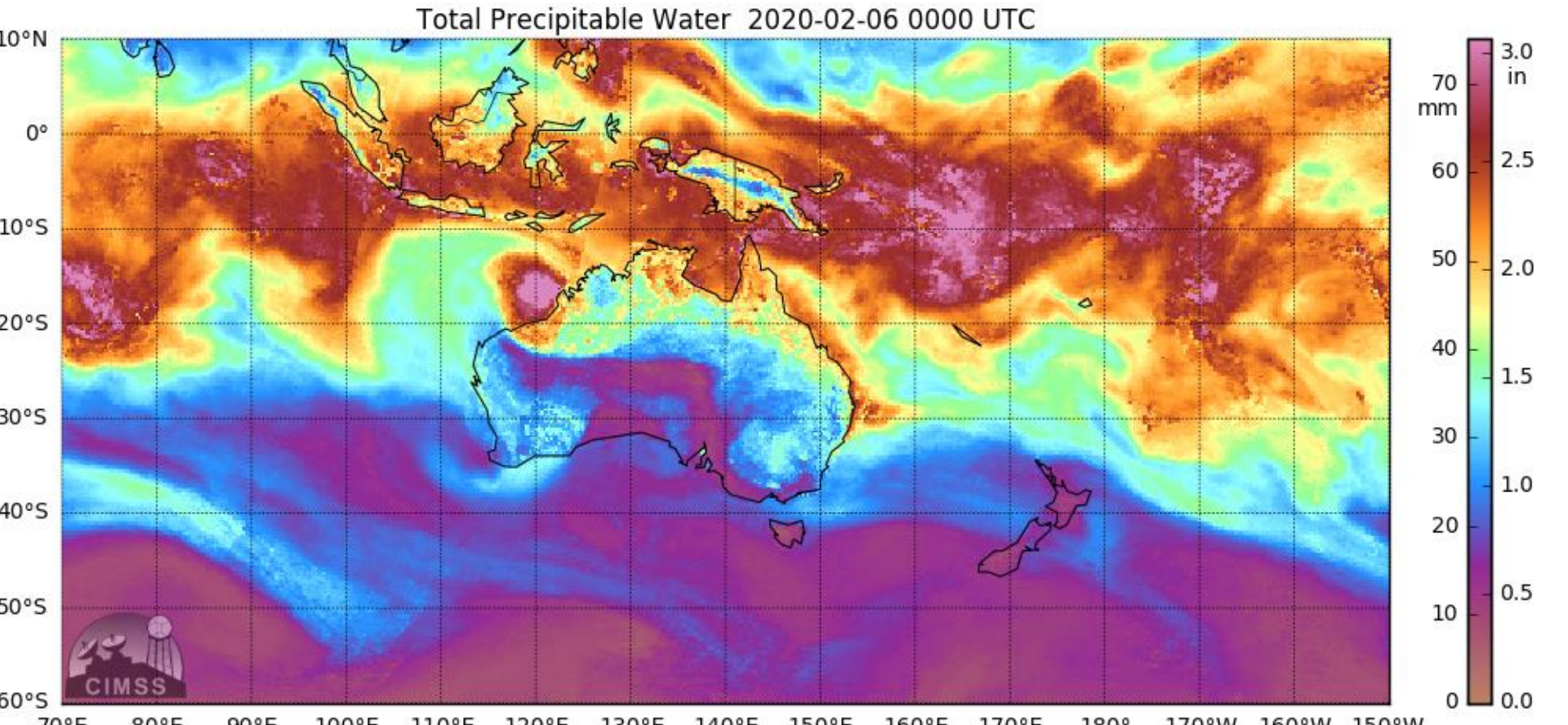
How quickly will it develop: environmental influences:

Moist? WV (CIRA) or TPW (CIMSS)

http://tropic.ssec.wisc.edu/real-time/mtpw2/product.php?color_type=tpw_nrl_colors&prod=ausf&timespan=24hrs&anim=html5



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How quickly will it develop: environmental influences:

SOCRATIVE Question

Based only on these influences what do you think the development rate will be once the low moves offshore?

a. The low will develop very rapidly (TC <18h)
b. The low will develop (18-36h)
c. The low will develop slowly (36-48h)
d. The low won't develop

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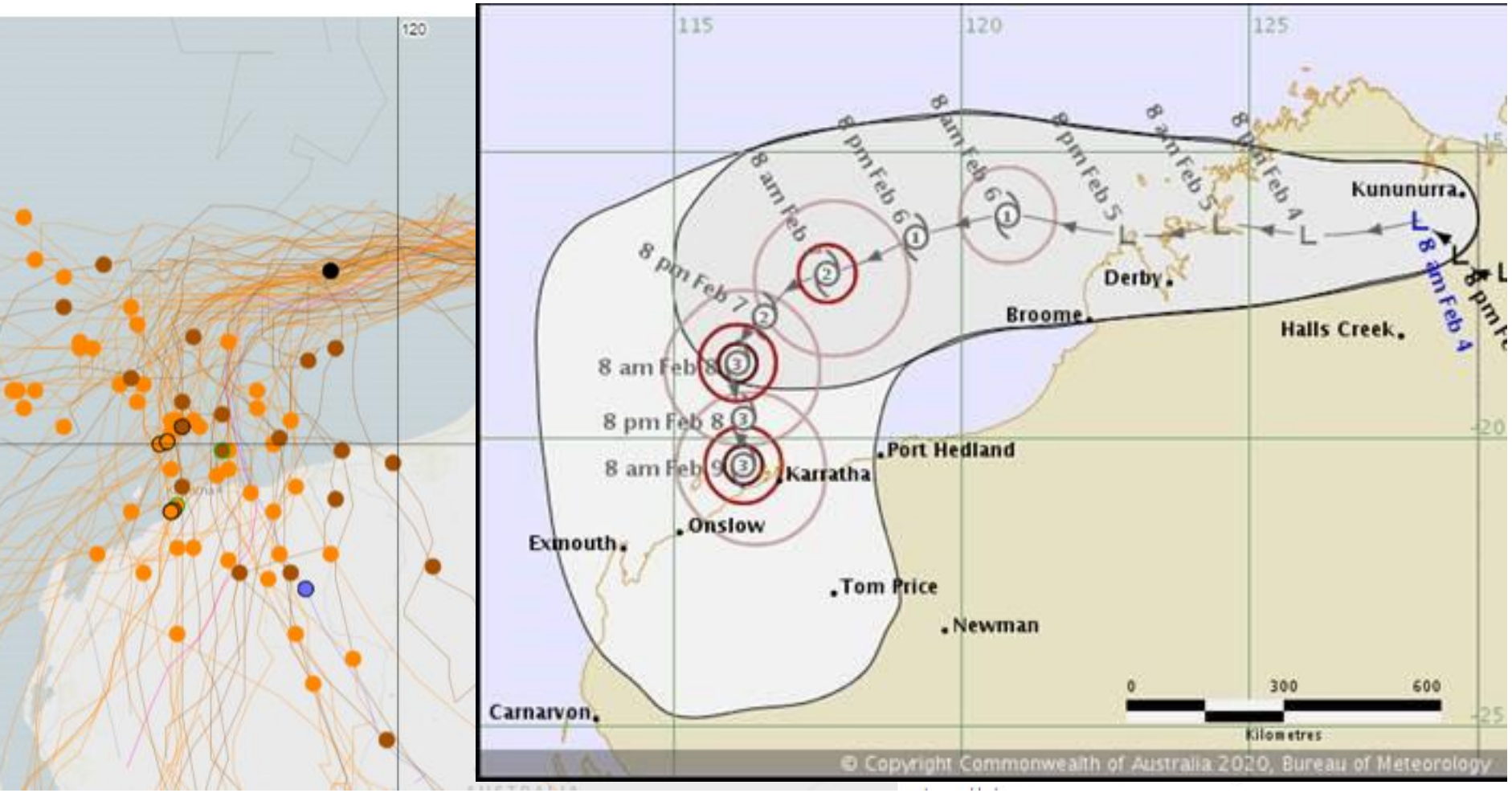
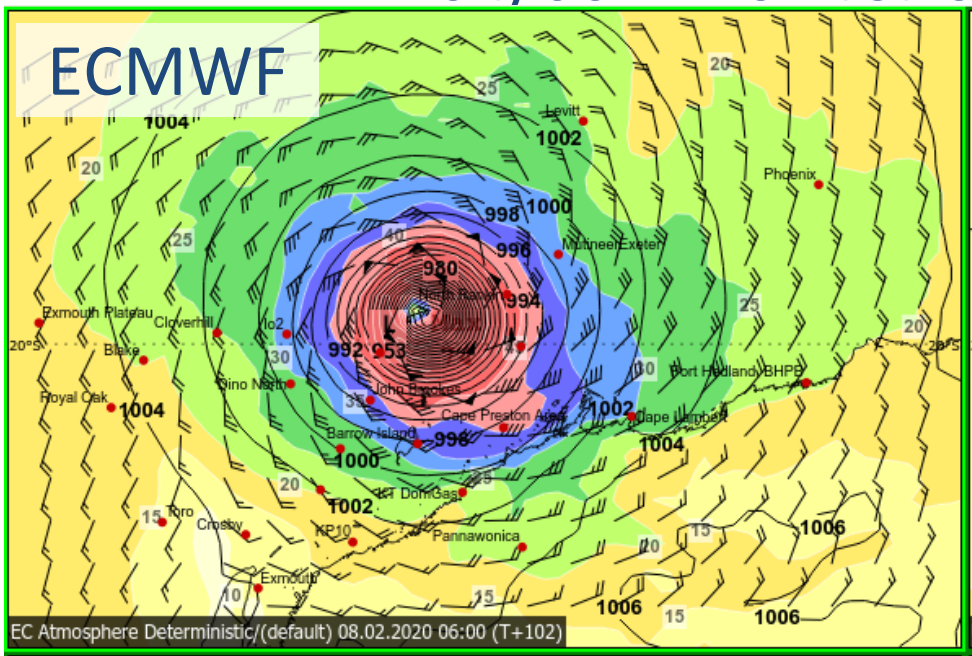
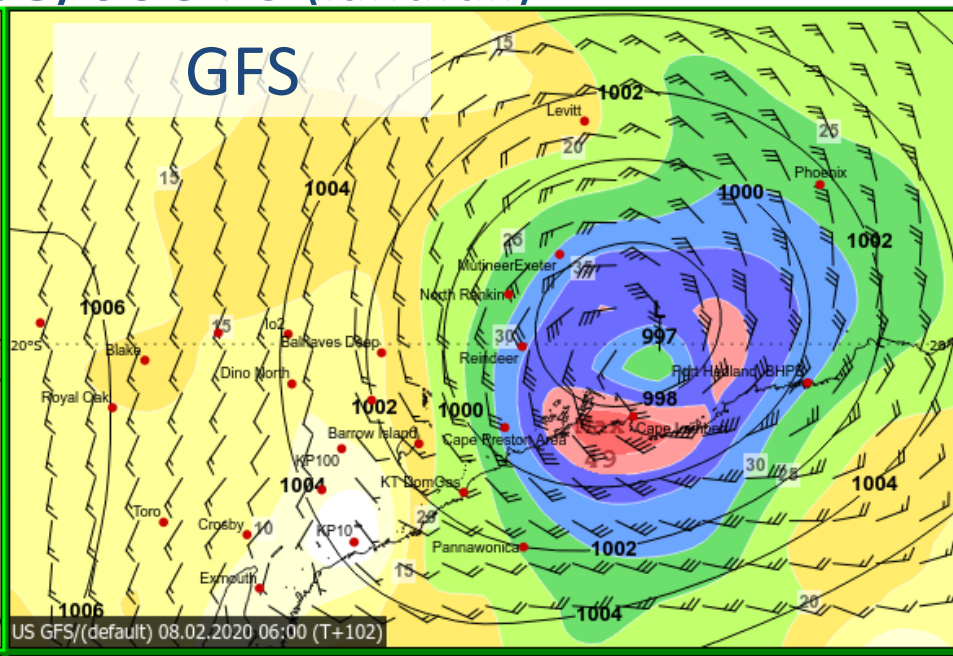
NWP variations and applying consensus for track

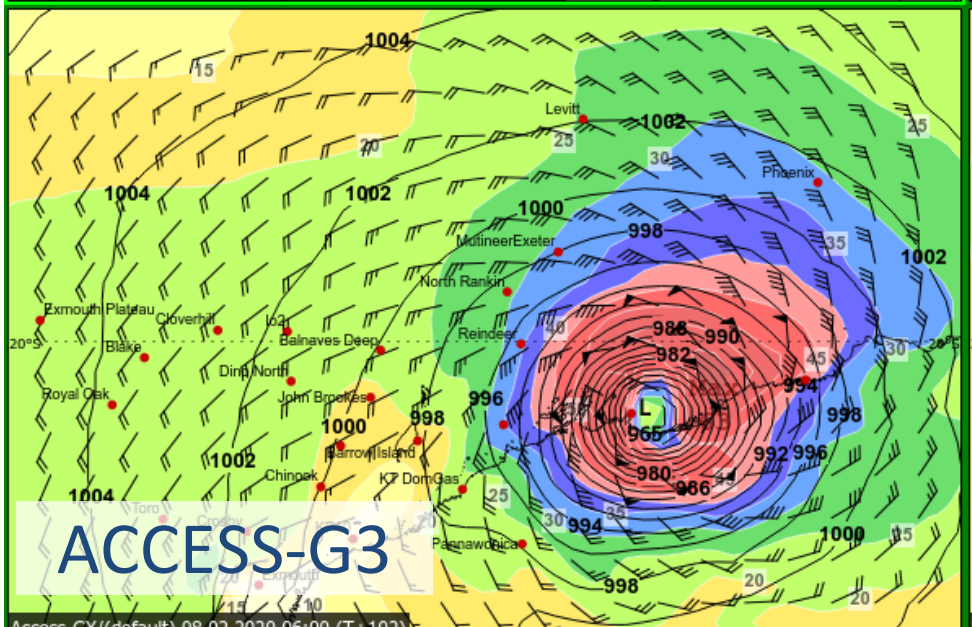


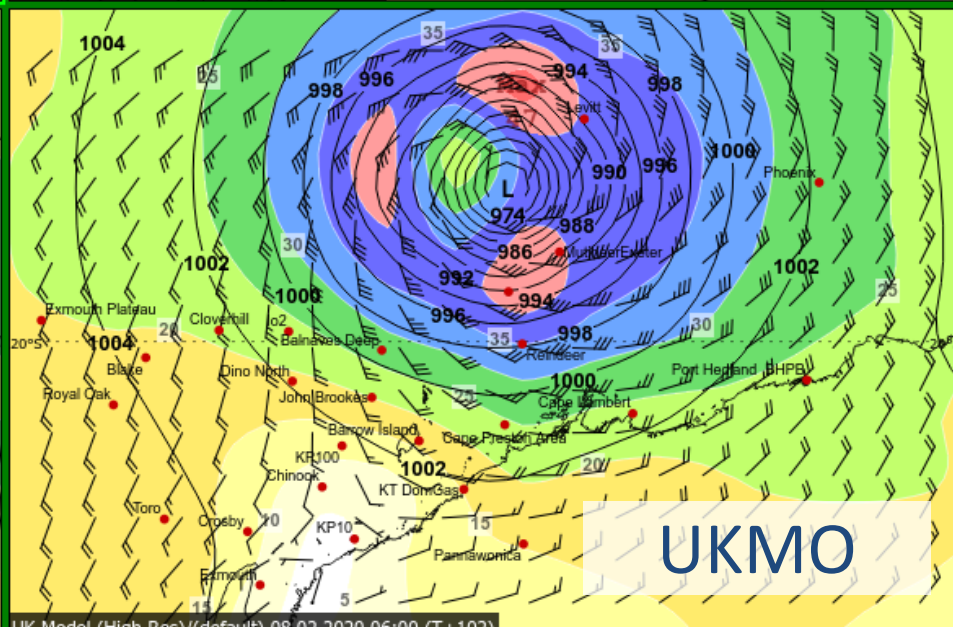
[Link to ensemble viewer]

Model comparison: Surface winds
04/00Z +102 for 08/06UTC (landfall)









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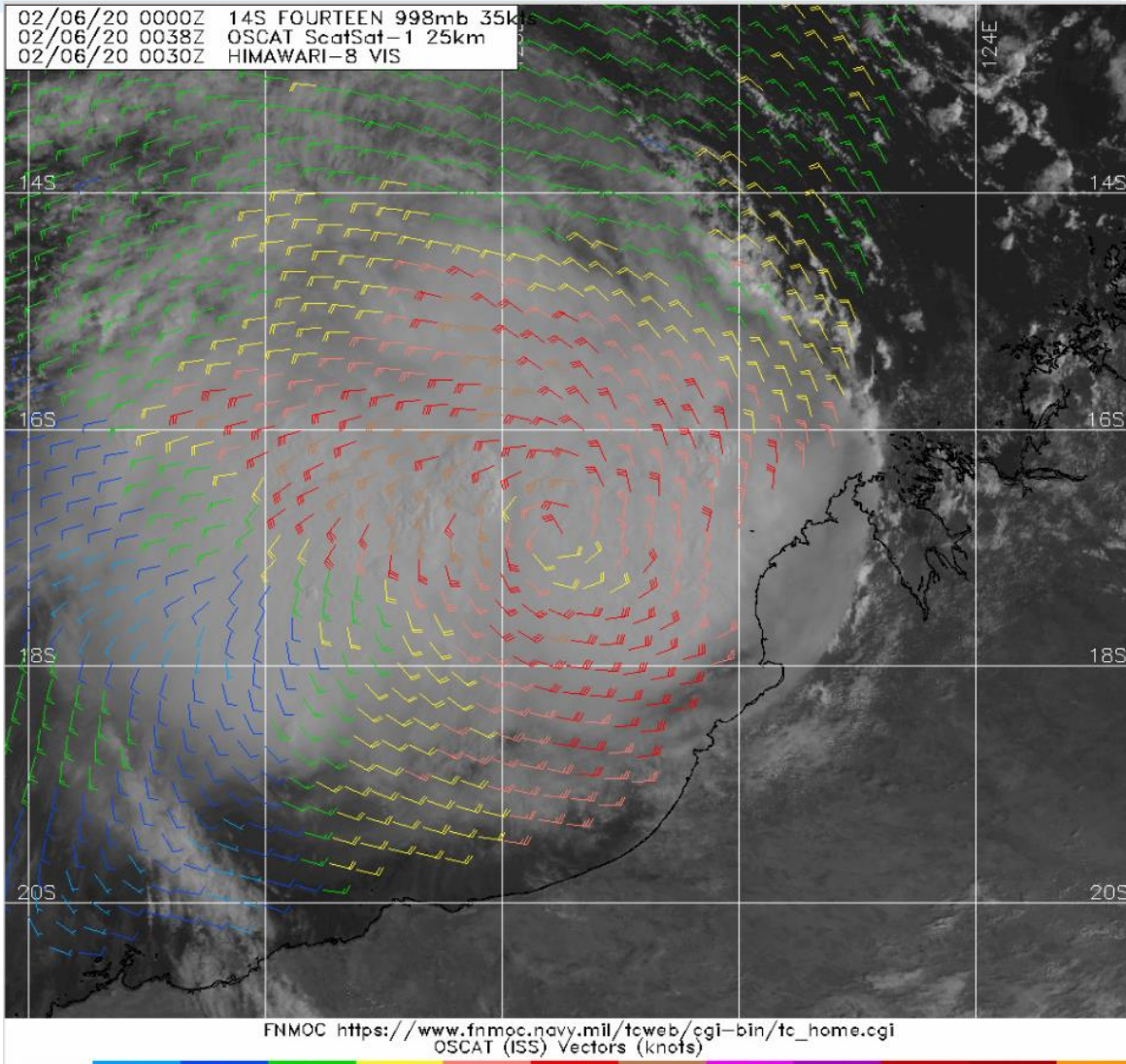
Formation over water: Is this a TC?

SCATSAT:

Socrative

Yes/No/Maybe



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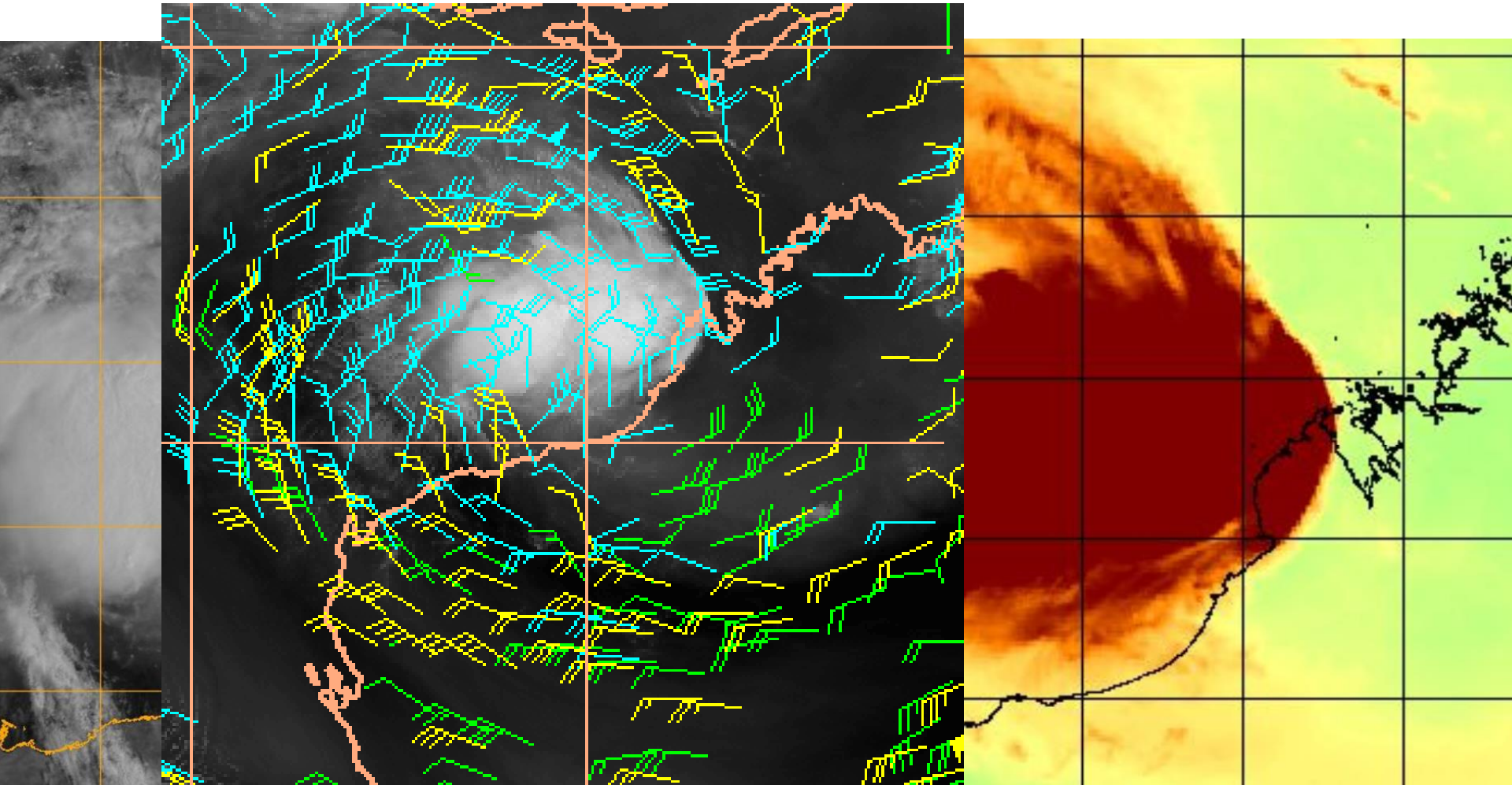
Fighting against the easterly shear: signals to look for

Outflow from convection against environmental flow: Vis and WV



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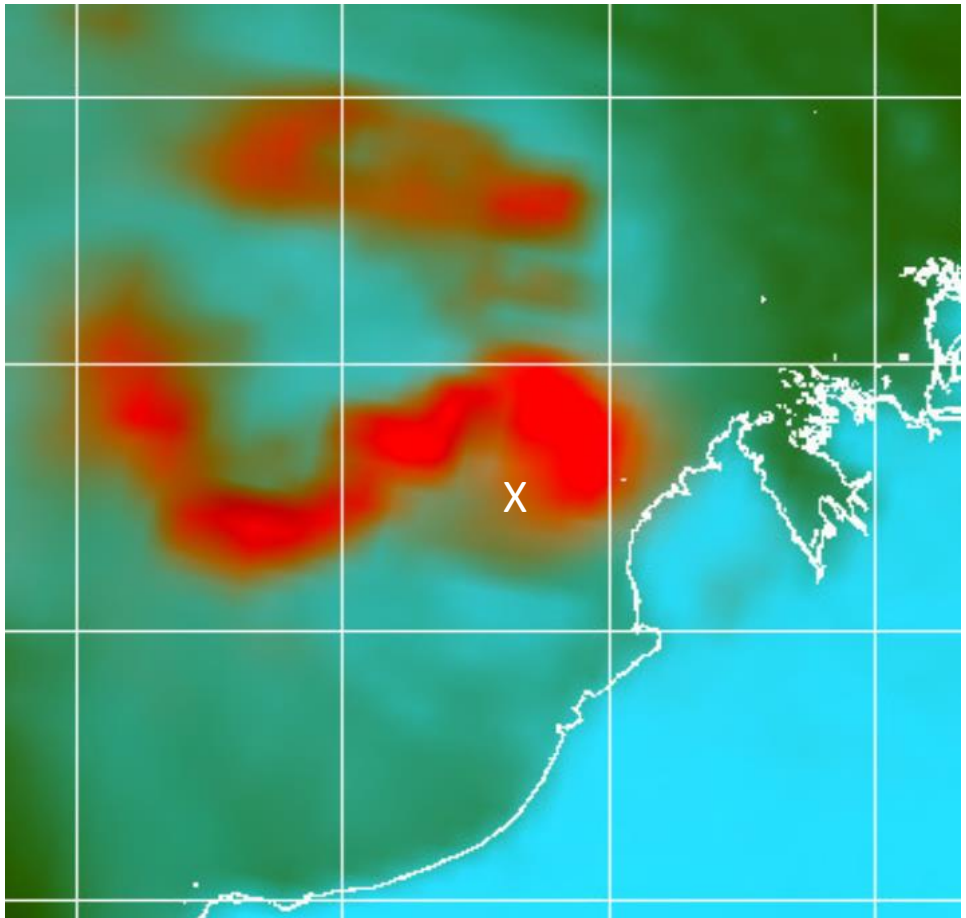
Fighting against the easterly shear: signals to look for

Outflow from convection against environmental flow

Convection developing on the upshear side (around northern side in southern hemisphere



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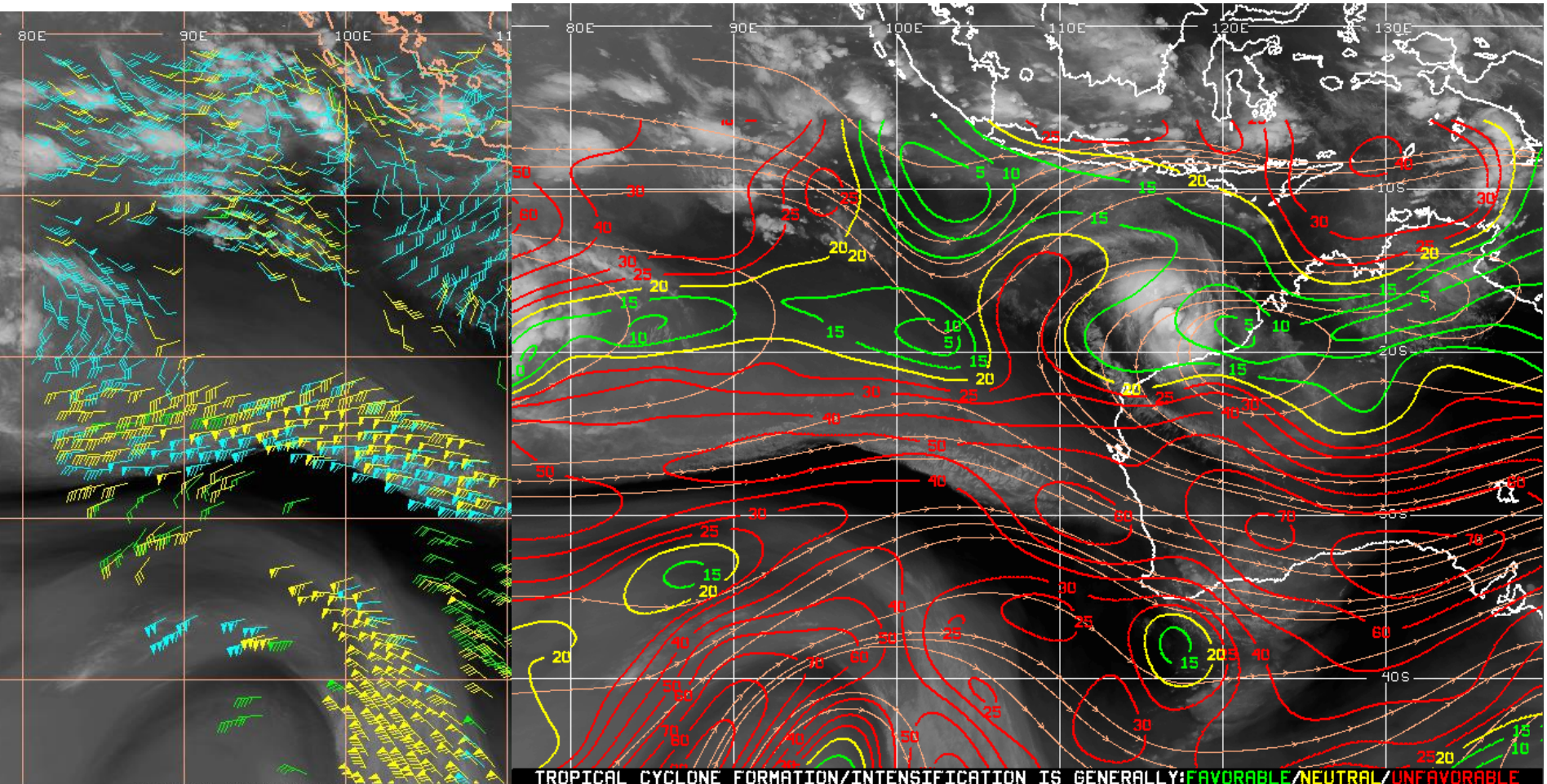
Development 7 Feb

strong outflow; low shear



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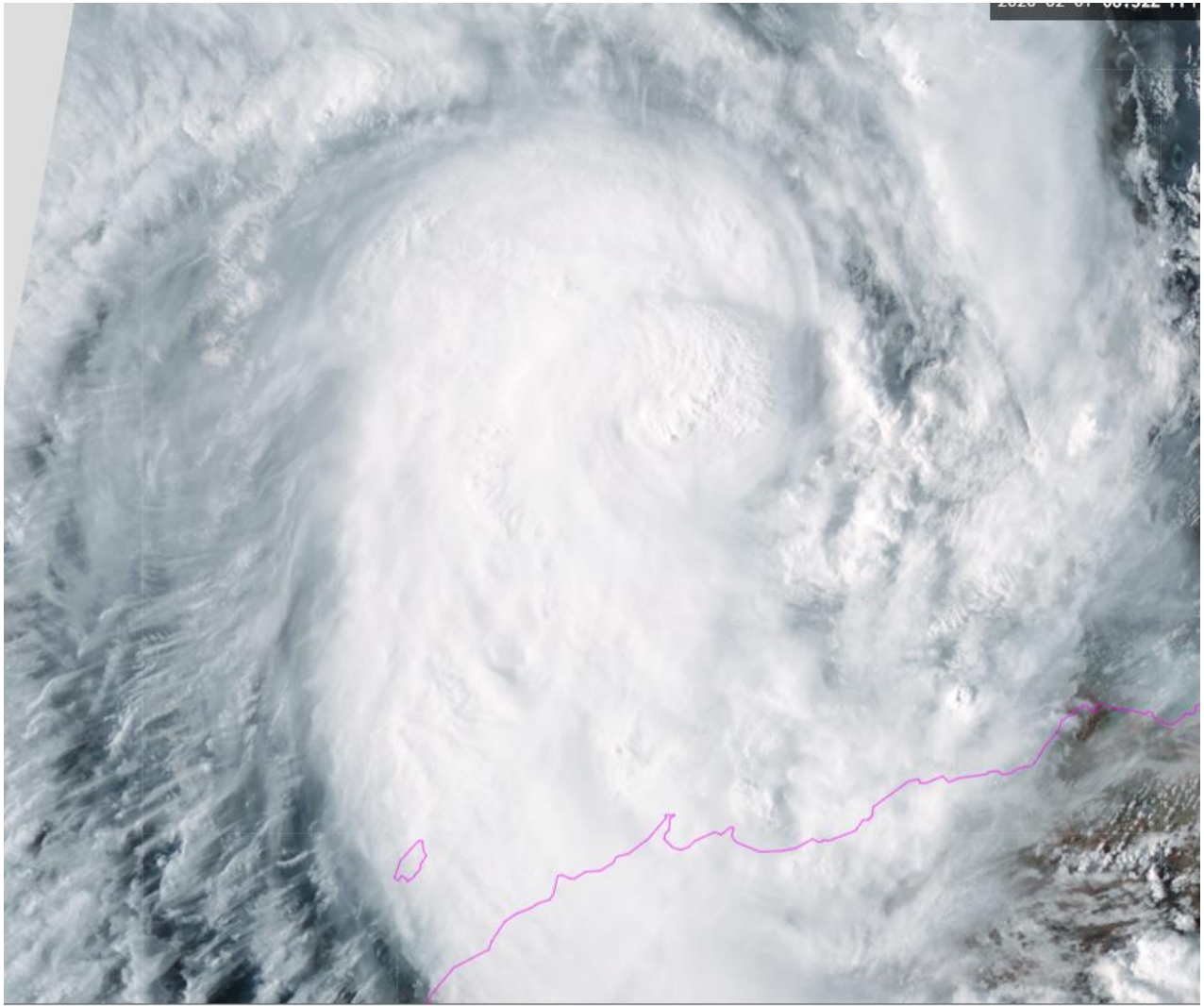
Development on 7 Feb

Rapidscan



Development on 7 Feb: microwave best for early detection

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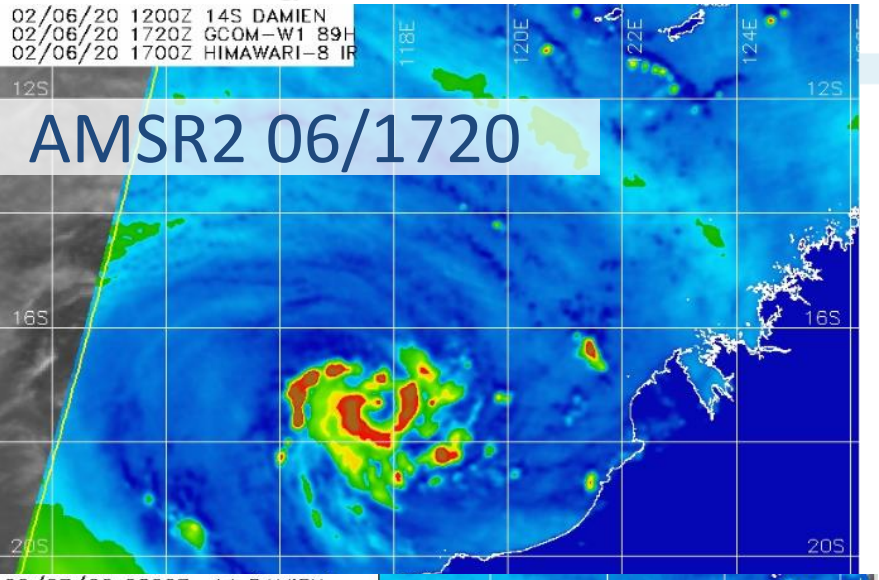

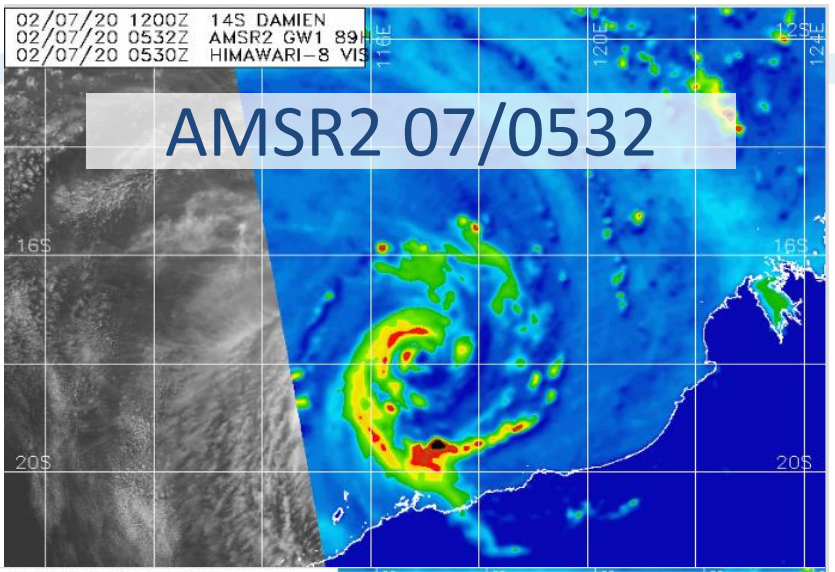

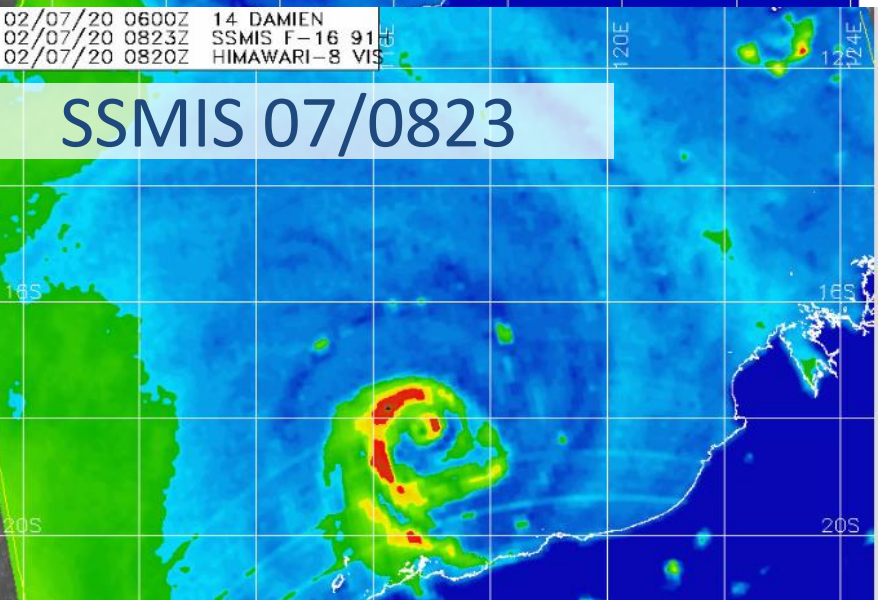

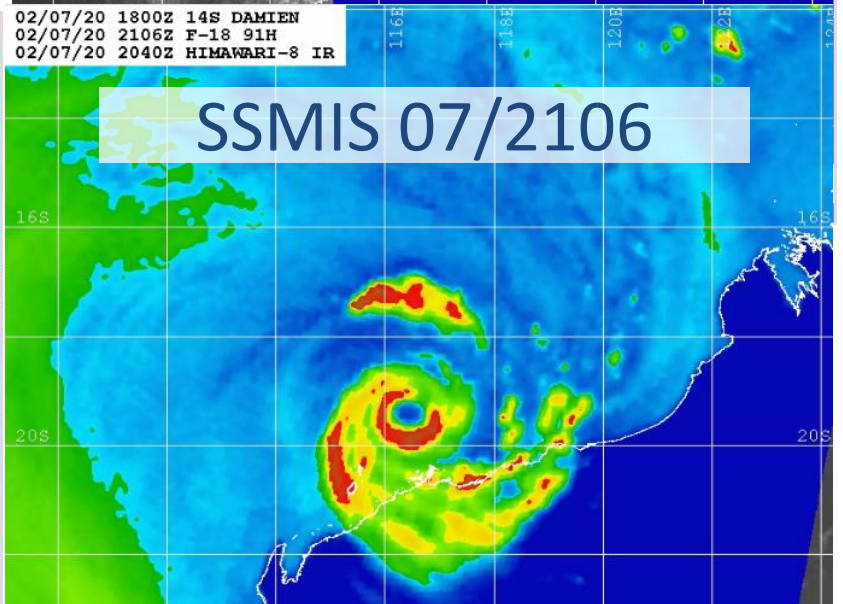

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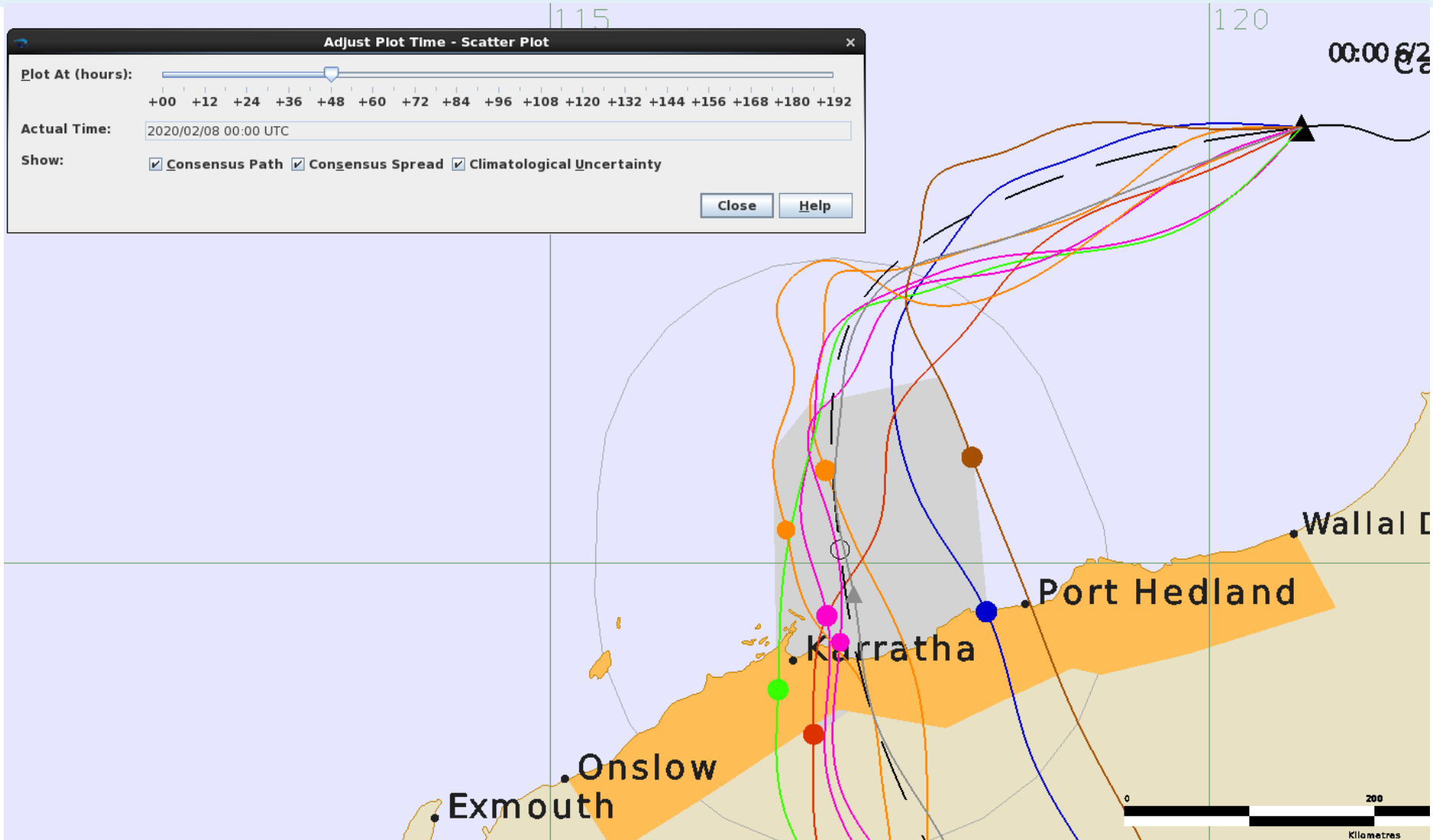
Landfall issues: Where?
When - timing with high tide?



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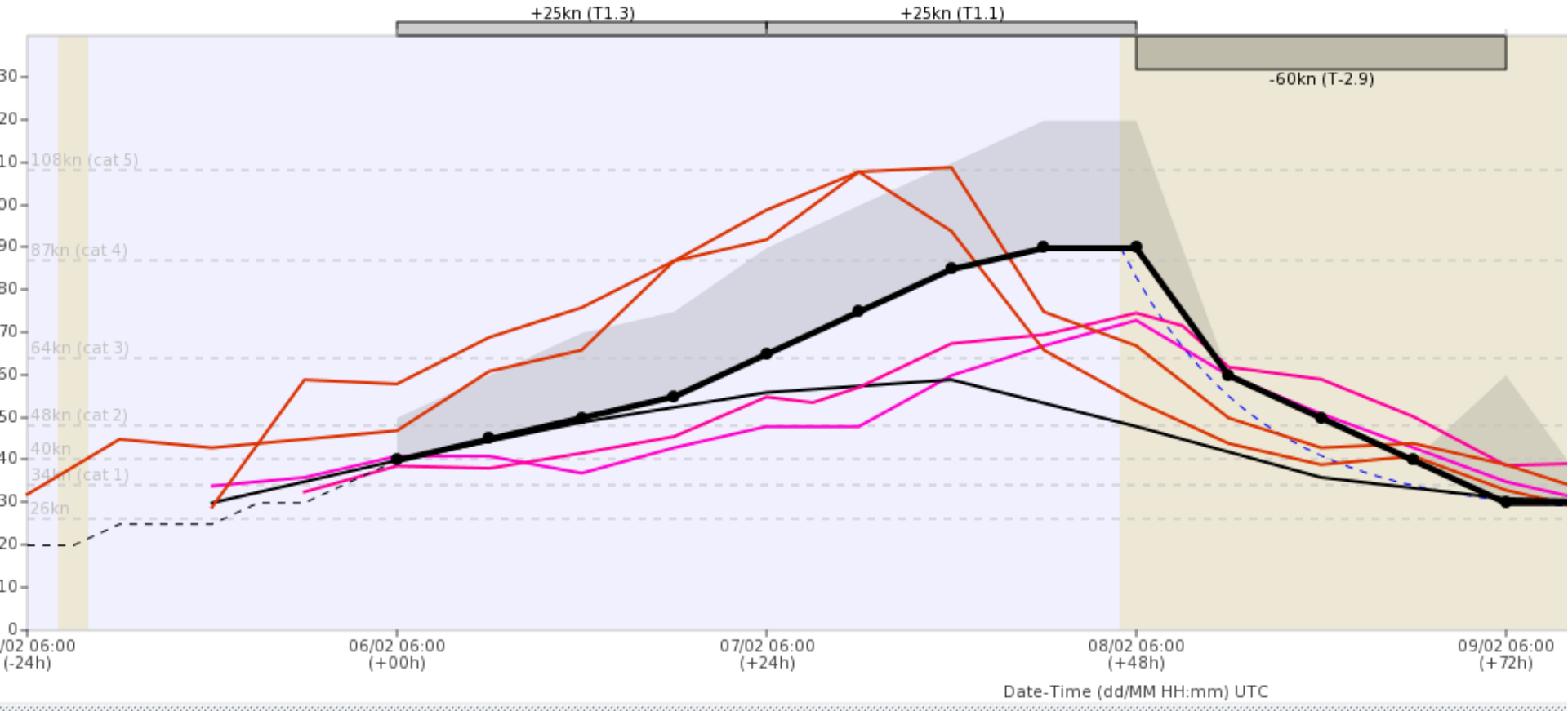
Landfall issues: Where? How strong? When - timing with high tide?

85kn = CAT 3 or 90kn Cat 4?



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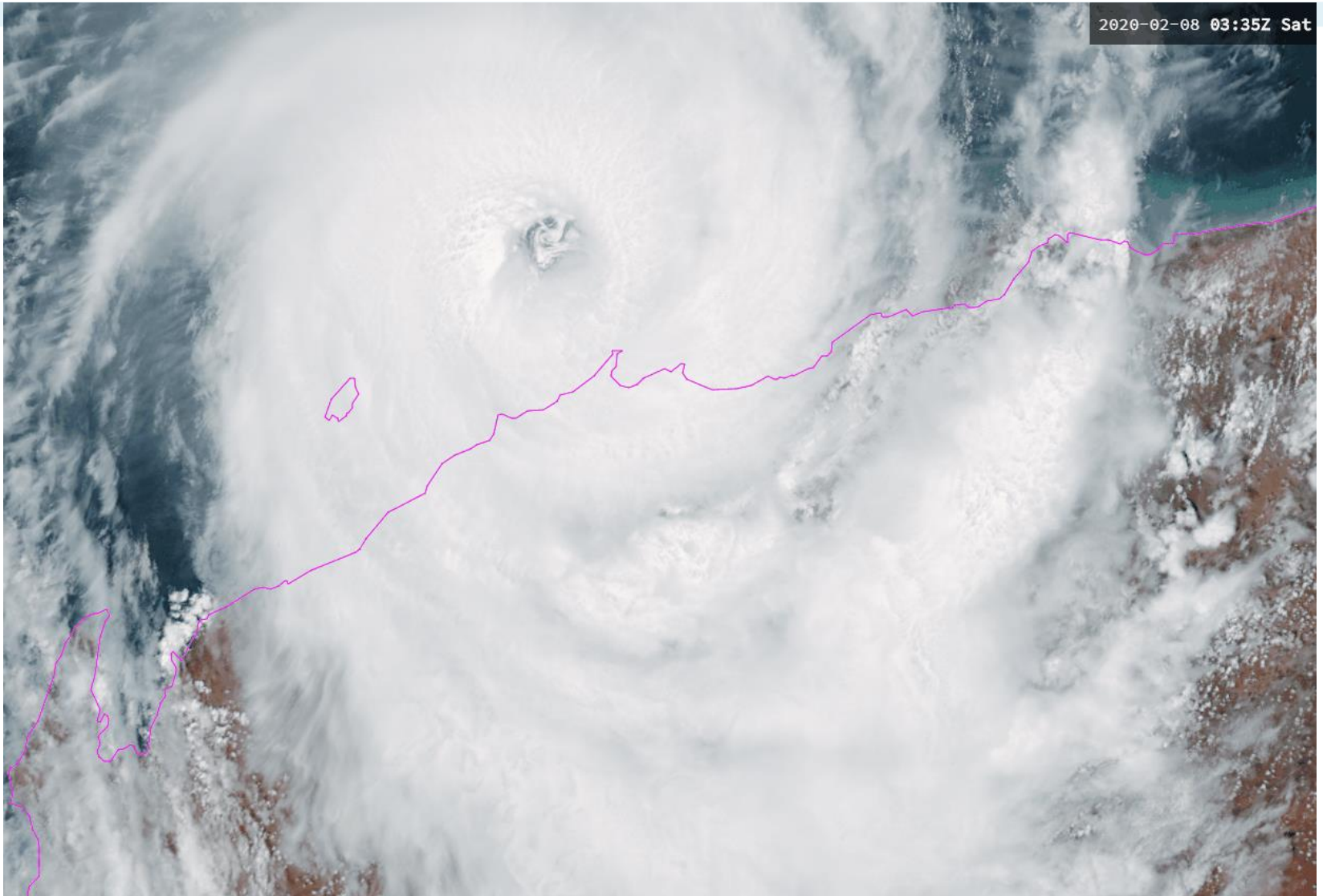
Rapid scan Visible loop at landfall 03-10UTC



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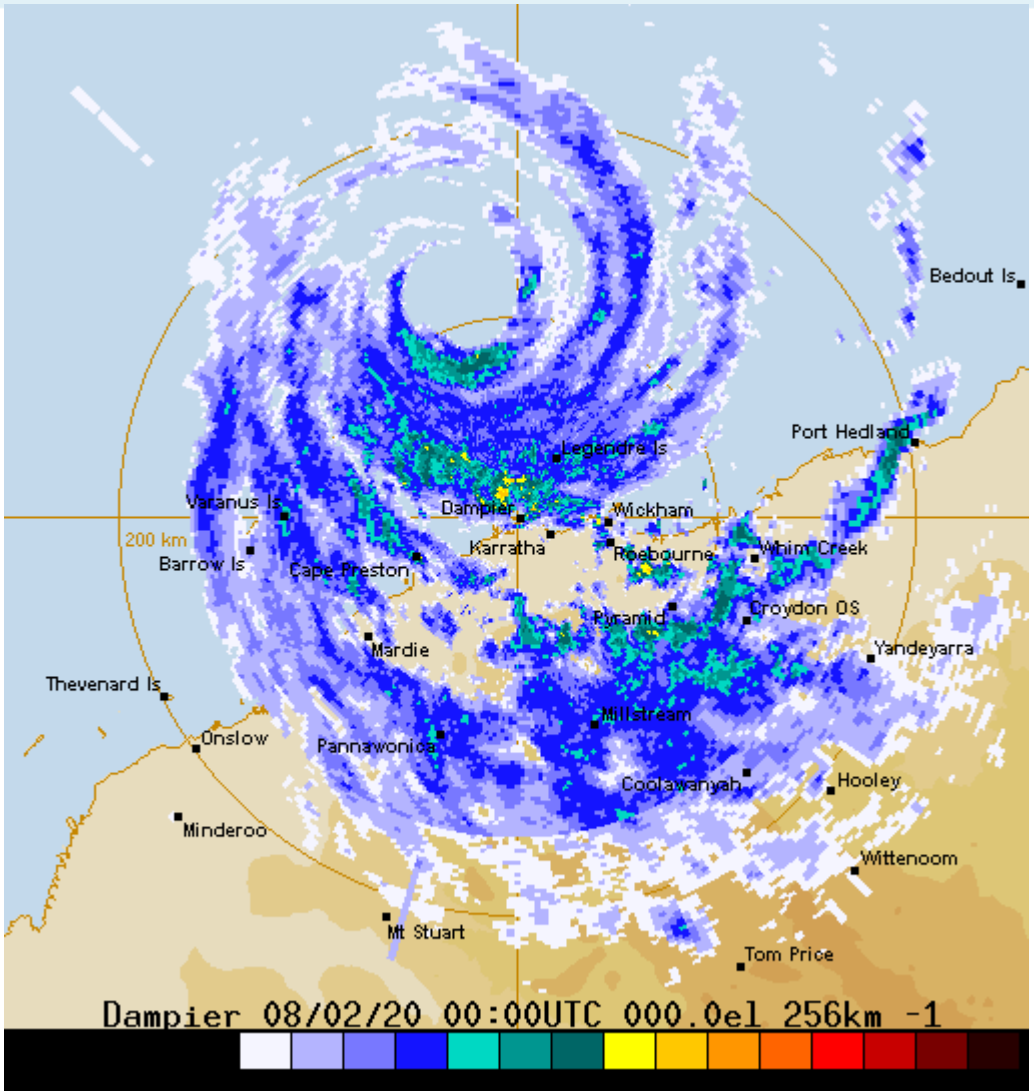
Dampier radar 256km loop

(until radar destroyed in northern eye wall)



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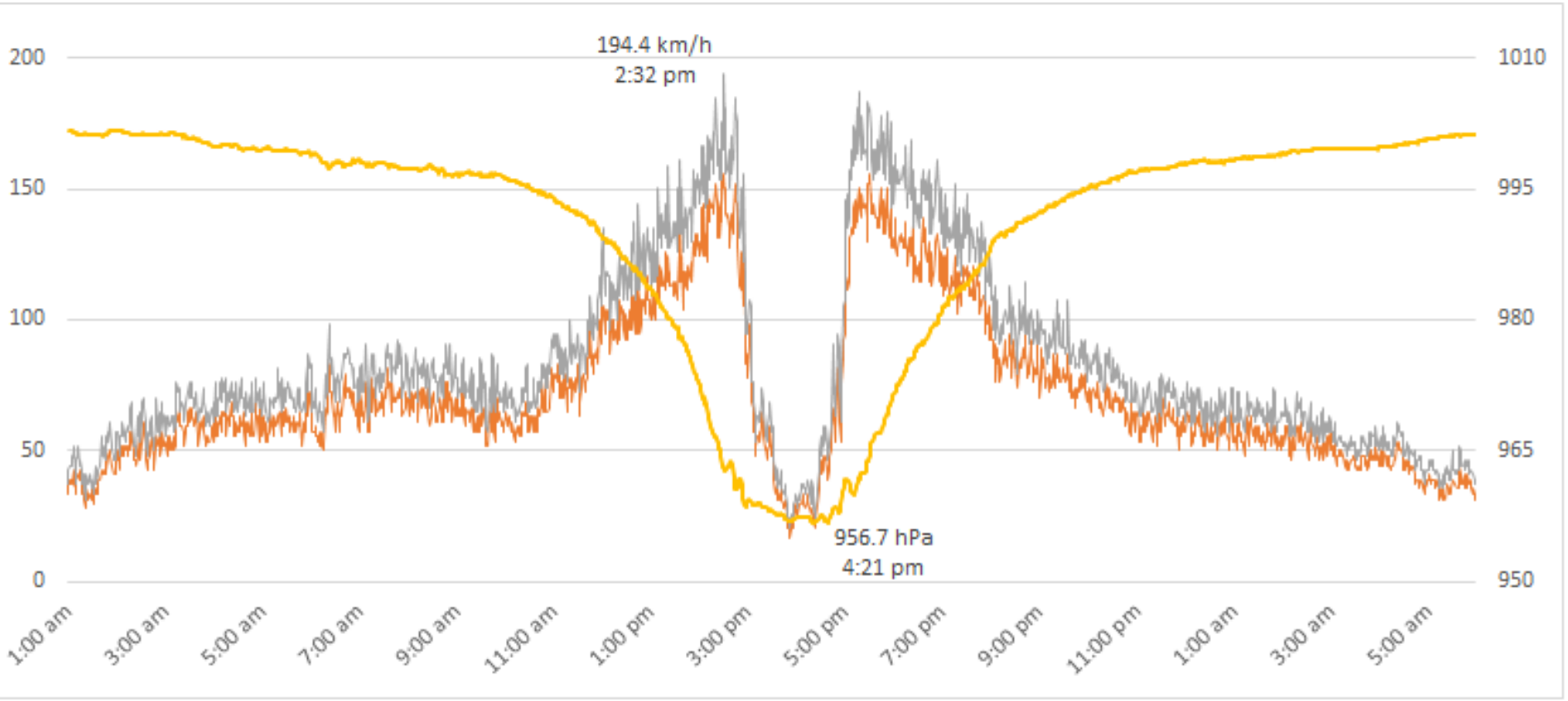
Karratha observations: max sustained winds 78kn; min pressure 956hPa



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Damage Karratha and flooding

Credit: ABC Pilbara Susan Standen

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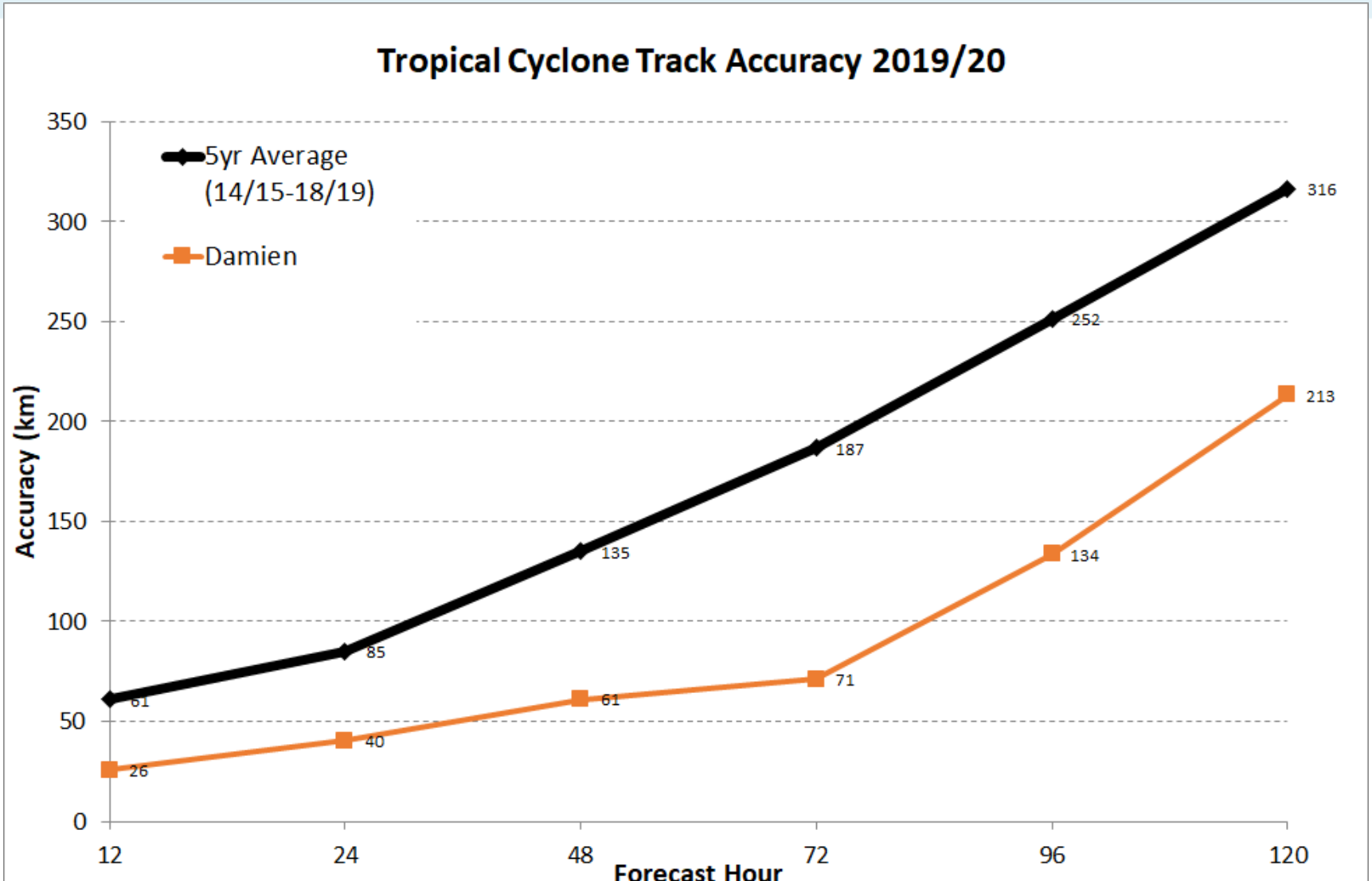
Accuracy: best ever track forecasting?



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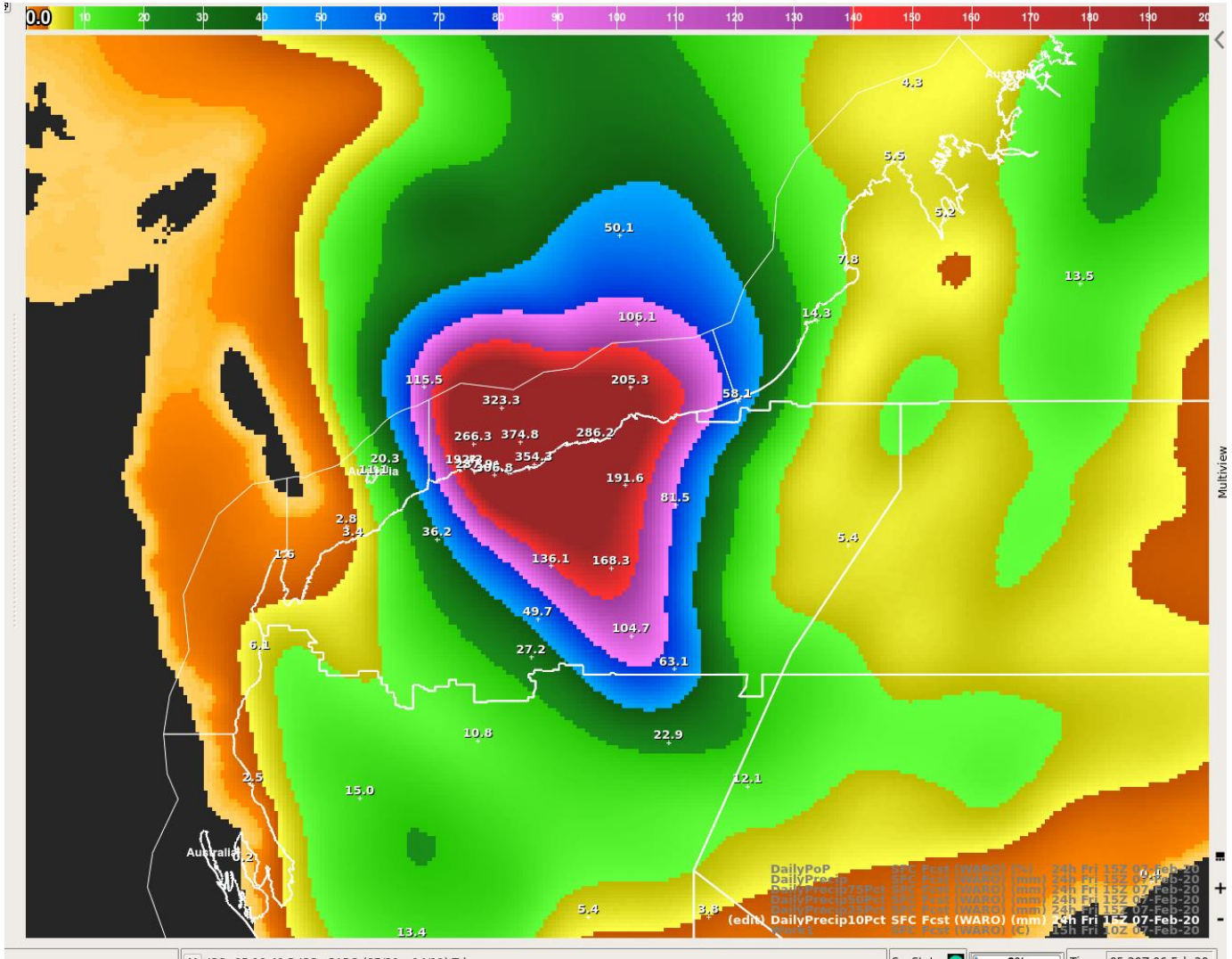
Many other issues: how much rain?

10% EC ensemble



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Many other issues:

How high will the storm surge be? When?
How long will it last as a TC? Decay model and NWP
But maybe enough for one day…

Questions?