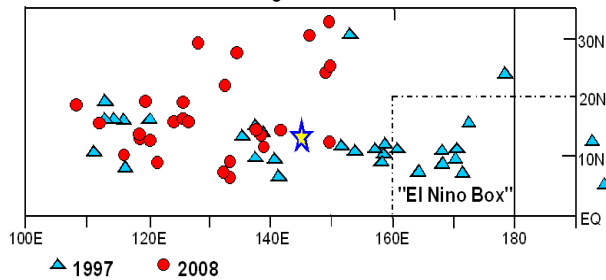


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1. INTRODUCTION

During the summer of 2008 an extensive field program was conducted under TPARC/TCS08 in the western North Pacific. One of the many goals of the program was to evaluate tropical cyclone (TC) genesis under two conditions (1) a Pre-monsoon depression stage; and (2) a cyclogenesis stage in which the central convection and winds develop well inside of the region of gale-force winds associated with the outer convective bands. The program which covered from the beginning of August through the first week in October initially had to wait almost two weeks to get the first officially named and warned on system that fell within the field study area (one TC, TD10W formed during the first week, but moved out of the area too quickly to be studied). Over the following 6 weeks, 11 numbered TCs were warned on by the JTWC in the area of interest (including 4 TDs) and were evaluated by numerous means of detection and NWP analysis techniques. This paper, using primarily satellite-based remote sensing tools, discusses the unusual, a-typical, nature of development of many of the warned on (and un-warned on) TCs that formed during this period and provides a couple of suggestions on how to recognize these systems and how they might not have fitted into the typical mold of development as suggested above.

2. LOCATION OF DEVELOPING TROPICAL Western North Pacific TC Origins



CYCLONES DURING TCS08.

Figure 1. Tropical cyclone origin locations during 1997 (blue triangles) and during 2008 (red dots). The yellow star with blue outline is the location of the island of Guam (13.4 N ; 144.8 E). (from Lander, 2010, personal communication).

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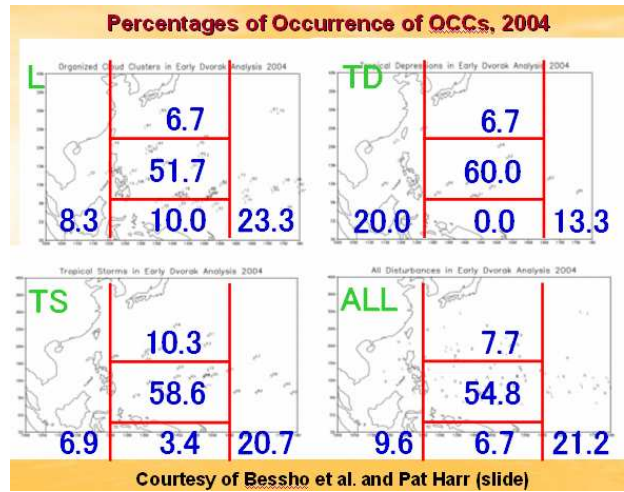


Figure 2. Normally expected TC development between 10N and 20N as per Bessho et al. and Pat Harr.

In Mark Lander's presentation (Fig 1, Conference, 11A.7) he presents an unusual character of the 2008 season where low level easterlies were unusually strong, almost down to the equator and that upper-level westerlies were unusually strong deep into the subtropics. His figure (Fig. 1) depicts the initial location of all warned on tropical cyclone. Note the large difference between the El Nino years development and the La Nina-like development in 2008.

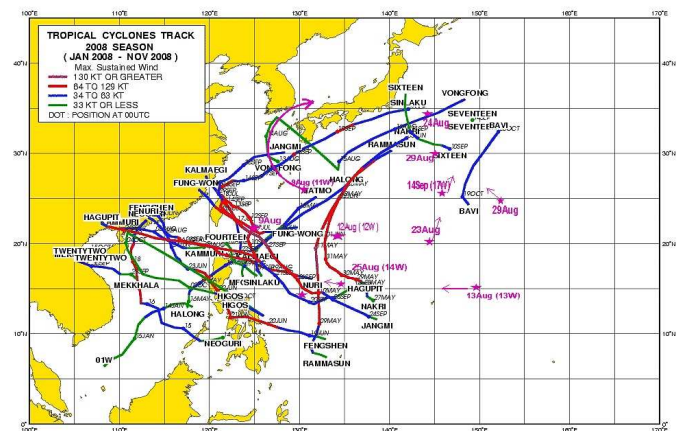


Fig. 3 Tracks of TCs for 2008 (taken from the JMA/JAXA site) but with stars added where circulations were first detected in out analysis.

A graphic of all tracks for 2008 is shown in Fig 3. Here I have added the location of all circulations (warned on and not warned on during the months of August and September. Note the large number of points to the north east of the official tracks where there were not warnings. Many of these systems were in an a-typical location for

3. THE DATA.

Figures 4 through 5 shows images of the types of TC development found during this period that were not warned on. Many of these circulations were parts of extensive looking elongated troughs, both orientated from the southeast to northwest (Figs 4 and 5) or from the southwest to northeast (Fig 6). Because of their size or attachment to these larger troughs, they were often not thought to be TCs. However, in each case, they were able to maintain their own identity over a period of days while keeping their own convective system in tact.

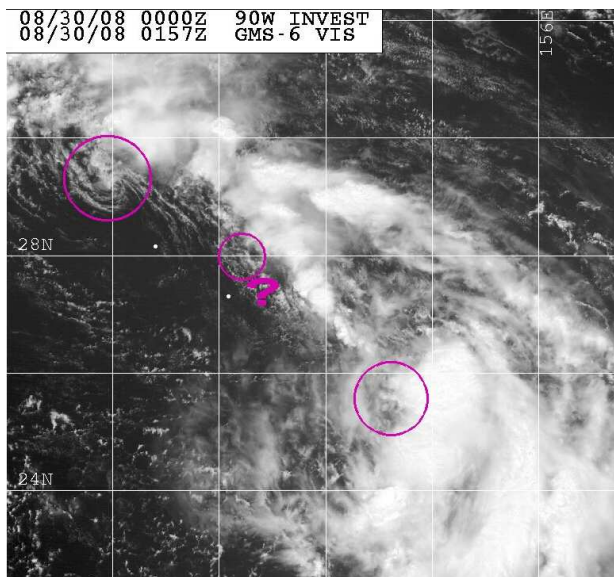


Fig. 4

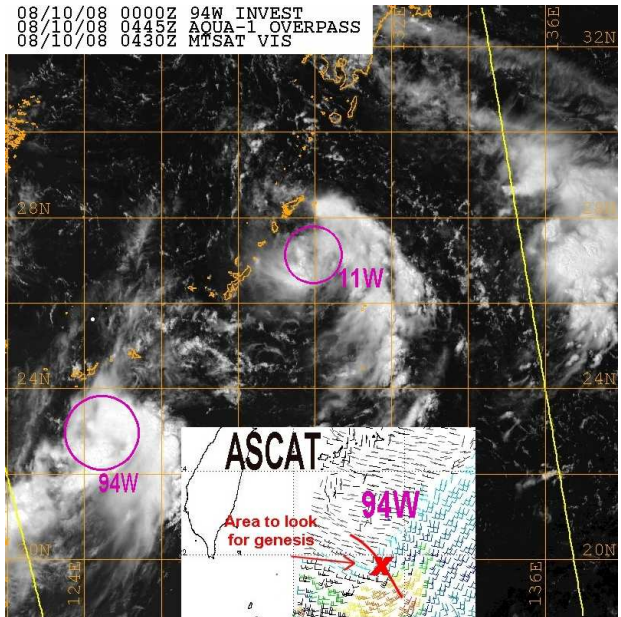
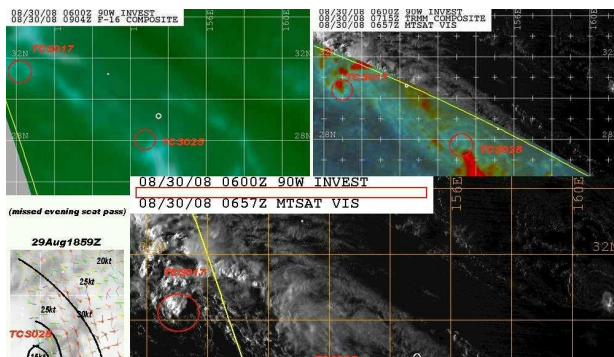


Fig 6.

4. CONCLUSIONS AND FUTURE WORK.

More work needs to be done to appreciate these systems. As evident in the wind data (scatterometer and passing ships) these systems present a hazard to the public and should be considered, perhaps as hybrid systems.

Acknowledgments. The author thanks Mark Lander for sharing the enthusiasm for studying tropical cyclones out in the western North Pacific.

5. REFERENCES

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