International Civil Aviation Organization

The Twentieth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/20)

Bangkok, Thailand, 26-29 May 2015

Agenda Item 7: Any Other Business

TRAFFIC FLOWS IN WPAC/SCS AIRSPACE

(Presented by Thailand)

SUMMARY

This paper presents a visualization of traffic flows in the West Pacific/South China Sea (WPAC/SCS) based on 2014 Traffic Sample Data (TSD) to assist the SCS-MTFRG.

1. INTRODUCTION

1.1 In March 2015, the Southeast Asia ATM Coordination Group (SEACG) established a South China Sea Major Traffic Review Group (SCS-MTFRG) aiming to review the conflicts between some PDC routes and the overall route structure in the South China Sea airspace in order to optimize airspace capacity and enhance flight safety in the long term.

1.2 As an RMA, MAAR has established a mechanism to process and analyze the traffic in the WPAC/SCS region as part of the annual risk estimation. To assist SCS-MTFRG, MAAR, therefore, undertook a task in producing a visual presentation of traffic flows in the WPAC/SCS based on 2014 Traffic Sample Data (TSD). The presentation can also serve as a tool for MAAR to better verify the quality of TSD received from States.

2. DISCUSSION

2.1 TSD submitted by States sometimes contains errors, does not follow the template, and may not contain all RVSM traffic in the FIR. MAAR usually has to put a lot of effort into processing the data. In later years, MAAR requested TSD in a form of FPLs so that the generation of TSD can be automated; this method usually benefits States whom do not already have an automated system to record traffic data.

2.2 As a result, TSD may be based on actual trajectories or planned trajectories depending on its source. Also, some data sets are missing significant points inside the FIR even though the template asks for these points to be filled in if the flight changes the route or flight level.

2.3 In order to produce a better picture of the traffic flows, MAAR added an additional processing step, interpolating unreported significant points on the major international routes. However, data from some FIRs with unreported middle points that are on domestic routes is mostly left unchanged.

2.4 **Attachment A** shows a visual presentation of traffic flows in the region. Turquoise lines represent westbound movements while oranges lines represent eastbound movements. The thickness of the lines was calculated from the volume of traffic in December 2014.

2.5 From Attachment 1 chart, it can be observed that the major traffic flows in WPAC/SCS could roughly be arranged into 3 groups.

Group	Flows
I	A1/G581 (from ELATO) & M750 (to ENVAR) A1
II	L642 & M771 A202
III	M758 N892 & L625 A641 A583

2.6 **Figure 1** shows the average number of flights per day by flow. The red, blue, and green colors correspond to group I, II, and III respectively.

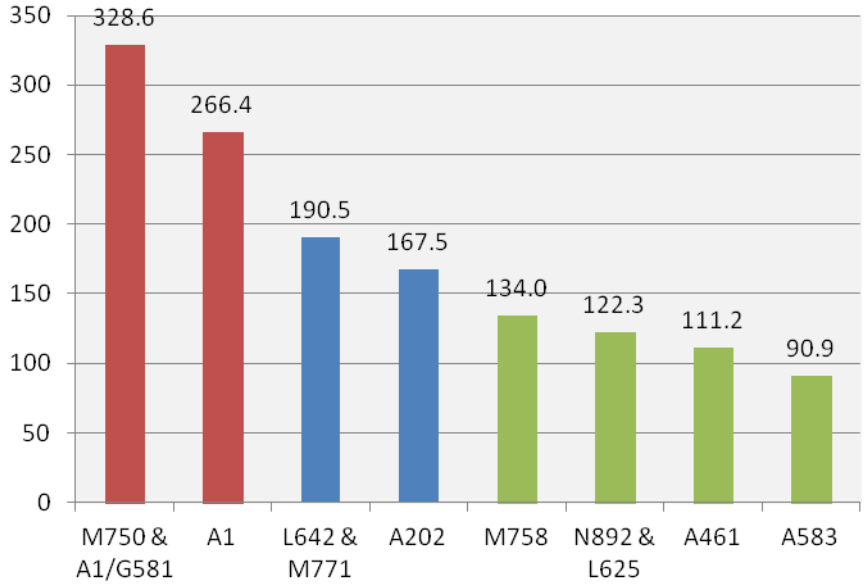

Figure 1: Average Number of Flights per Day by Flow

2.7 **Attachment B** shows the traffic flows and the number of crossing pairs on adjacent flight levels within a 15 minute window, which is a parameter normally used in RVSM airspace safety assessment. The number of crossing pair represents the bunching of traffic at crossing points. For example, assuming there are the same numbers of flights on each route, if the flights are crossing at different times of day, the number will be lower than if the flights are crossing at same times of day.

2.8 **Attachment B** chart shows that the significant points in oceanic airspace with highest adjacent-level crossing pairs in December 2014 are MUMOT, MAVRA, AVMUP, AKOTA (crossing points between route N892, L625 and A583, A461) and TOKON (crossing point between A583, M646, and M767).

2.9 **Attachment C** shows the traffic flows and the number of Large Height Deviation (LHD) occurrences. Typically, LHDs are operational errors that put an aircraft at a time and position unexpected by the controller. LHDs are the main driver of mid-air collision risk. The spots where most occurrences were reported in the year 2014 are NOMAN and SABNO (Manila – Hong Kong FIR boundary), OSANU (Manila – Kota Kinabalu FIR boundary), and DOTMI (Hong Kong – Guangzhou FIR boundary).

2.10 **Attachment D** and **E** show the traffic and the theoretical SSR and VHF coverage in the region. However, the SSR and VHF locations and coverage information have not been verified by corresponding States and could be outdated.

2.11 The charts should be able to serve as a tool for airspace planners to identify problem areas in the airspace and find the suitable solutions.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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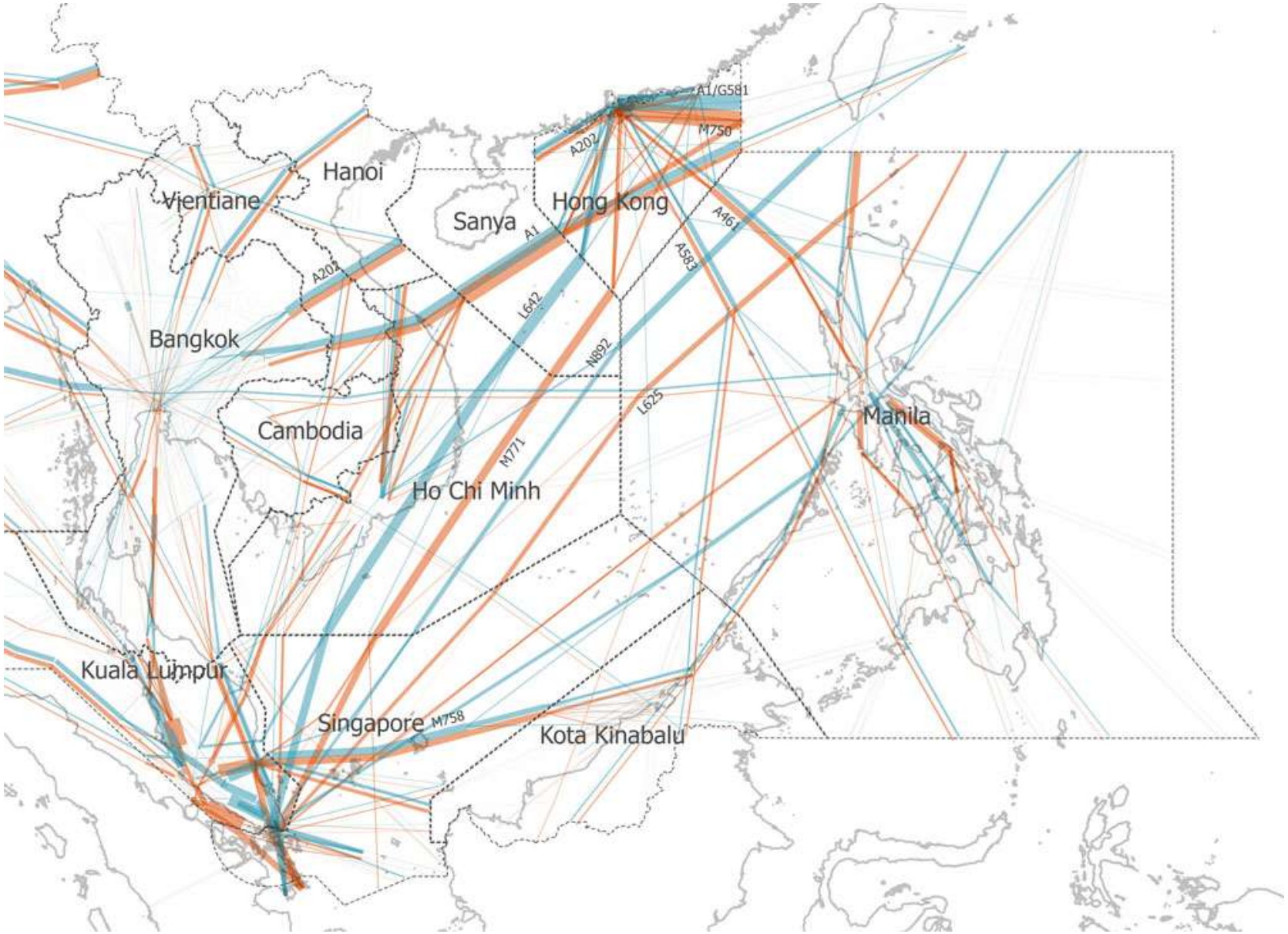
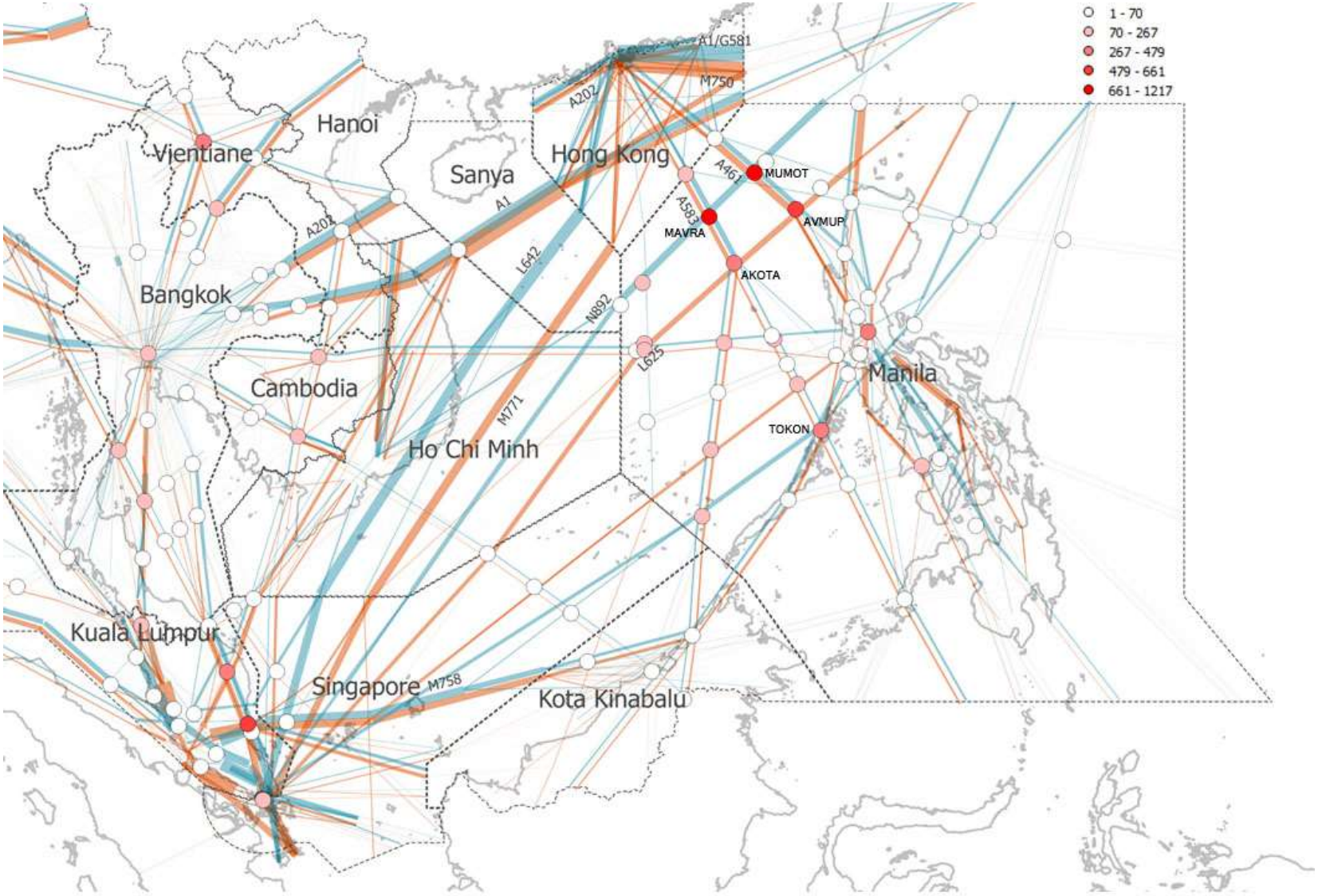
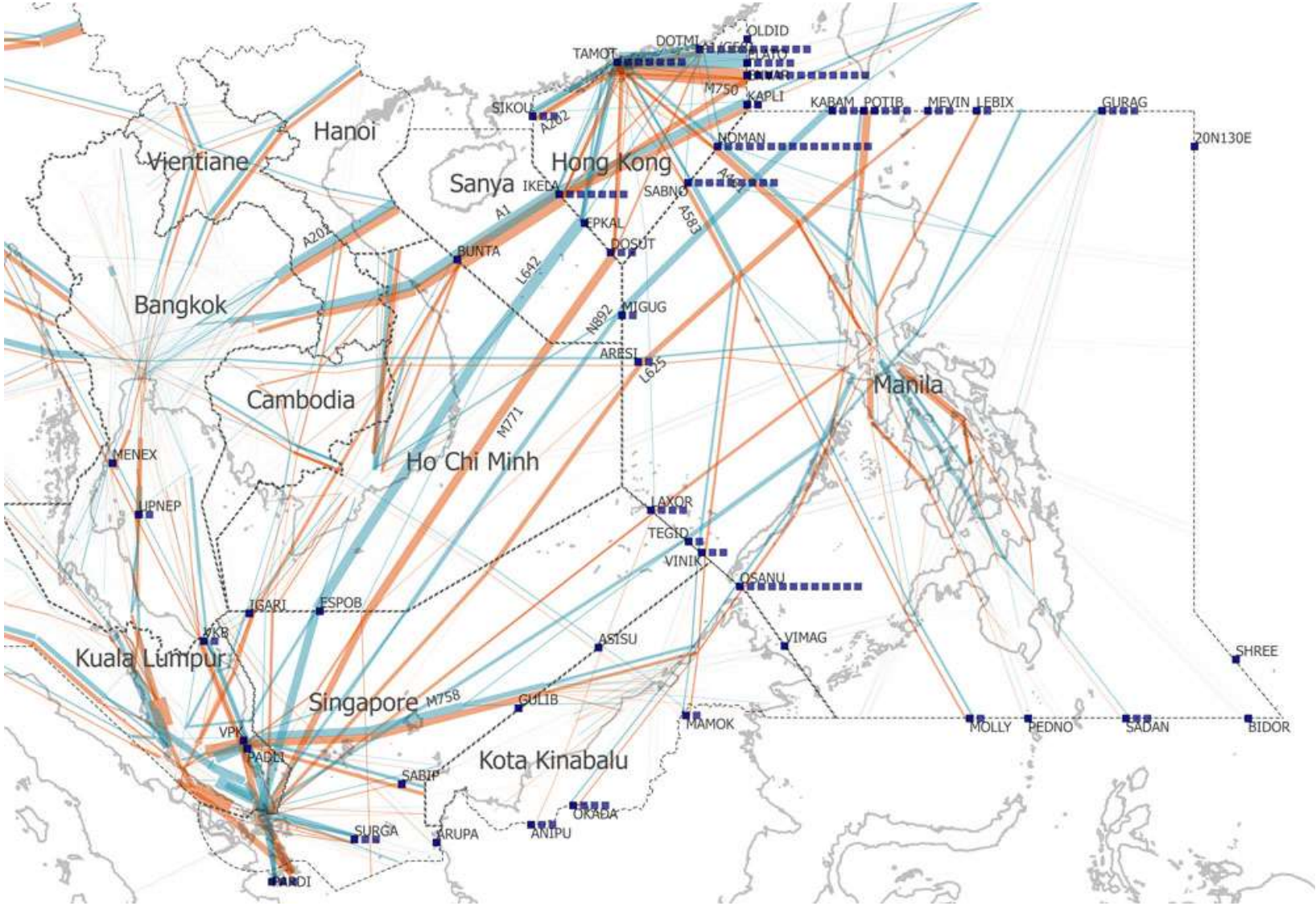
Attachment A: Traffic Flow



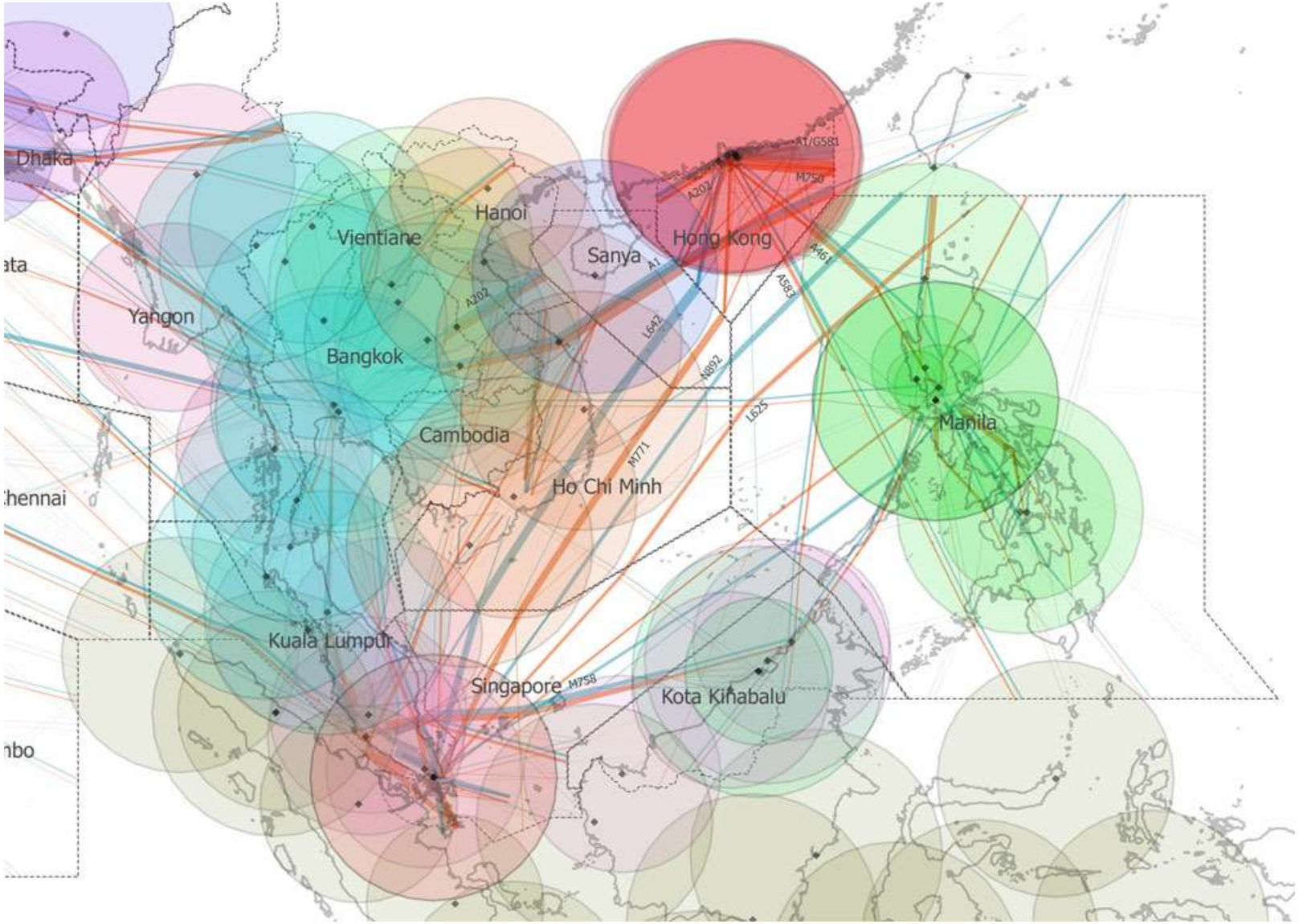
Attachment B: Significant points in oceanic airspace



Attachment C: traffic flows and the number of Large Height Deviation (LHD) occurrences



Attachment D: traffic and the theoretical SSR coverage in the WPAC/SCS region



Attachment E: traffic and the theoretical VHF coverage in the WPAC/SCS region