

What is the predictability of usefulness for new heliports using wind roses?

Philip Hogan 2016



For a heliport to be constructed it is reasonable to expect that it should be useable for 90 & % (95% -99%) of operations.



Heliport pre-assessments

- 1 identification of design helicopter and operational criteria for operations in Performance Class 1
- 2 spatial requirements of the heliport to suit the design helicopter operating in Performance Class 1
- 3 *assessment of site specific winds to determine flightpath track* options and overall usability for flights operating in Performance Class 1
- 4 identification of obstacle accountability area (OAA) boundary, etc., etc.,

Department of Health & Human Services



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Optimal patient care?

Furthermore, the level of building-induced winds needs to be related to the operating performance (or pilot preferred) limitations of the helicopter.

33406DOT/FM/PM-84/25

Evaluating Wind Flow

Program Engineering **Around Buildings on**
and Maintenance Service

Washington, DC. **20591 Heliport Placement**

U J.B. McKinley

Systems Control Technology, Inc.
West **2326 S.**Congress Ave., Suite **2A** Palm Beach, Florida

October 1984



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To assist with optimal performance all helicopter operations should land and take-off into wind

4.2 Presently, paragraph 92(1)(d) of CAR states:

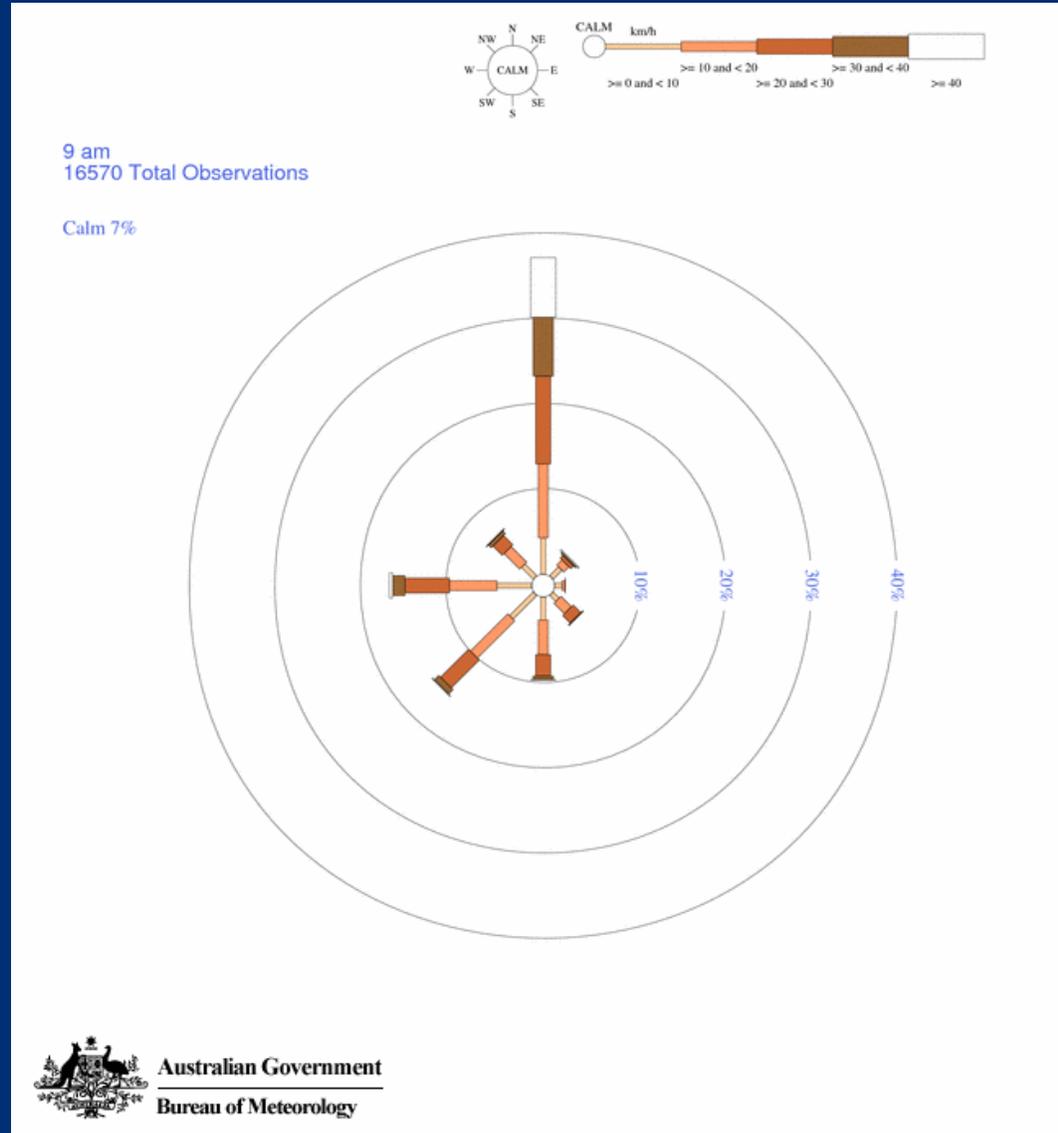
An aircraft shall not land at, or take-off from, any place unless...the place...is suitable for use as an aerodrome for the purposes of the landing and taking-off of aircraft; and, having regard to all the circumstances of the proposed landing or take-off (including the prevailing weather conditions), the aircraft can land at, or take-off from, the place in safety.



To ensure optimal approach / departure paths are selected a frequent method is to use meteorology wind roses



What's a wind rose?



That which we call a rose, by any other word
would smell as sweet. *William Shakespeare 1597*

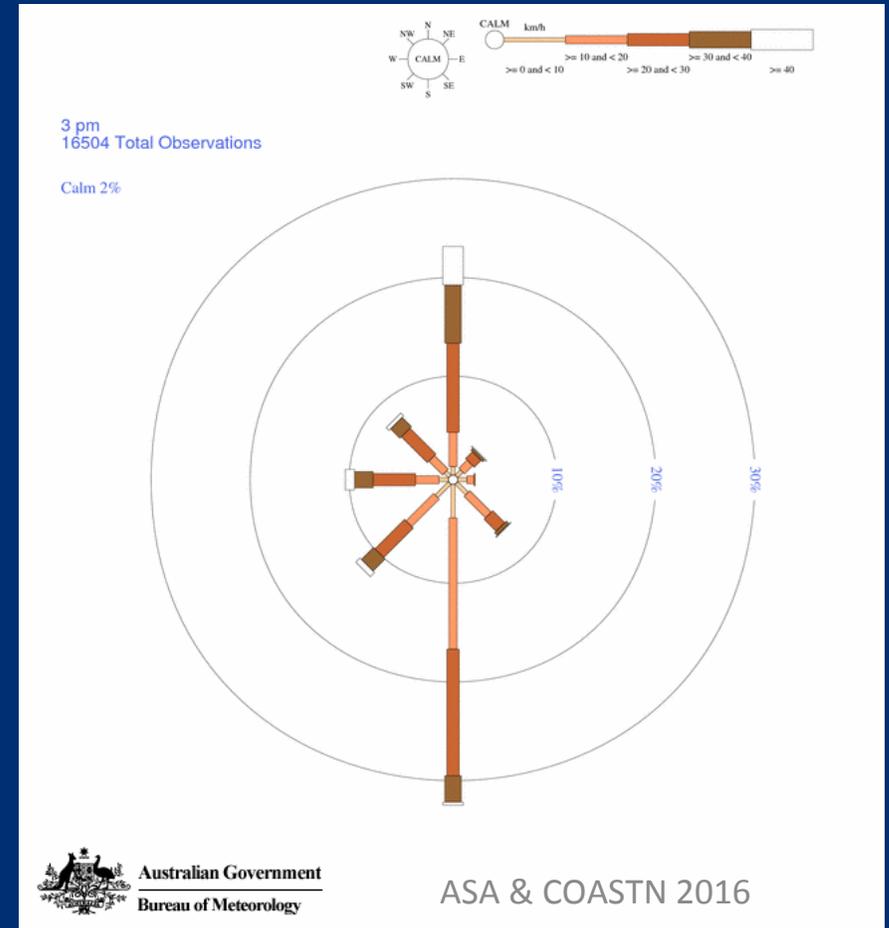
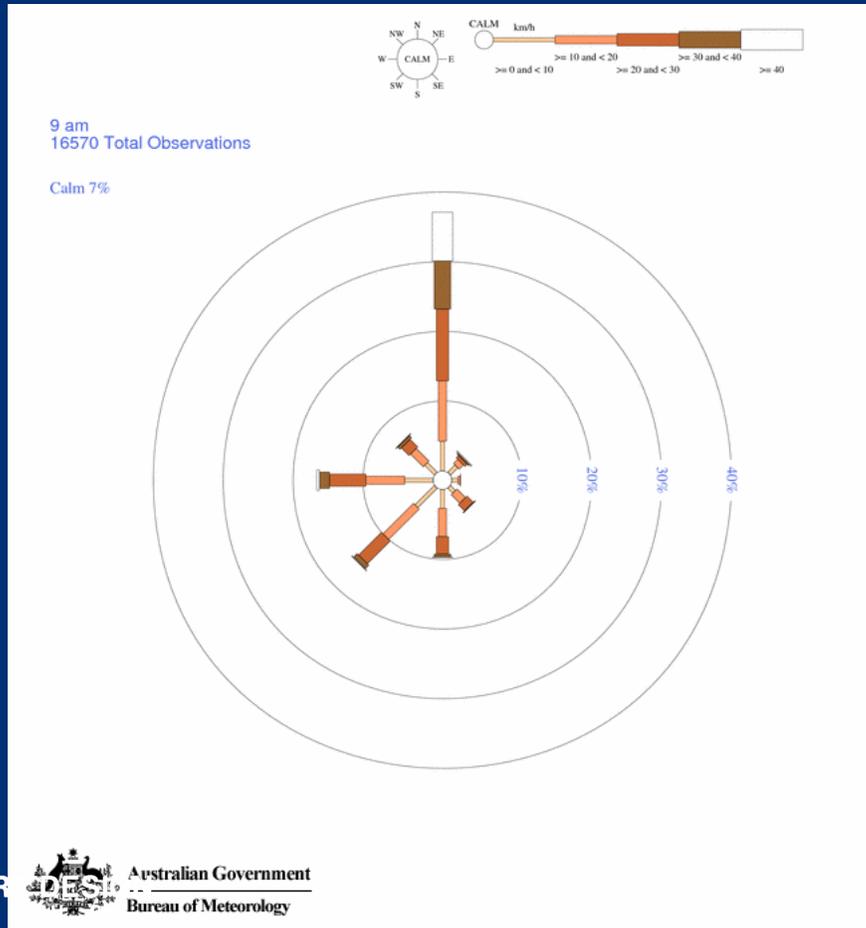


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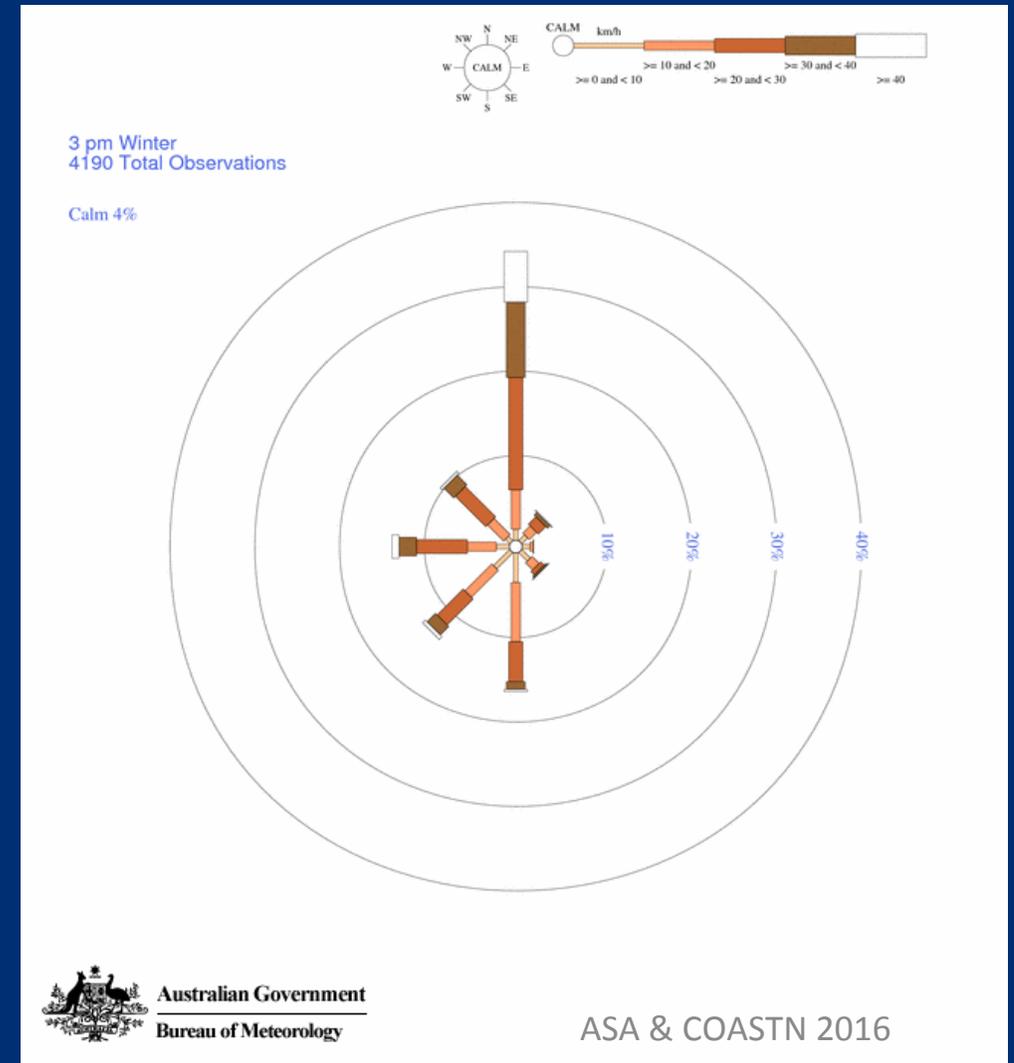
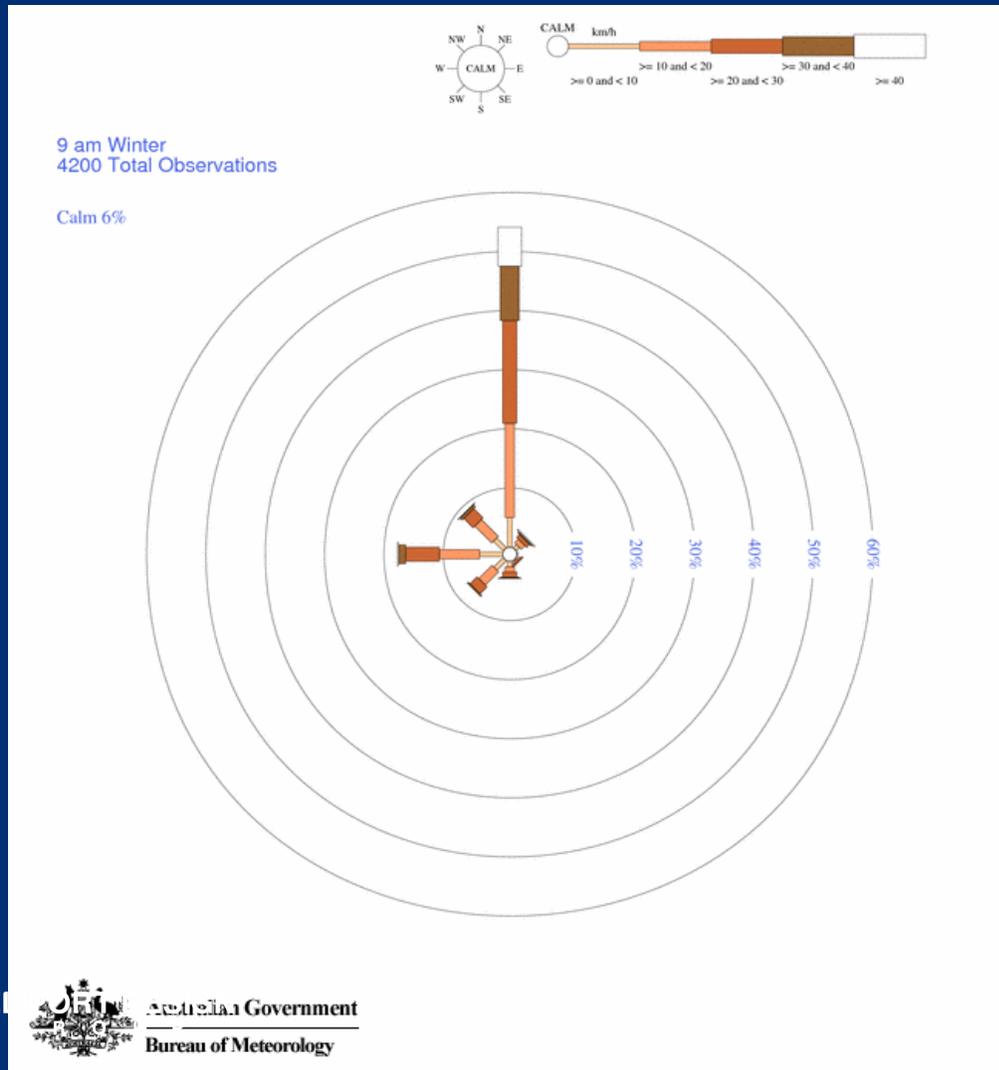
Look past the flower and you'll see
the prickles. *Philip Hogan 2016*



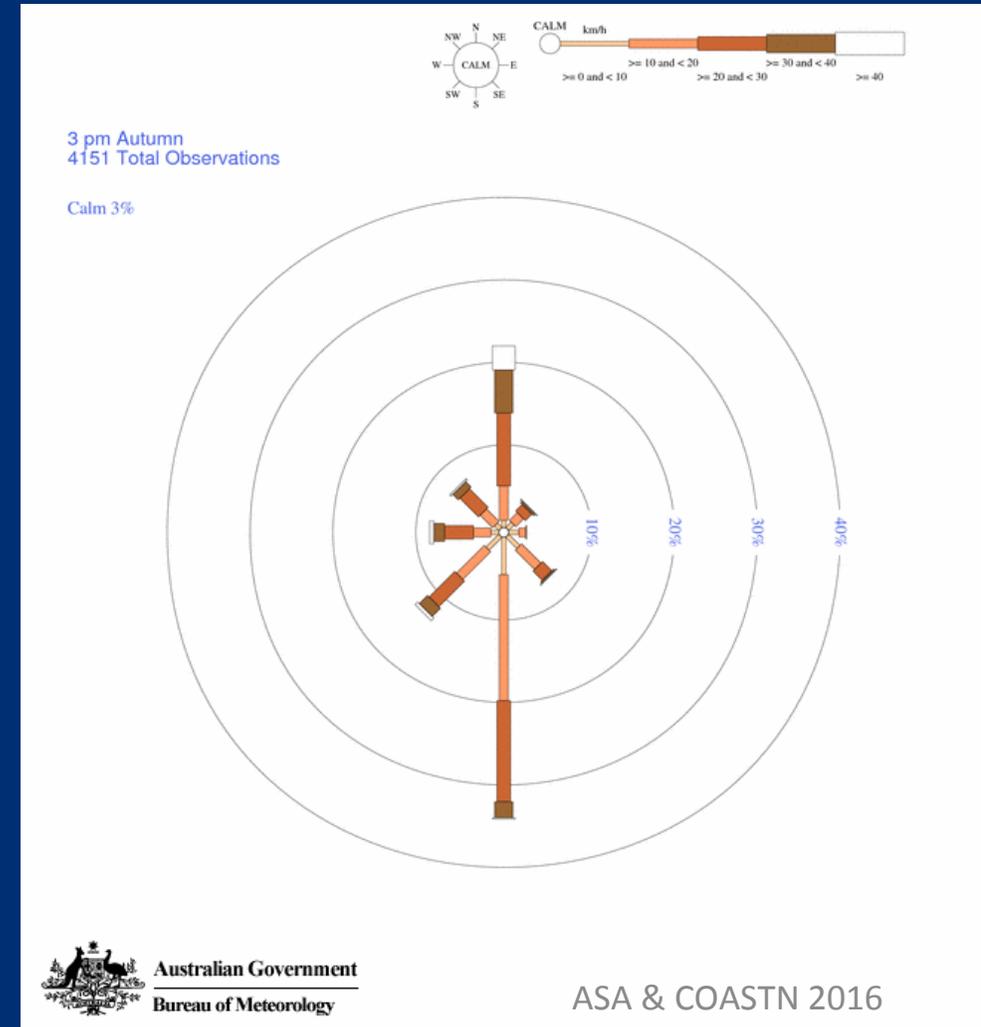
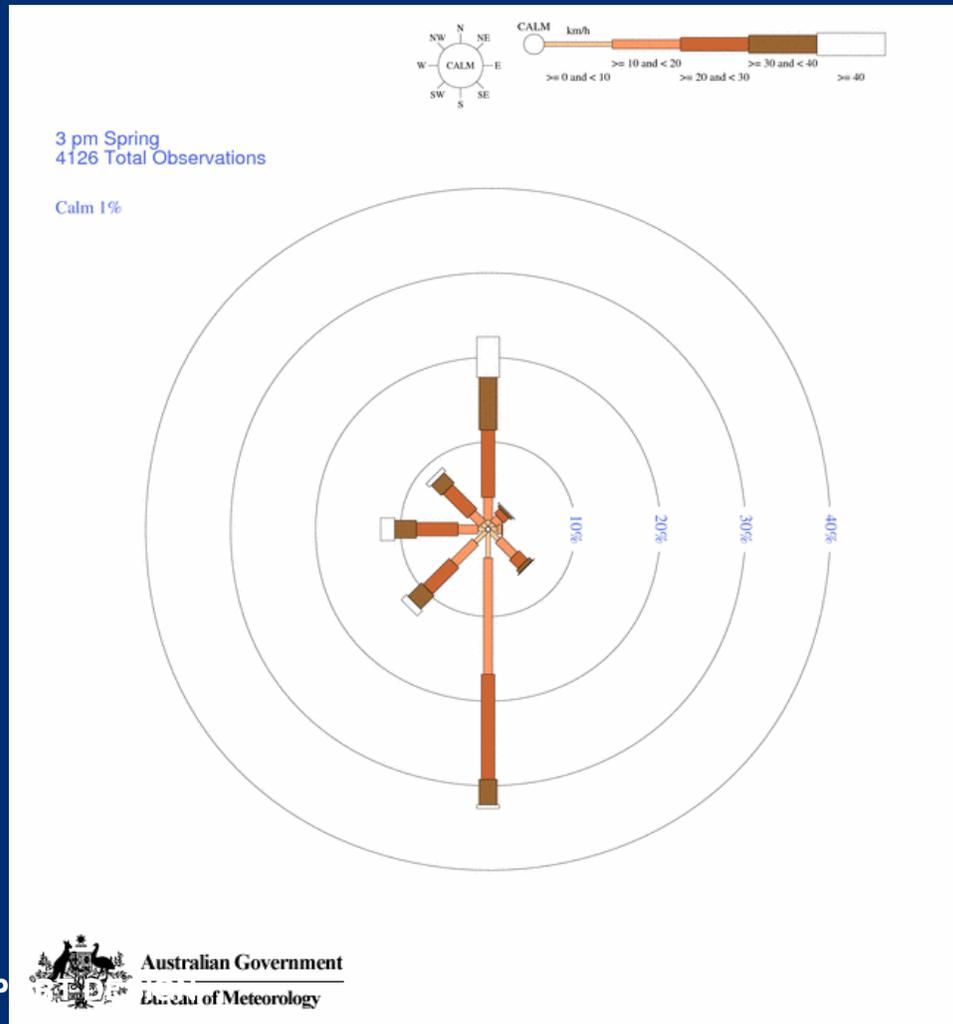
Wind roses normally capture recordings at certain periods during the day and usually display many years of records (16,504)



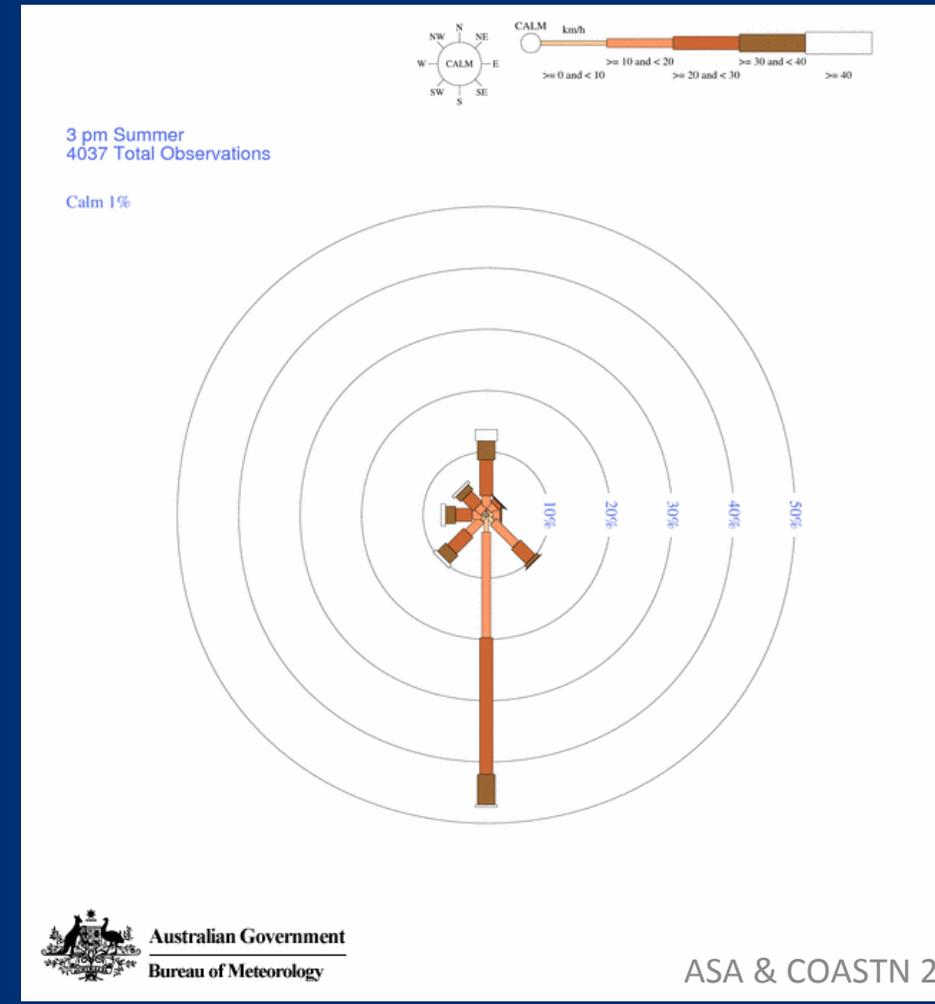
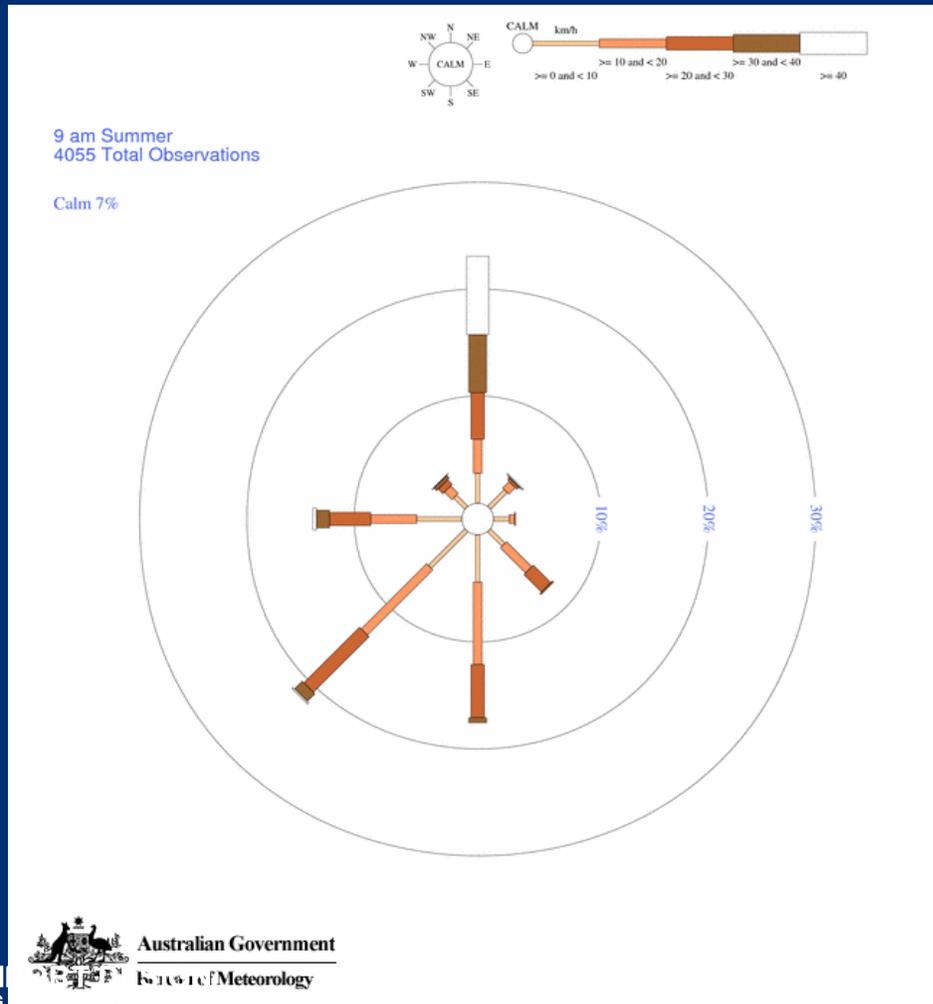
Data for wind roses taken during winter at 0900 and 1500 hrs



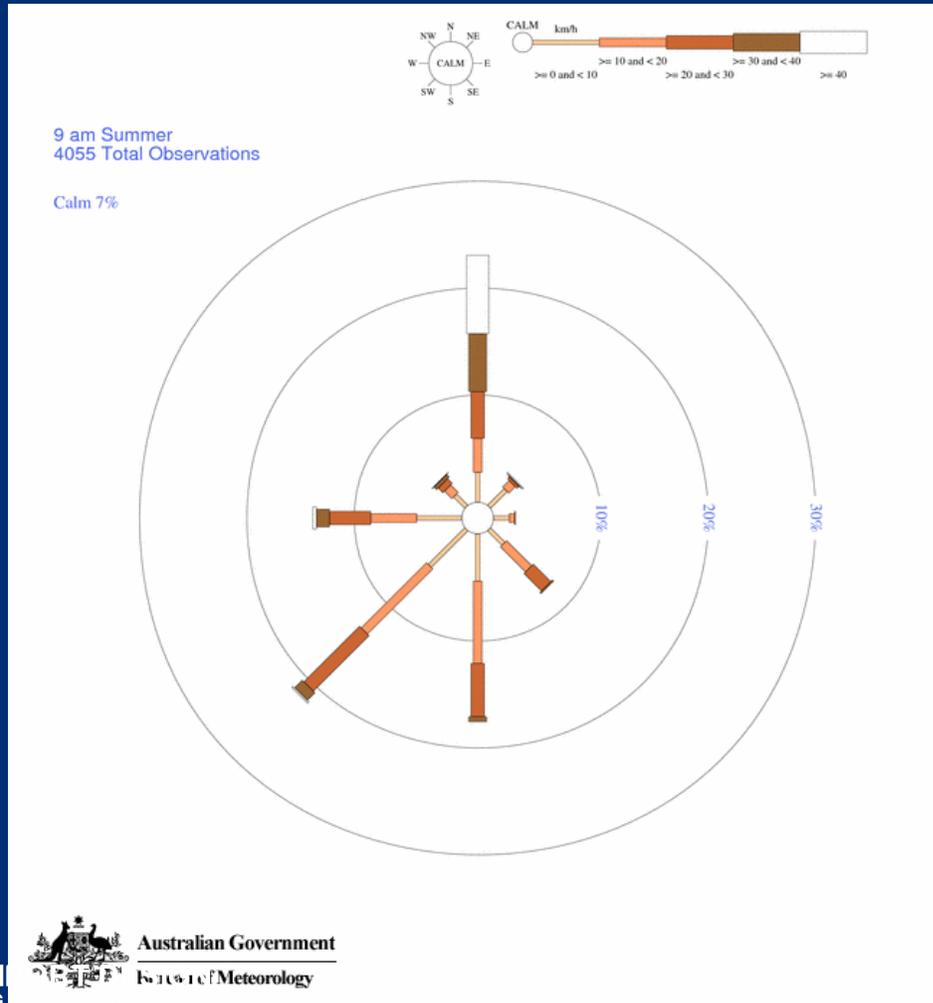
Data for wind roses comparing spring and autumn



Data for wind roses comparing 0900 and 1500hrs during summer



Data for wind roses comparing 0900 and helicopter arrival during summer



Data for wind roses will commonly-

- Be taken at 0900 and 1500 hrs
- Display annual wind measurements
- Be taken at ground level or computer modelled at a given location
- Rarely be taken in the exact location of the proposed heliport



What to do to ensure optimal use of any heliport to be built?

- 1 Don't rely on wind roses for data to ensure operation of the heliport
- 2 Avoid single axis flight paths



Using available wind data to ensure optimal use of any heliport to be built?

- 1 Try to get onsite records over a long period
- 2 Local helicopter pilot knowledge
- 3 Geographical changes may be a guide
- 4 Remember microclimatic conditions will influence aircraft performance



Remember microclimatic conditions will influence aircraft performance

The large value of z in unstable conditions at **157 (degrees)** is the result of flow over the freeway and several 5-6 story buildings within 300 m (1000 ft) of the site.

WIND AND TURBULENCE INFORMATION FOR VERTICAL AND SHORT TAKE-OFF AND LANDING (V/STOL) OPERATIONS IN BUILT-UP URBAN AREAS

- RESULTS OF METEOROLOGICAL SURVEY

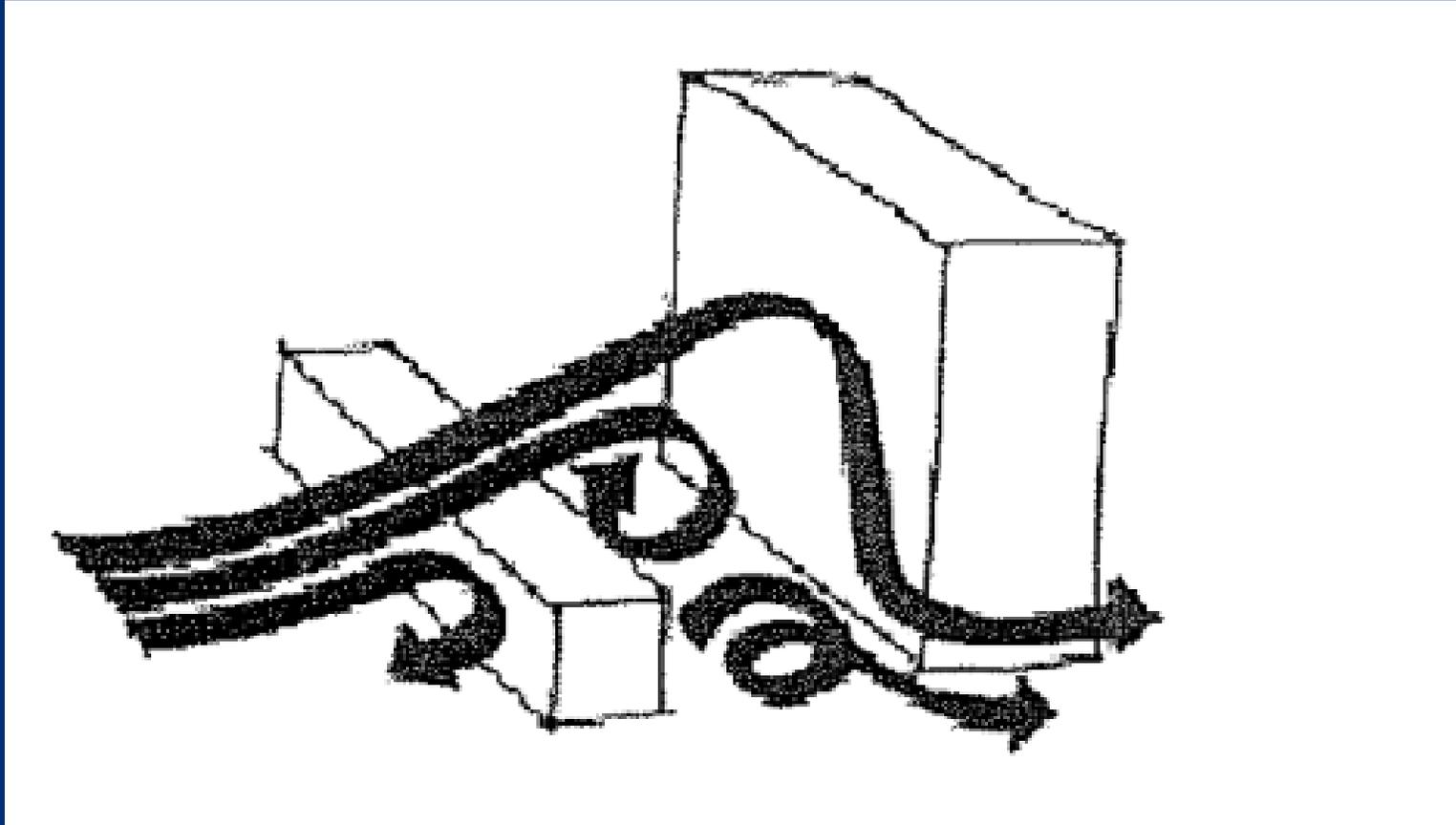
J. V. Ramsdell

FAA — RD — 75-95

Z = turbulence



Minimising turbulence



JESSICA BENNETT

WITH CONTRIBUTIONS BY: B. KEPKA, F WANG AND R. WATT.

BBSC 433 – ARCHITECTURAL AERODYNAMICS

ASA & COASTN 2016



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Minimising turbulence

For example, a VFR heliport with a width of 50 feet (15 metres) and a transitional surface of a 2:1 slope, a building taller than 112.5 feet (34metres) can be no closer than 225 feet (69 metres) from the helipad's edge.

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So what do we need to do?

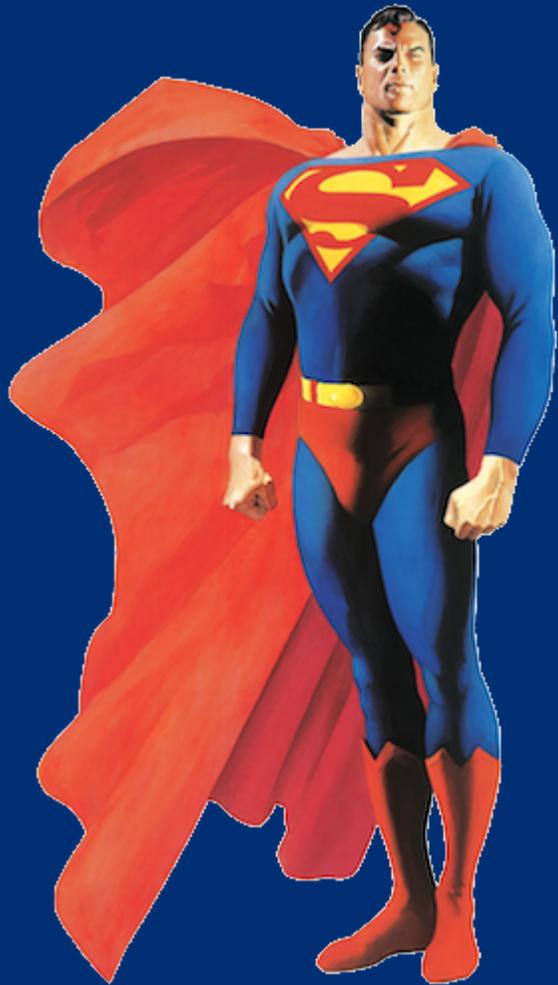
- Gather local area data
- Consult wind experts



So what do we need to do?

- Construct heliport with 360 degree access
- Accept there will be some unusable wind situations (there should be no surprises)





Picture by
Alex Ross



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The End

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