

2005 TAMS/IPWEA CONFERENCE

Tomorrow's Weather A Challenge for Tasmanian Engineers

Mal Riley

Bureau of Meteorology

It's my **FUTURE!**
I want to be
an engineer...
SEX CAN WAIT!

Presented by
The Kansas City, Missouri Health Department
and Missouri Department of Health and Senior Services

LAMAR

AT
INS!

Newport
cigarettes
Taste of sin

358

Produce Dept. 10/15/11

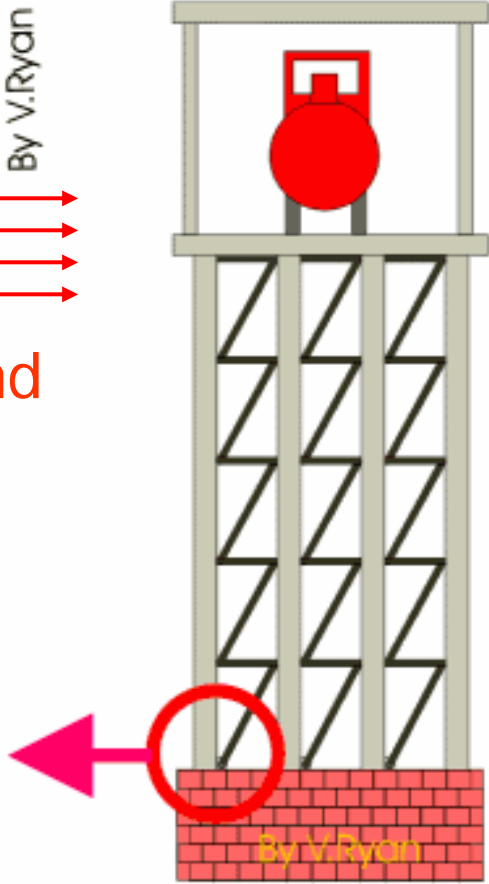
DISASTER!
The Greatest
Camera Scoop
of all time!

CAMERATIME



By V.Ryan

Strong Wind



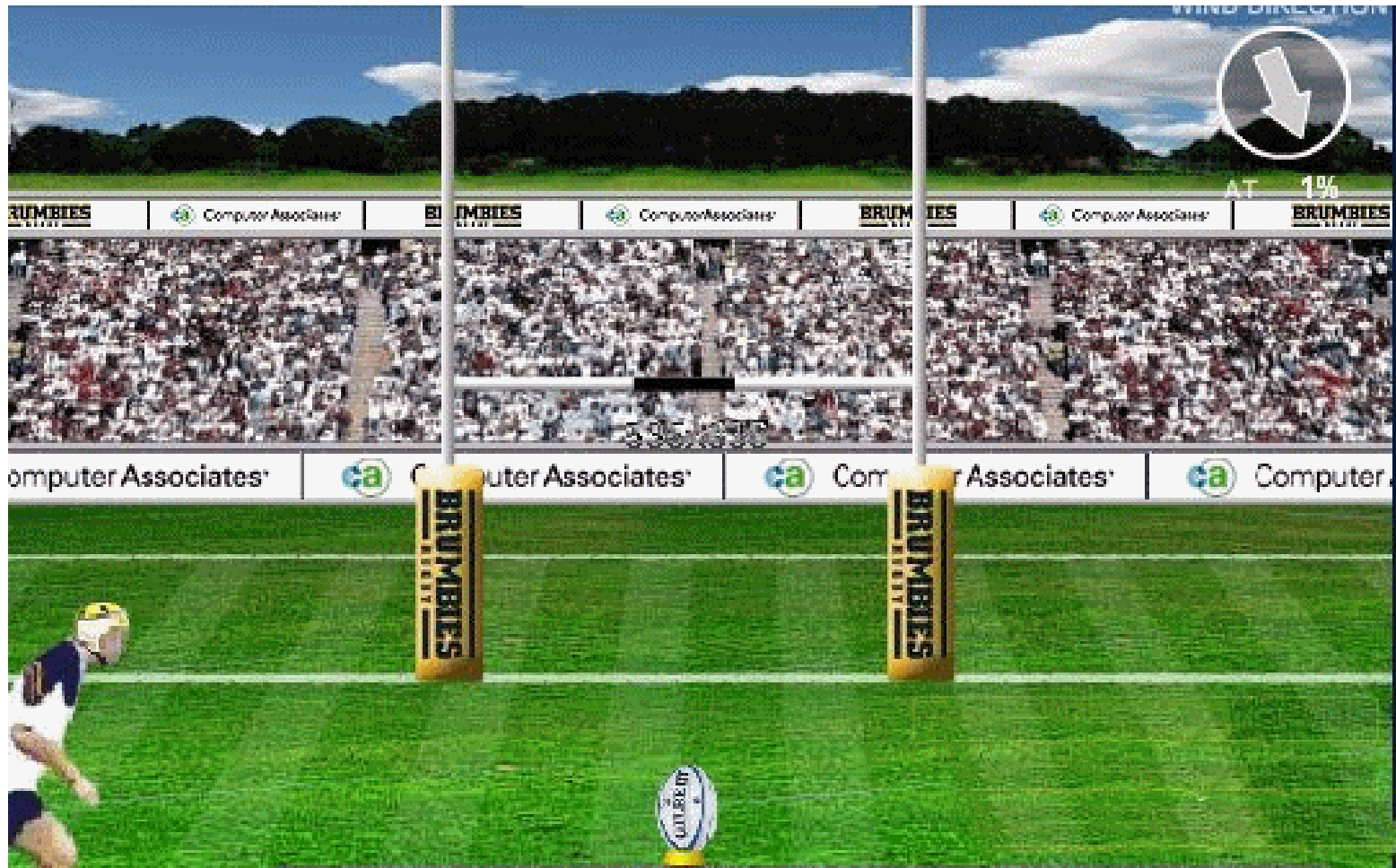
Minimum design loads on structures (known as SAA Loading Code) (AS1170.1-1989)

AS 51002004 Bridge Design, replaces the Australian Bridge Code (HB 77)

National Plumbing and Drainage code - Water supply (AS3500.1-1992)

Loads on buried concrete pipes (AS3725-1989)

Guide to Traffic Engineering Practice, Part 4: Roadway Capacity, AUSTRROADS.



Are the goalposts
moving?

Cramps Bay



Before



Before

End of ramp

Cramps Bay

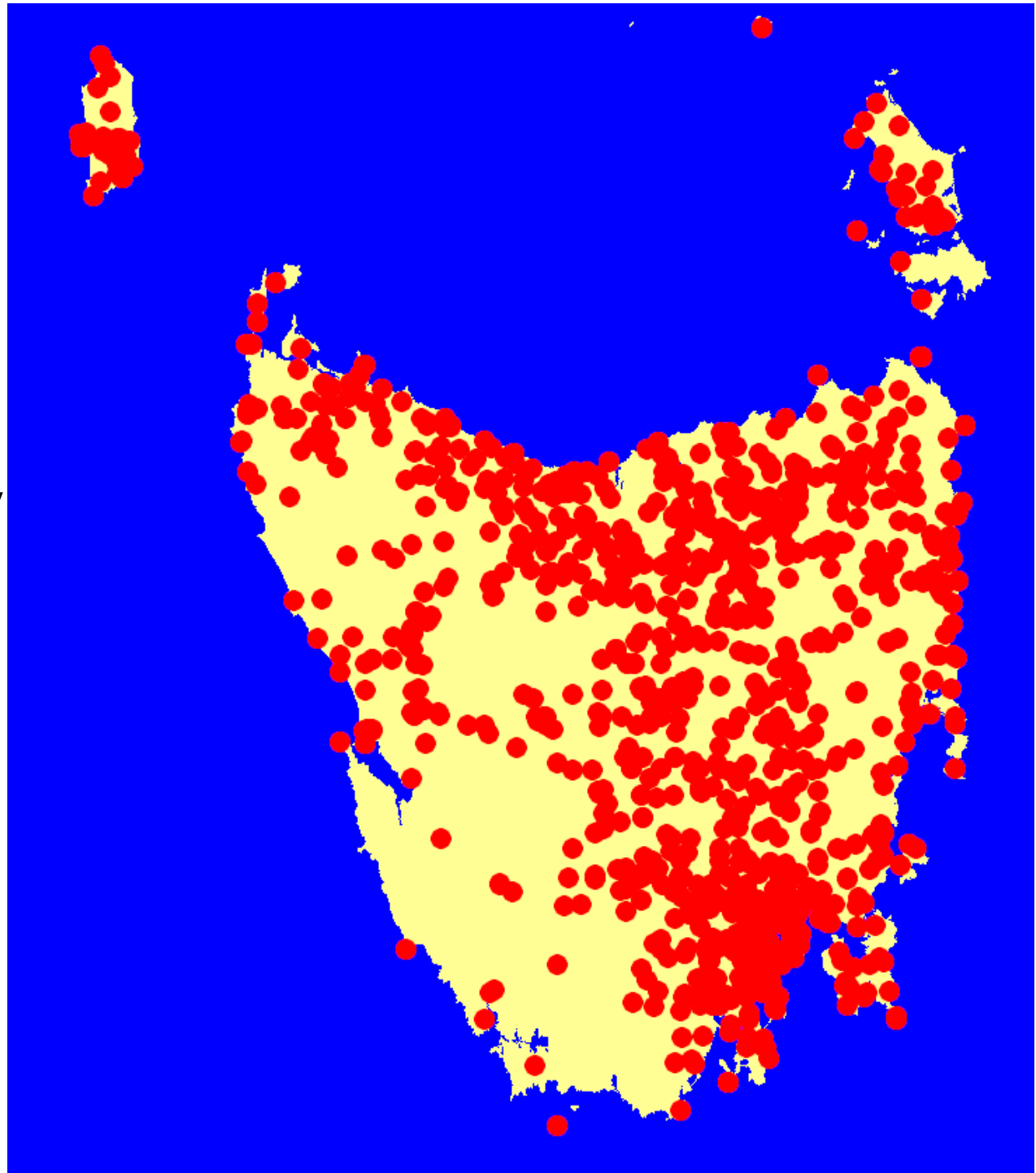


After

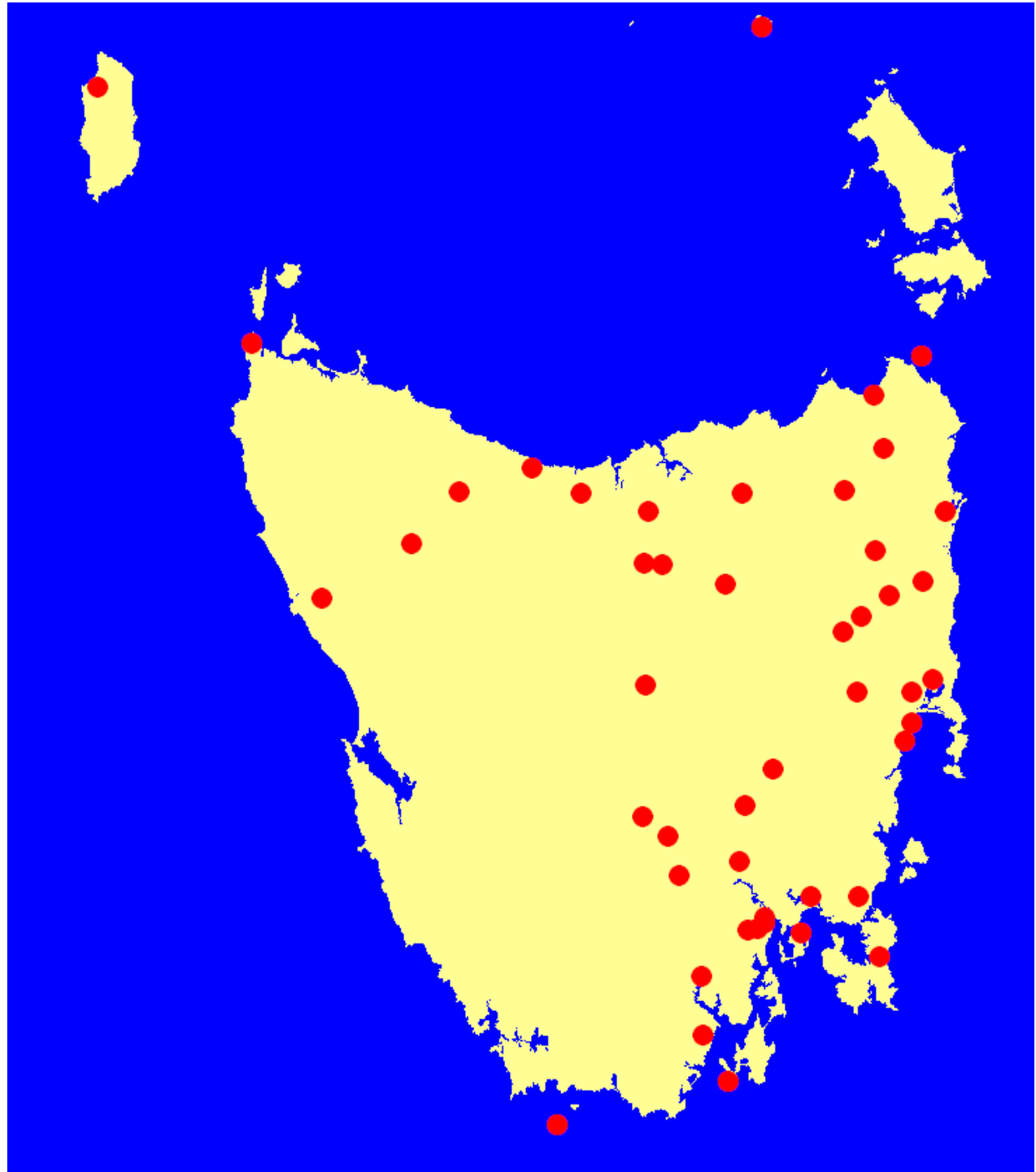


After

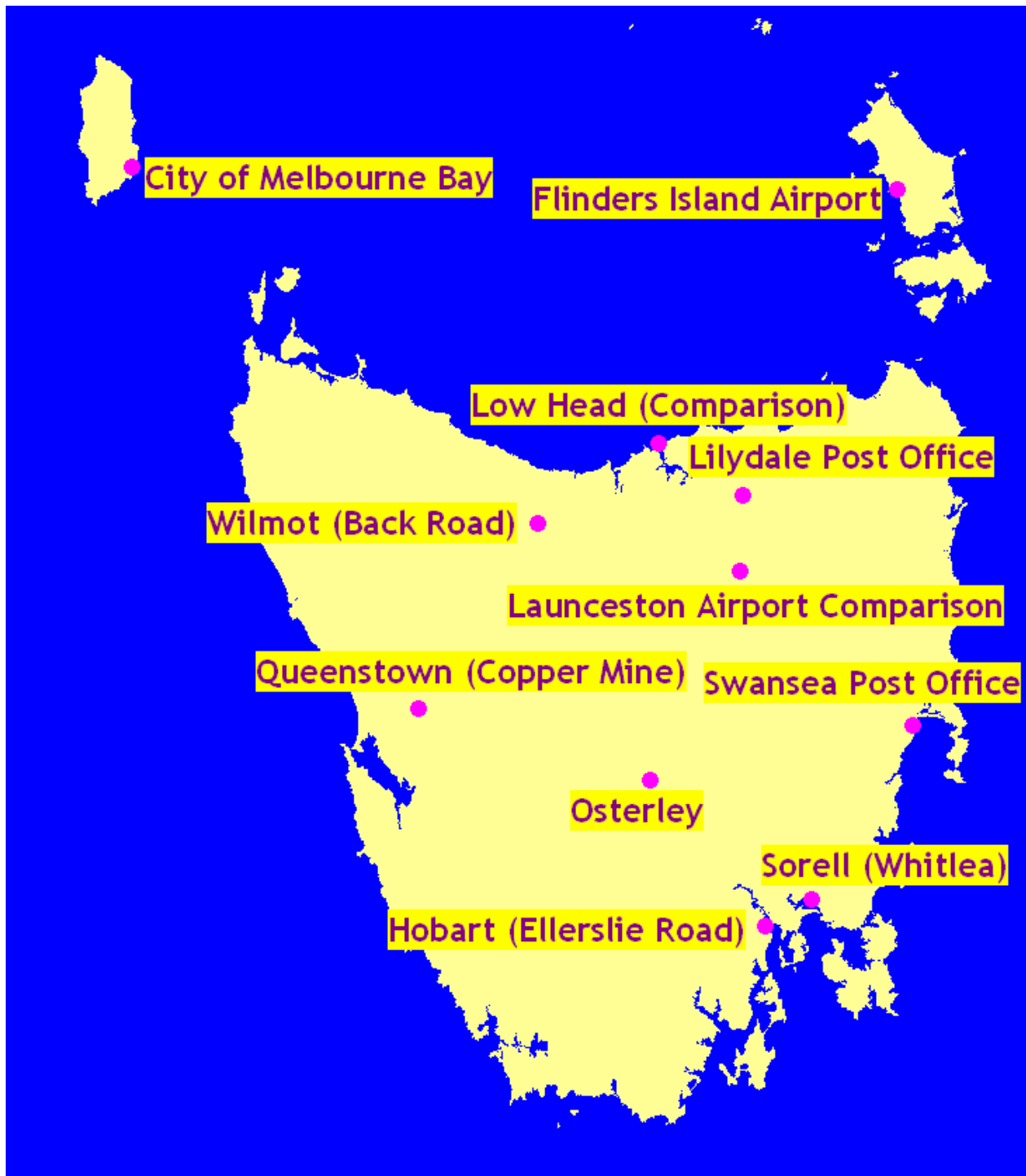
The Bureau of
Meteorology has
collected rainfall
records from over
1000 sites - mostly
thanks to
volunteers



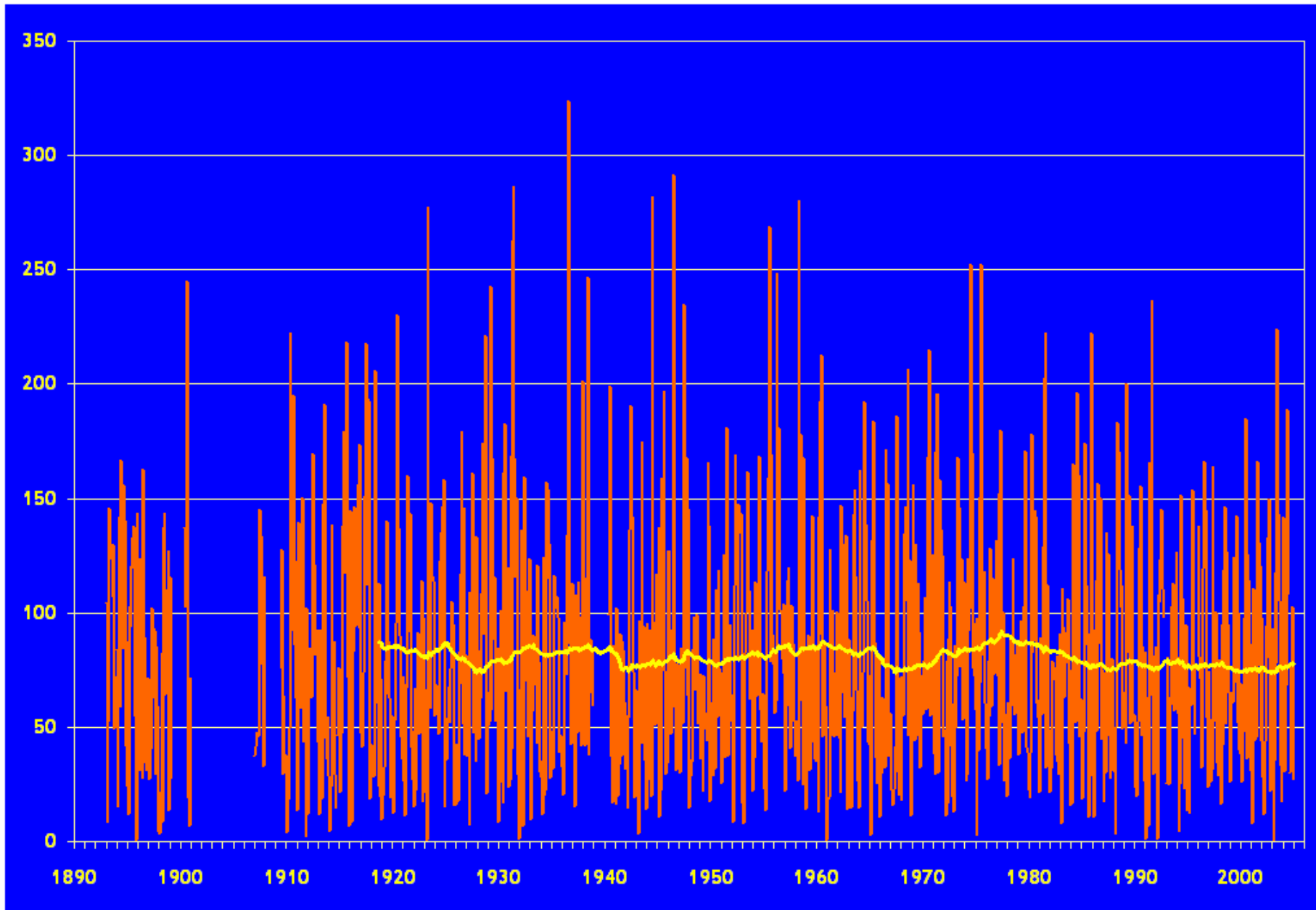
Only 47 sites have more than 100 years of record



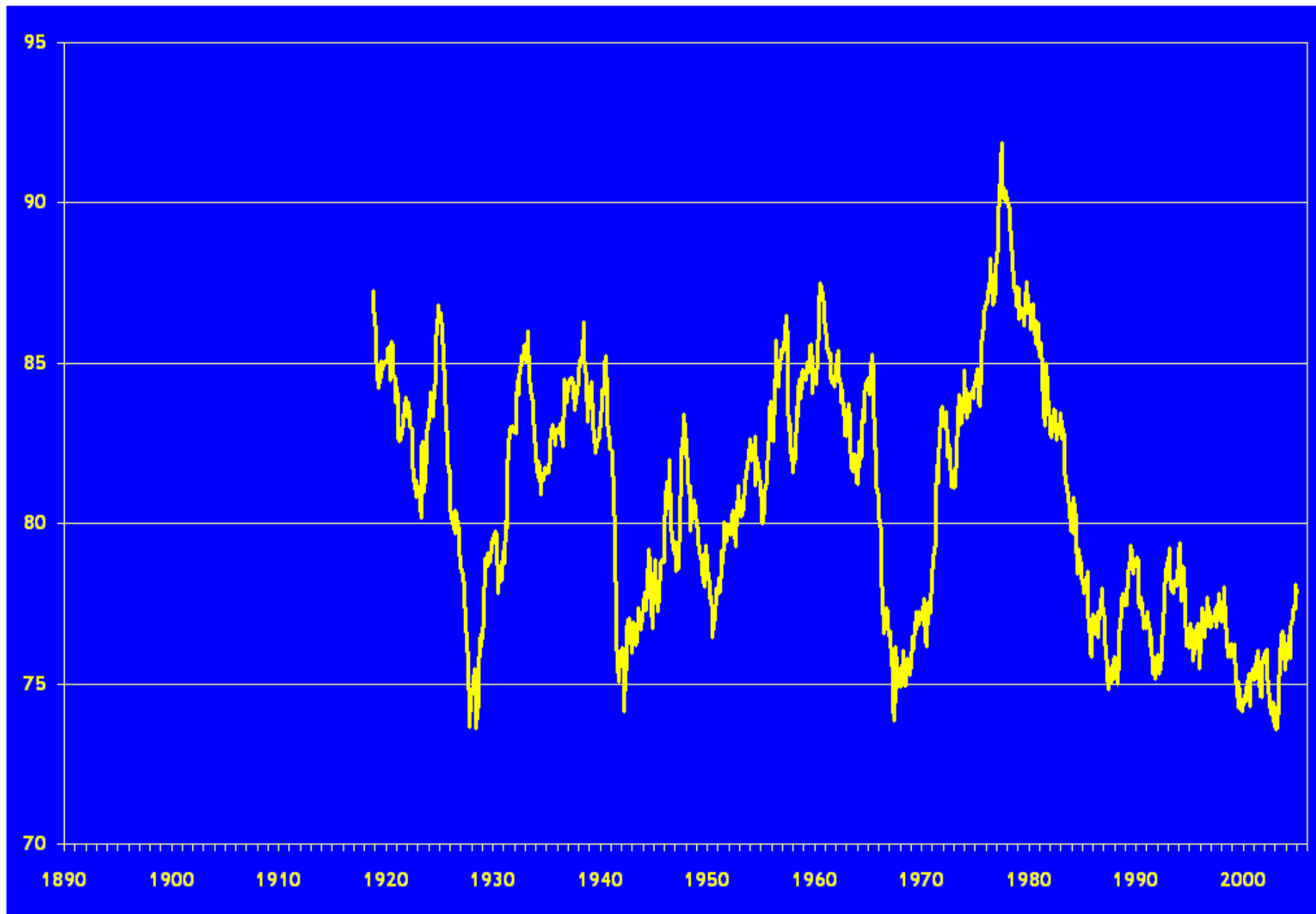
Sites of interest



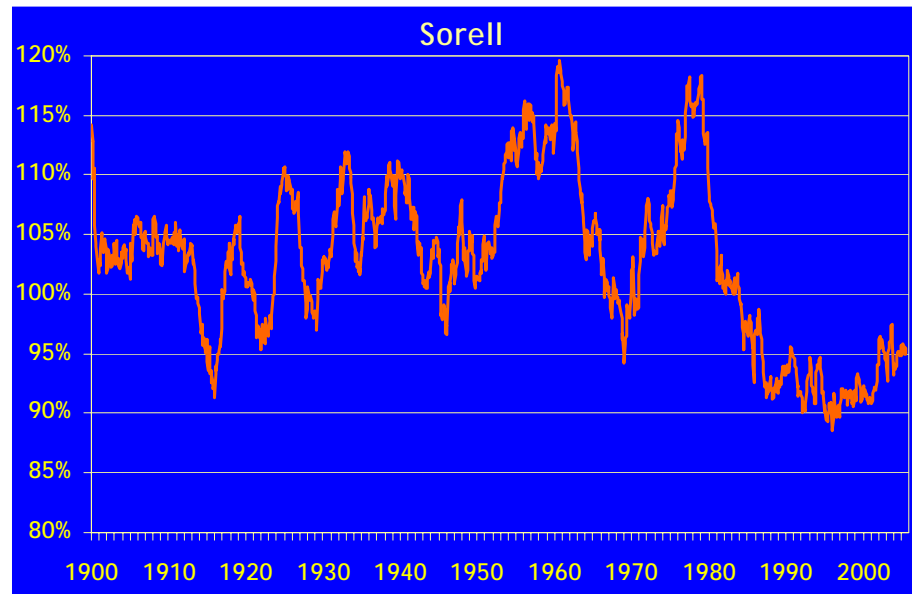
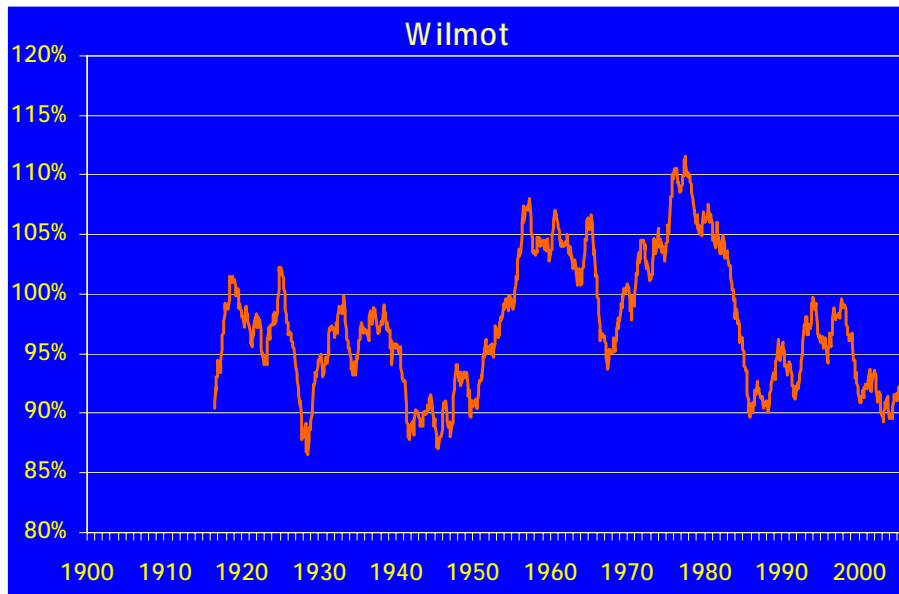
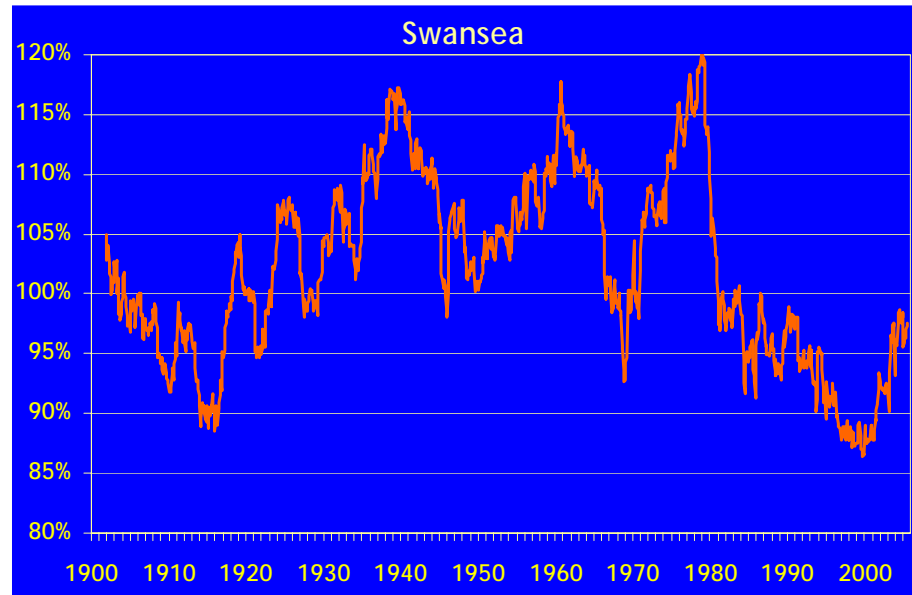
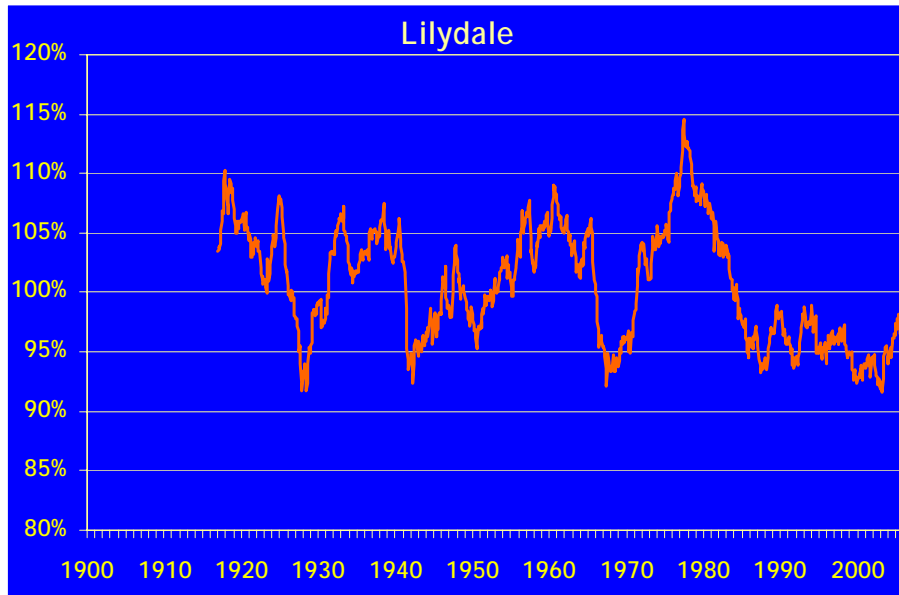
Monthly rain at Lilydale



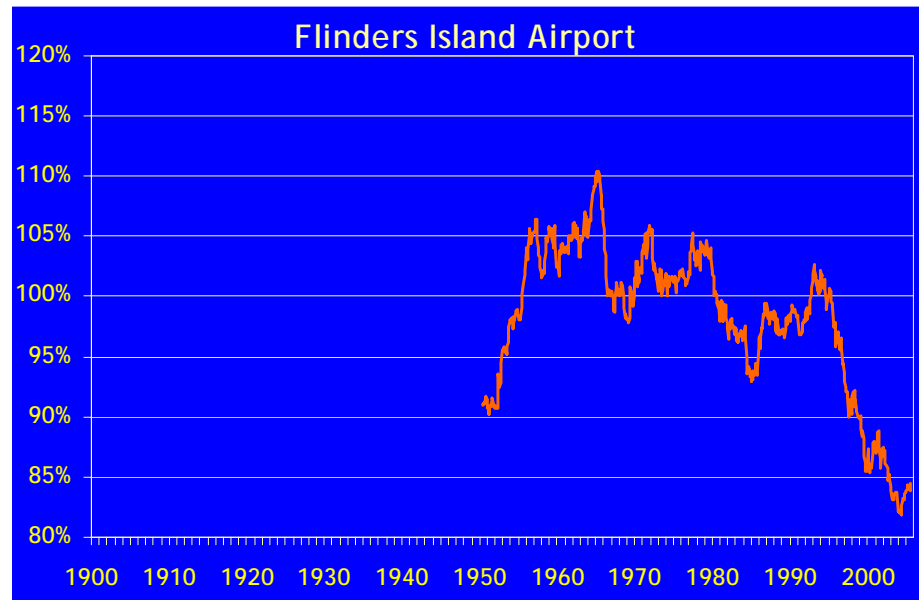
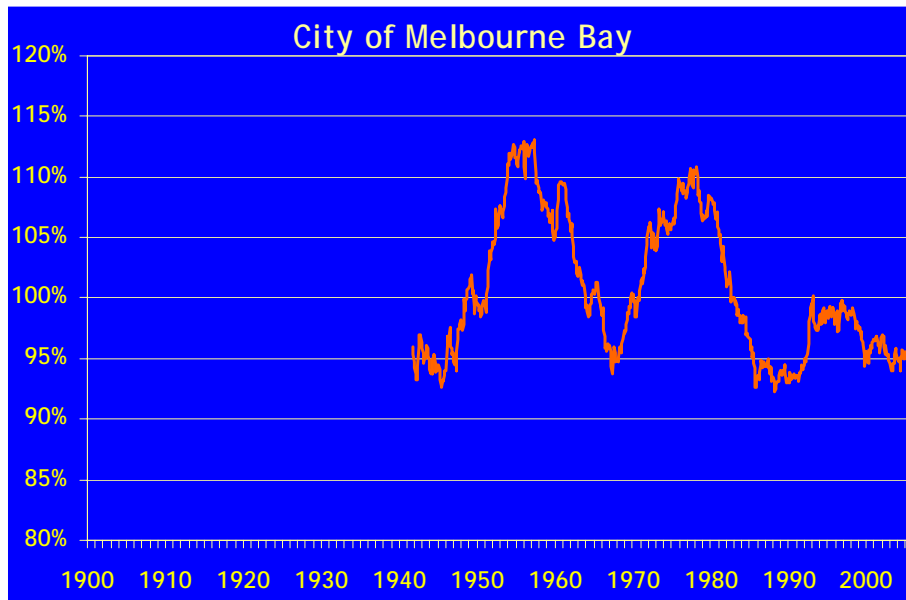
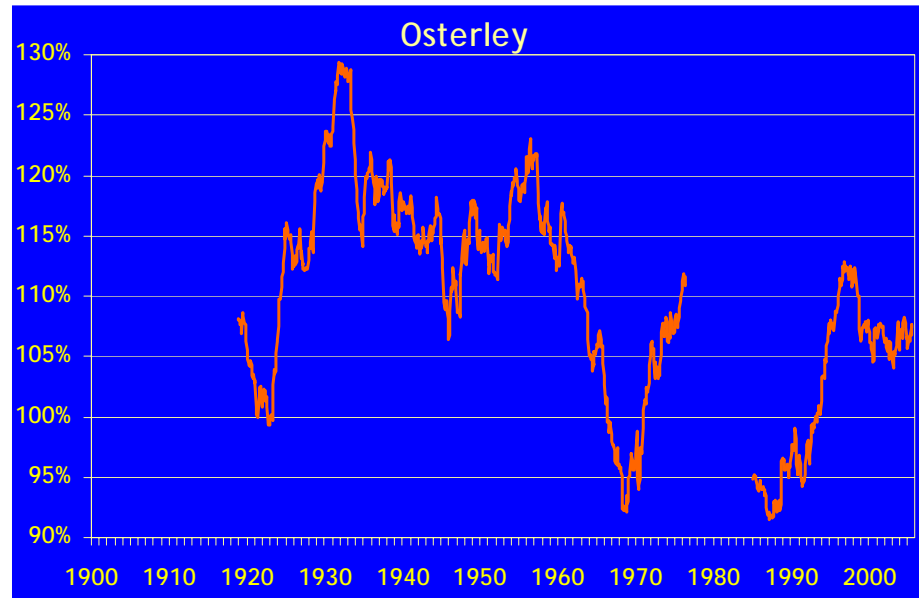
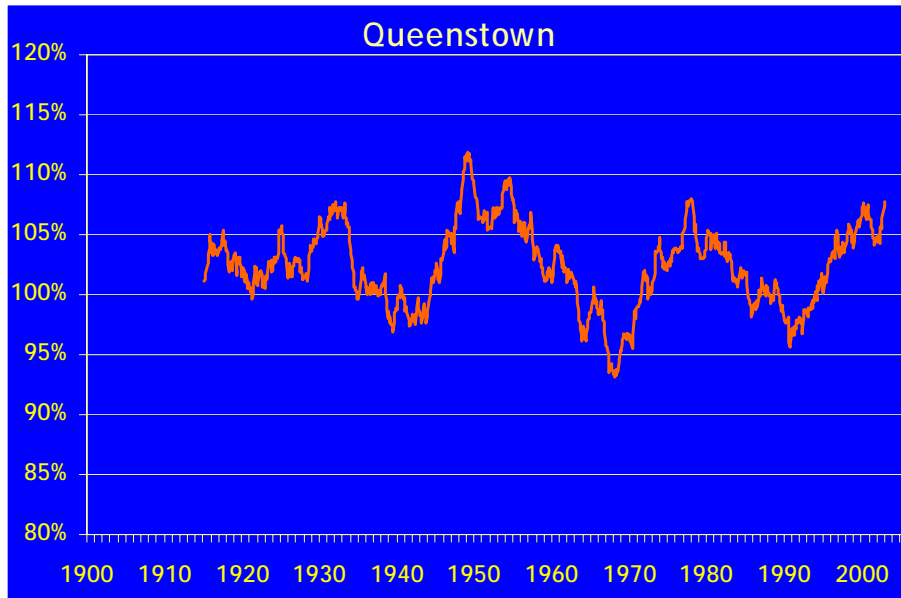
Lilydale rain 120 month moving mean



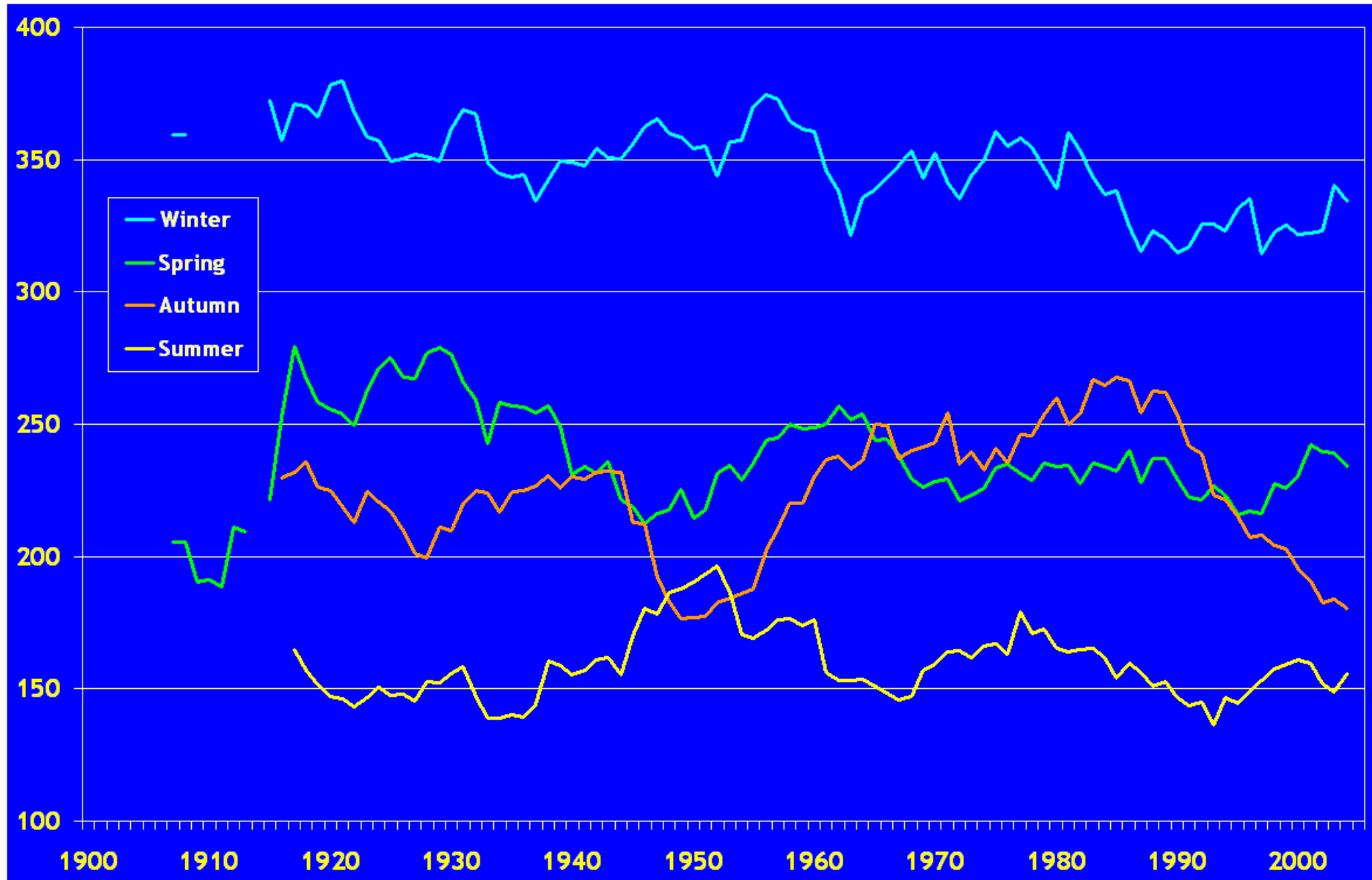
120-month moving mean rainfall Relative to 1961-1990 mean



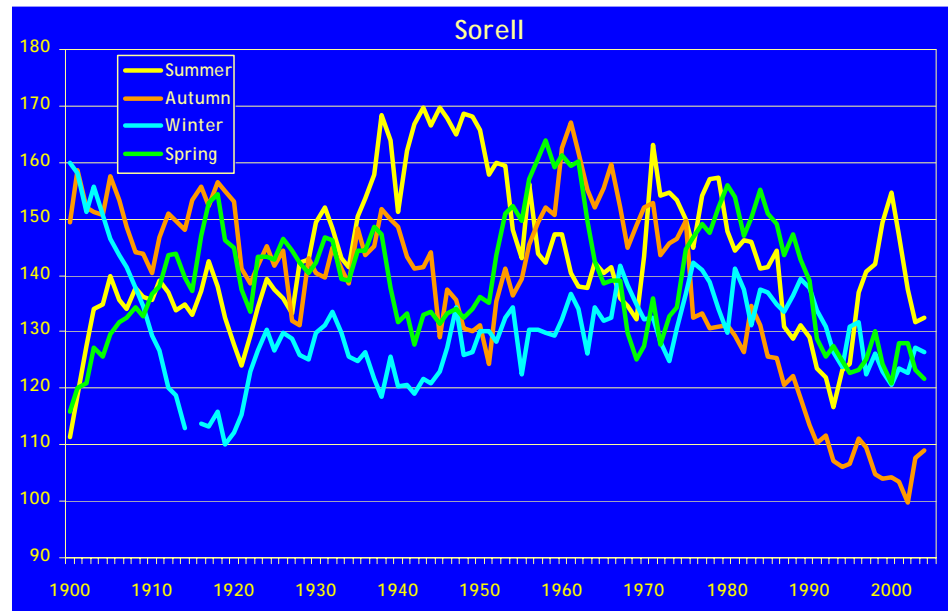
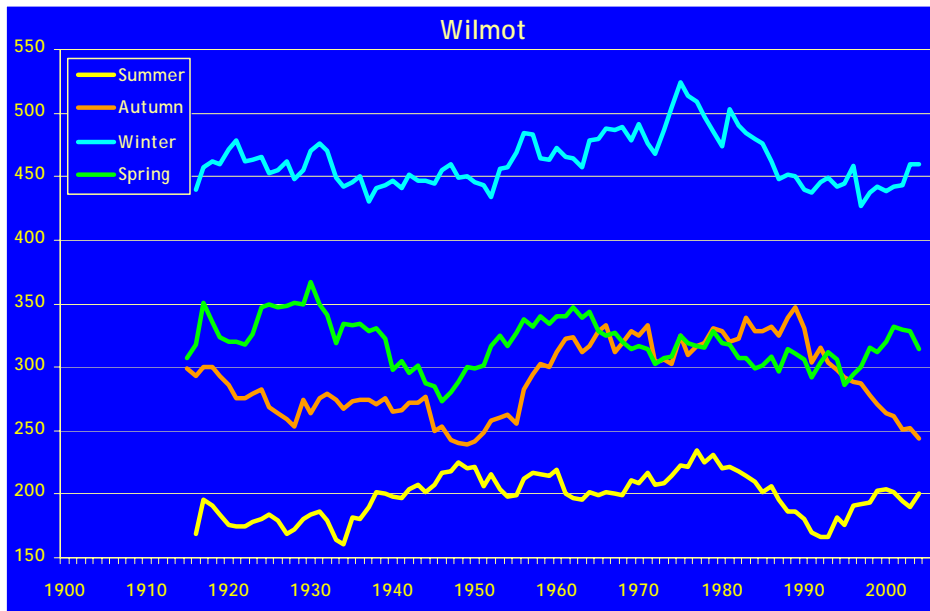
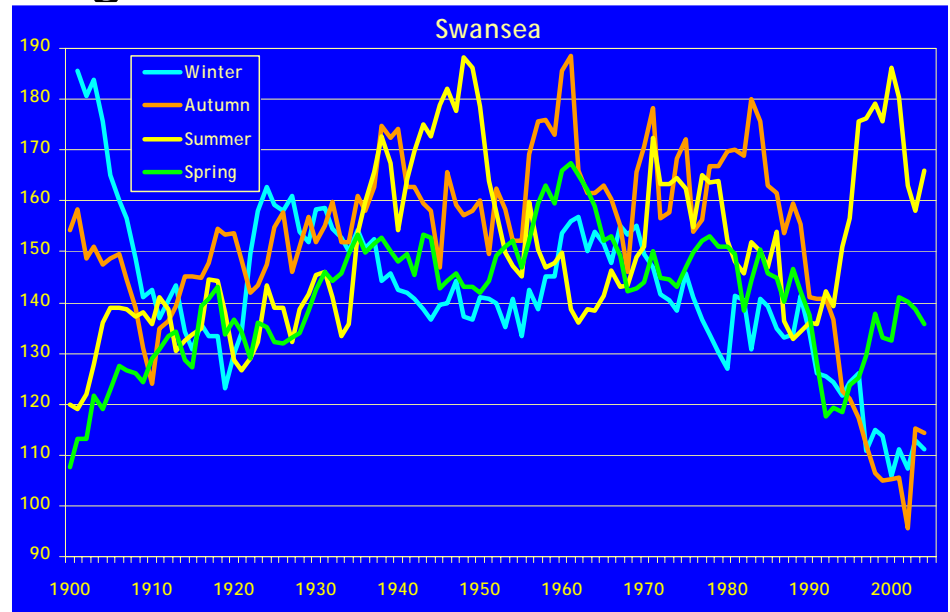
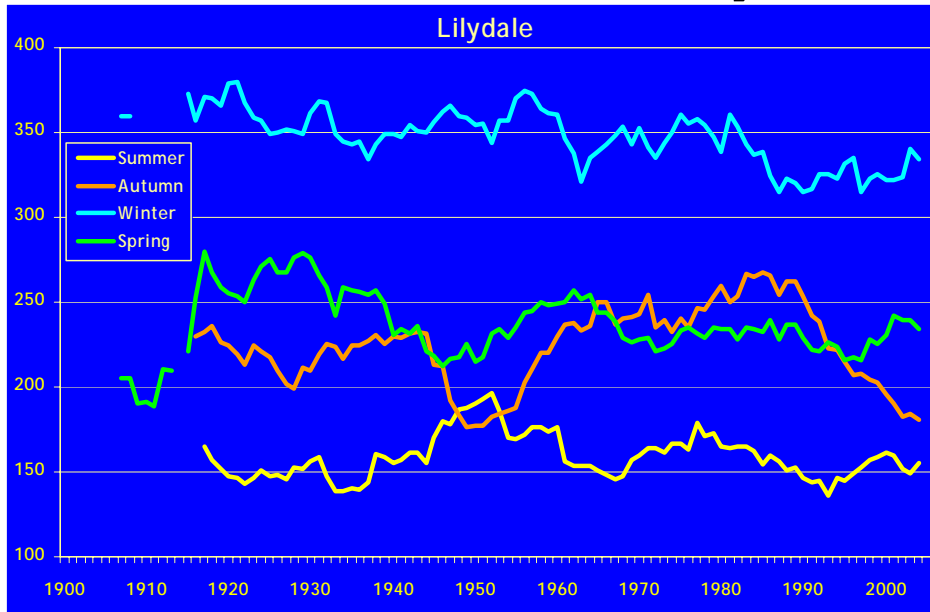
120-month moving mean rainfall Relative to 1961-1990 mean



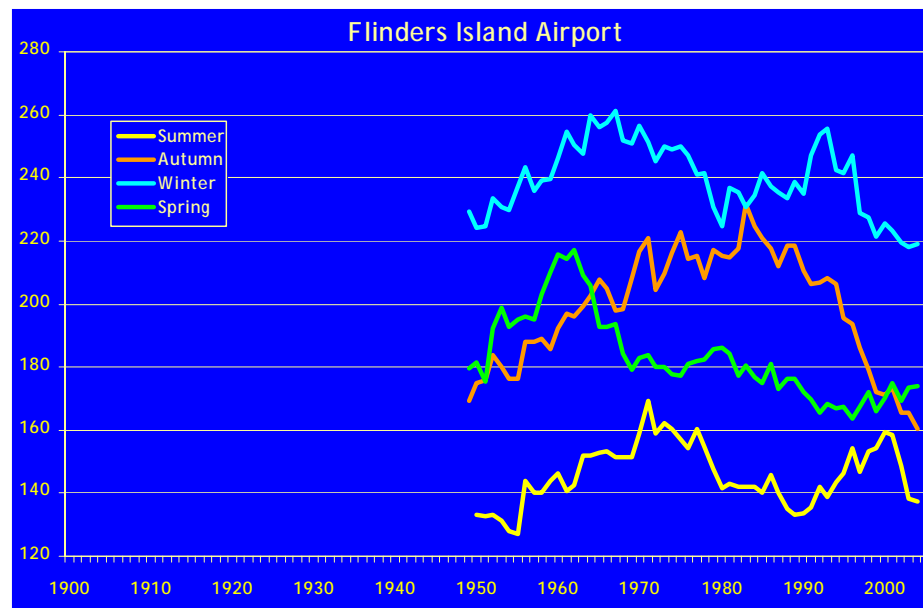
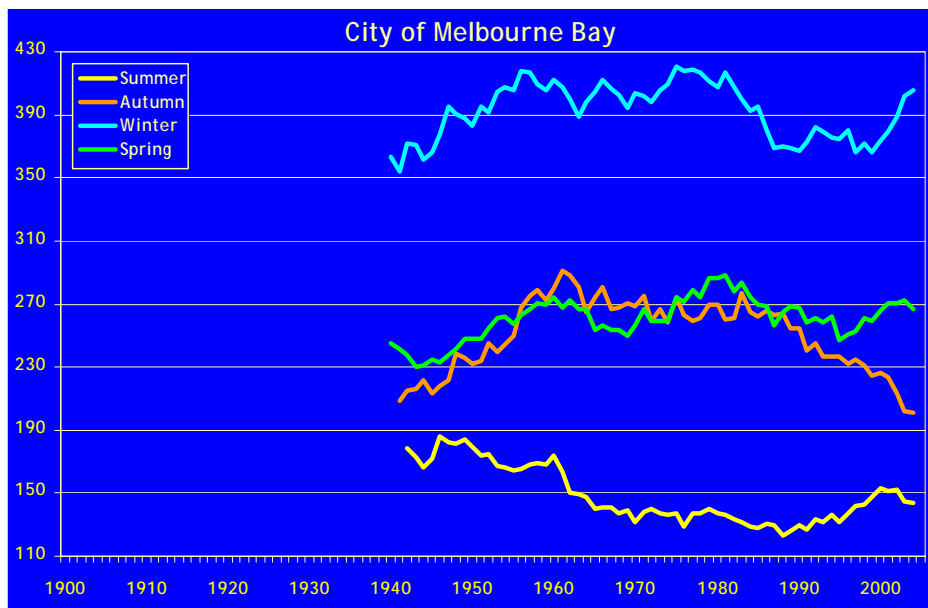
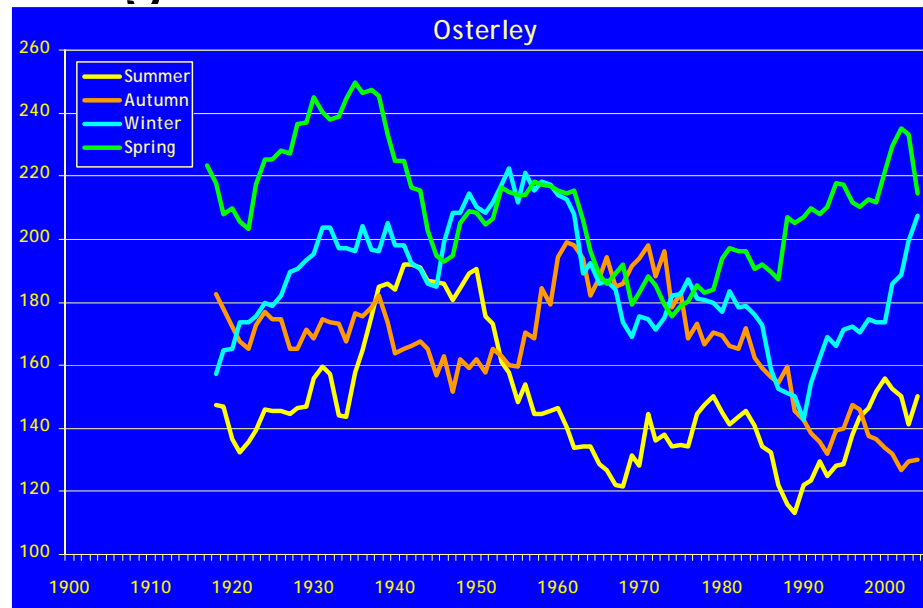
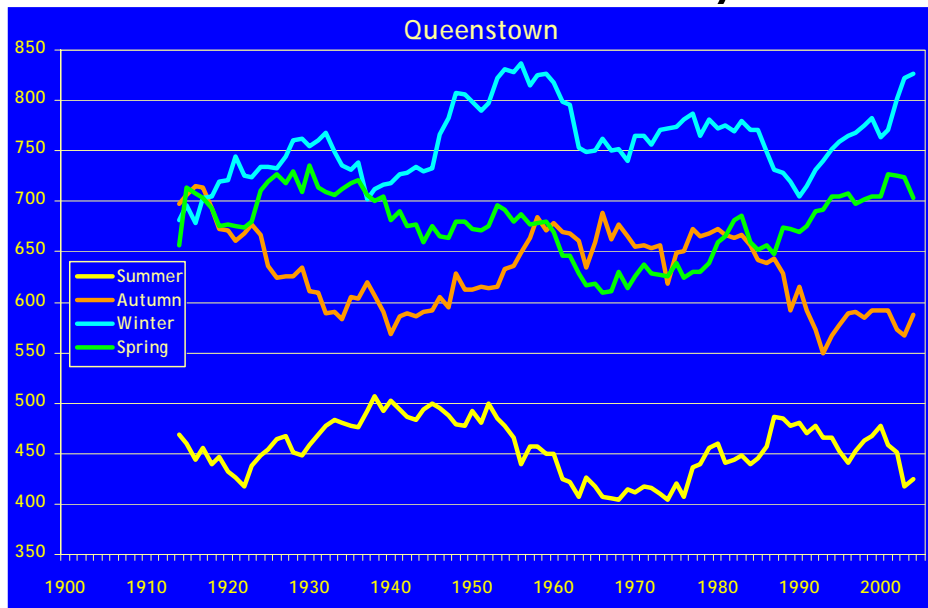
Lilydale seasonal rainfall 10-year moving mean



Seasonal rainfall 10-year moving mean



Seasonal rainfall 10-year moving mean



Predictions for Tasmania

Rainfall totals may not change very much.

Rainfall events fewer but more intense.

The Effects of Climate Change and Variability on IFD Curves

Marked differences were seen in the lower durations and higher return periods.

For major hydraulic structures (such as major highway bridges) where high return periods are used for calculating design floods, the impacts would be most noticed.

The Effects of Climate Change and Variability on Intensity-Duration-Frequency Curves

Cameron James Hanush

Noosa through to Batemans Bay

Rainfall in river headwater (mountains) increased intensity in heavy rain (1 in 20, 1 in 40 years) events 30% - 2030, some areas 70% by 2070.

Little change in lowland areas.

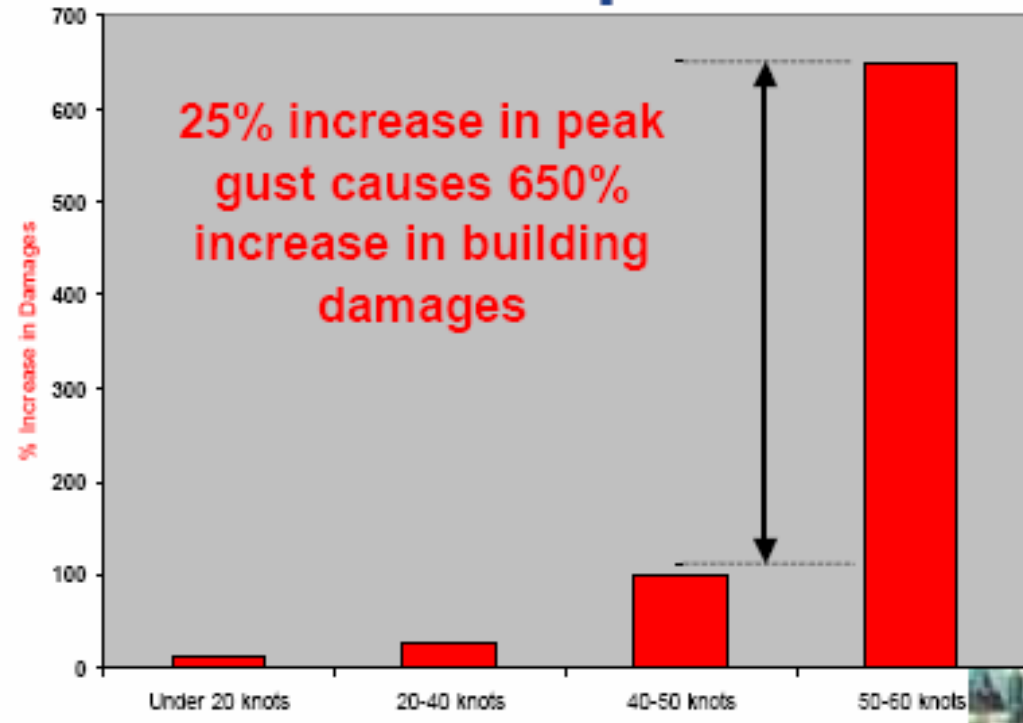
Gold Coast - previous one in 40 year event likely to be one in 15 years.

Same scenario in Tasmania - rivers becoming more "sluggish" flushed out more dramatically.

Fewer but heavier rain events - greater variability in river flow -
greater drainage capacity needed



Small changes in hazard intensity can lead to multiple increases in damages



NSW, NRMA Building Insurance only



Source: Sydney Morning Herald 25th August 2003



Temperature

Temperature up by 1.5°C by 2030.

Temperature up by 4.4°C by 2070.

Evaporation

Less rain events + higher temperatures + more wind

= lower humidities + longer periods without rain

= Greater evaporation

Estimated to be (max) 30% increase on Tasmania's East Coast.

Sea Level Rise

Sea level risen 80mm at Port Arthur in past 160 years.

IPCC predict 0.8 to 8.0 mm a year sea level rise.







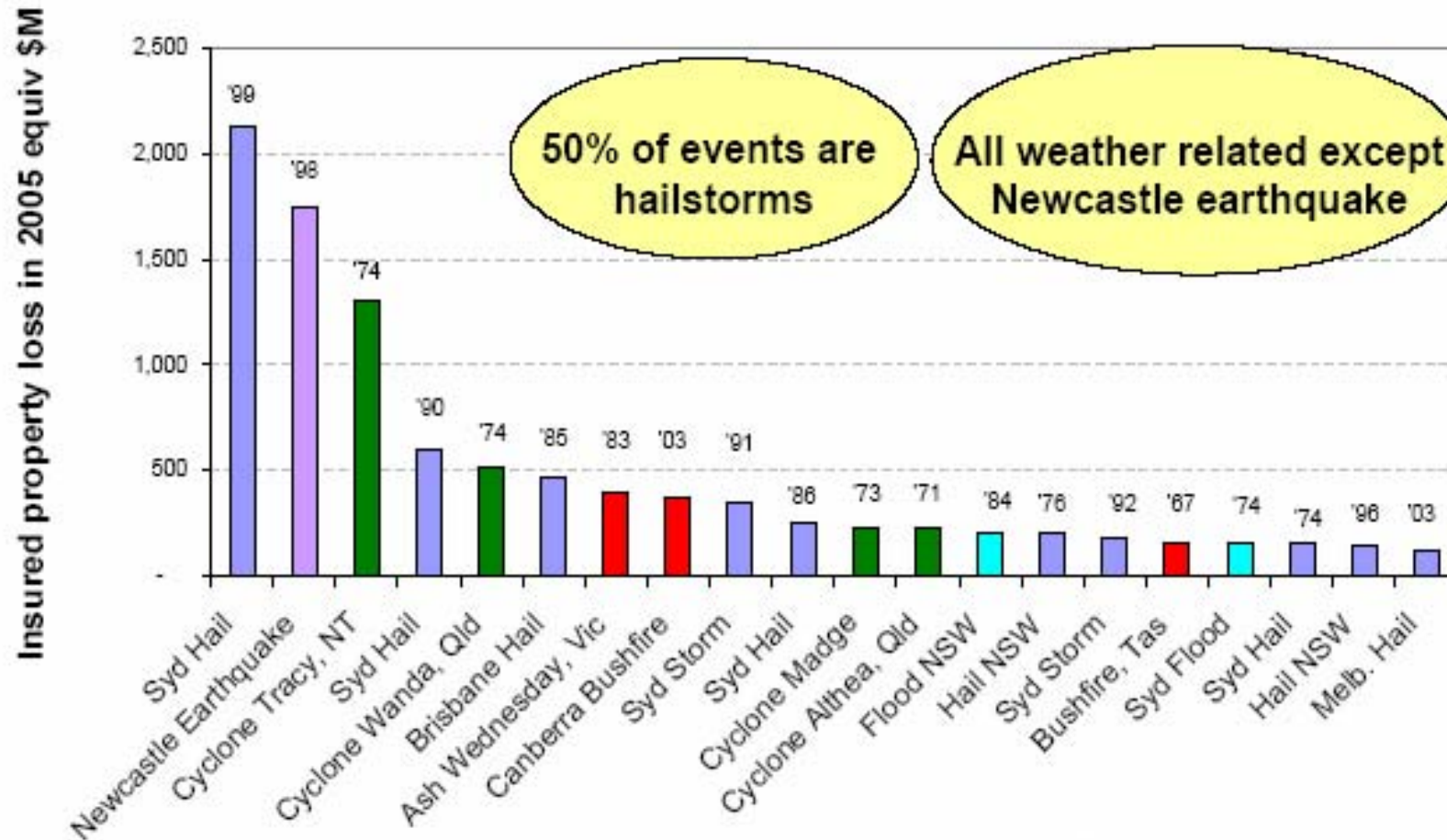
www.stormplanet.com







Australia's Most Costly Insured Natural Disasters



Reconstructed from IDRO





26 days at sea at 22 knots

Fuel consumption 40 tonnes of Heavy Fuel oil and 2.5 tonnes of Marine Diesel Oil per day.

Total fuel burnt 1105 tonnes - over one million litres.



A single cargo ship coming into harbour can release as much pollution as 350,000 current-model-year cars in one hour.

Go on

Do your bit for the planet

