A User

Looking for a support group!

Helen Fairweather

Thank you to the assistance from the US Global Climate Observing System Program at NOAA's National Climatic Data Center
ACRE – an important tool for linking climate change science to decisions
Climate Change

Factors
- Annual averages
- Extremes
- Frosts
- Climate Change
- Greenhouse gases
- Rainfall
- Hail
- Evapotranspiration
- Humidity
- Synoptic patterns
- Statistical downscaling

Cumulative effects
- Storm tides
- Sea level rise
- Wind
- Floods
- Risk
- Management

Projections Framework
TC geological evidence of storm erosion
Gold Coast

Slide courtesy of Bureau of Meteorology and enhanced by Jeff Callaghan
Toowong Total: 249 mm
Toowong Total:
1211 mm
Toowong Total: 2663 mm
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/2/1893</td>
<td>Lower part of Brisbane submerged, and water still on the rise; the &quot;Elamang&quot; and the gunboat &quot;Paluma&quot; were carried by the flood into the Botanical Gardens, and the &quot;Natone&quot; on to the Eagle Farm flats.</td>
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<tr>
<td>4/2/1893</td>
<td>Disastrous floods in the Brisbane River; 8 feet of water in Edward Street at the Courier building. Numbers of houses at Ipswich and Brisbane washed down the rivers. <strong>Seven men drowned through the flooding</strong> of the Eclipse Colliery at North Ipswich. Telegraphic and railway communication in the north and west interrupted.</td>
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<tr>
<td>5/2/1893</td>
<td>The Indooroopilly railway bridge washed away by the flood. Heaviest floods known in Brisbane and suburbs.</td>
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<tr>
<td>6/2/1893</td>
<td>The lower part of South Brisbane completely submerged. The flood rose 23'9&quot; above the mean spring tides and 10 feet above flood mark of 1890; north end of the Victoria Bridge destroyed.</td>
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<tr>
<td>7/2/1893</td>
<td>Flood waters subsiding. Sydney mail train flood bound at Goodna, unable to either proceed or return.</td>
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<tr>
<td>13/2/1893</td>
<td>Second flood for the year in the Brisbane River.</td>
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<tr>
<td>16/2/1893</td>
<td>More rain in the south east districts; another rise in the Brisbane; further floods predicted.</td>
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<tr>
<td>17/2/1893</td>
<td>A third flood occurred in the Brisbane River for the year.</td>
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<tr>
<td>18/2/1893</td>
<td>The &quot;Elamang&quot; floated off from the Botanical Gardens. Business at a standstill in Brisbane. Ipswich and other towns. <strong>Several deaths by drowning reported.</strong></td>
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<tr>
<td>19/2/1893</td>
<td>The gunboat &quot;Paluma&quot; safely floated off the Gardens, and the &quot;Natone&quot; off Eagle Farm flats. Another span of the Indooroopilly railway bridge carried away. The third flood reached its maximum height at 12 noon, viz. 10 inches below the first flood.</td>
</tr>
</tbody>
</table>
10-12 June 1893: Flood in Brisbane River
Taking a Longer Term View
Accumulated SOI index
La Nina periods rising curve – El Nino falling curve

Jan 1841 506mm
Dec 1859 840mm
Mar 1870 865mm
Feb 1875 691mm
Jan 1974 904mm
Jun 1967 701mm
Feb 1954 543mm
Jan 1927 570m
Feb 1893 1026mm
Mar 1890 543mm
Jan 1887 593mm
Jan 1841 506mm
Dec 1859 840mm
Mar 1870 865mm
Feb 1875 691mm
Jan 1974 904mm
Jun 1967 701mm
Feb 1954 543mm
Jan 1927 570m
Feb 1893 1026mm
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Jan 1841 506mm
Dec 1859 840mm
Mar 1870 865mm
Feb 1875 691mm
Jan 1974 904mm
Jun 1967 701mm
Feb 1954 543mm
Jan 1927 570m
Jan 1887 593mm
Apr 89 502mm
Jun 1976
May 96 617mm
Before SOI data

Year
Cumulative SOI
La Nina periods rising curve – El Nino falling curve

Before SOI data

Slide courtesy of Jeff Callaghan
500hPa (6km elevation) wind patterns
1949 to 1976 1977 to 1999
Summary

- Need to visualise the data to gauge its usefulness.
- Provides a tool for constructing a climate change projections framework and focussing on the projections that are important.
- Vote 1 for vorticity.
- Still much more that can be done with it.
- High overhead in time to access and analyse the data – but someone has to do it!
Applying Climate Change Projections to policy development

- Global Temperature Change
  - % Change in Design Rainfall (1% AEP)
    - Input into Hydrological models calibrated on current climate
      - Input into revised hydrographs into hydraulic models
        - Assess climate change impacts and consequences
Toowong Total: 199 mm
Toowong Total: 67 mm
Toowong Total:
70 mm
Toowong Total: 300 mm