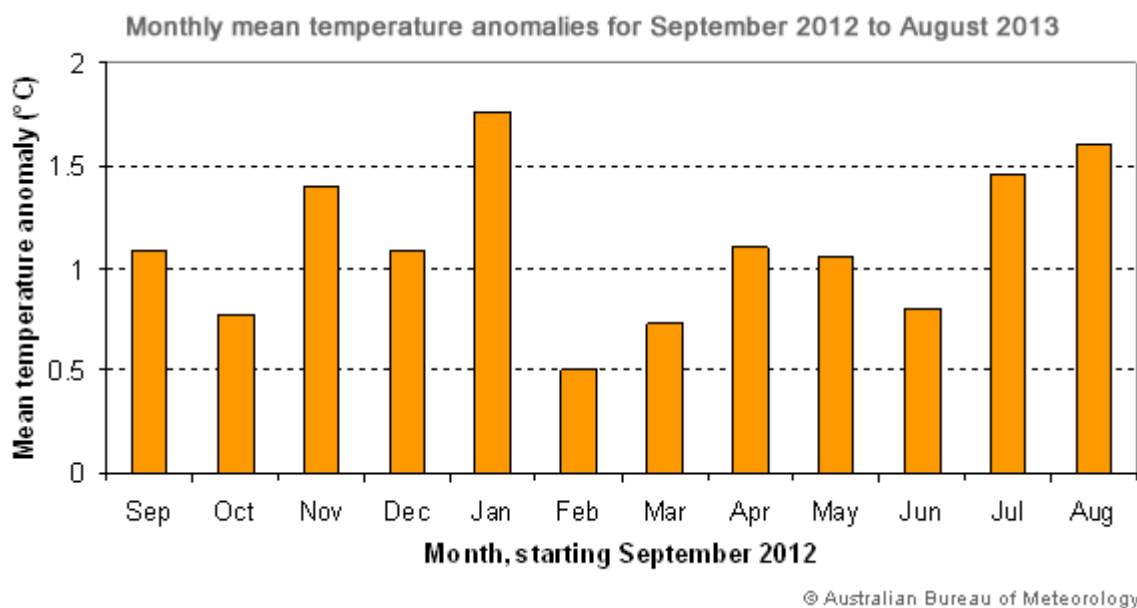
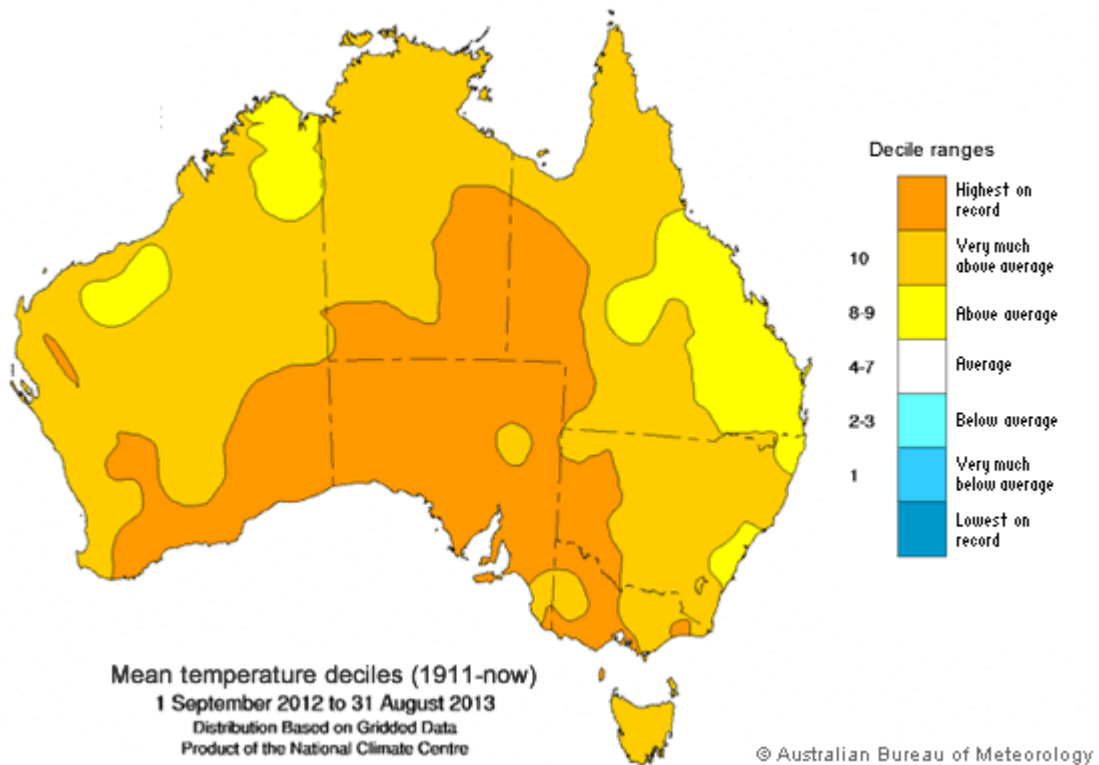


The area we live (Sydney, Central Coast, NSW) will experience the typical effects of changing climate: increased events of record high temperatures, changes in rainfall patterns, i.e. rainfall events will be more sporadic and more intense. Historically, Australian east coast has been strongly influenced by ENSO, with dry/hot El Niño and wet/cool La Niña. For example, strong El Niño drought lasted most of previous decade until 2010, followed by record floods in 2011/12. Current year (until Aug2013), even though ENSO-neutral, is the warmest on record, more than 1degC warmer than 1961–1990 average, according to the pictures below taken (BOM data, 2013).



Also, Sydney has clocked its record high temperature of almost 46degC. So, the climate change is very real in our neighbourhood.

In NSW, apart from increased risk of bushfires from the extreme heat events, we can expect decrease in annual rainfall and runoff in the inland catchments (Climate change impacts in NSW, 2013). The latter will have an impact on Sydney water

security, because its main water reservoir (Warragamba Lake) catches precipitations in Central Tablelands, 70-140km inland. Combined with increased evaporation, and potentially more prolonged El Niño events, Warragamba Lake can likely run dry. The state government recognised the water security problem. Unfortunately, they decided to build desalination plant which is bad outcome: water desalination is a classic example of mal-adaptation, i.e. the action that disguises as a temporary relieve, but in a long term renders the problem worse. Right now, Warragamba Lake is full after recent floods and the desalination plant is sitting useless. However in the future, the plant will be consuming enormous amounts of energy, while the coastal water runoffs (in Sydney itself), which may increase according to (Climate change impacts in NSW, 2013) will be wasted.

Fortunately, due to water restrictions and extensive water saving campaign by Sydney Water, people became more water savvy. More water tanks are installed around. Most councils, including my own, require water tank to be part of any new housing development. Myself, I have installed several tanks totalling 15tons on my property, knowing that standard 3-5ton tank size in Sydney will not be enough in the event of prolonged El Niño. I use tank water for my garden, toilet, washing, shower, etc. Using treated Sydney water for these activities is a huge waste. I hope, with continued council regulations and awareness campaign, all people in Sydney will install tanks and stop wasting water, then the desalination plant will be idling forever until its inevitable decommission.

Another important adaptation/mitigation potential in my neighbourhood is rooftop electricity production, either solar thermal or PV. I recently learned that currently, every fifth house in Australia has installed rooftop solar panels. No surprises here, as the PV technology became so cheap that anyone can afford it. At current prices, PV would already out-compete coal-fired power (still the main source of energy in Australia) in not for the storage problem. Because of that problem, it is important to change our electricity usage habits: use most of it on sunny days when your panels are at peak working: forget about "cheap" off-peak overnight tariff. My habit have changed accordingly: I run washer, dishwasher, etc. at mid-day from my panels, rather than overnight as I used to.

For bush regenerators and gardeners, the important aspect of climate change mitigation is maintenance of healthy, fertile soil. Thick layer of humus can bind lot of carbon. In fact, typical soils contain more carbon in form of humus (about 130 tons C per ha) than the atmosphere does in form of CO<sub>2</sub>. The actual humus content in soils varies widely. Unfortunately, recent western agricultural practices (use of chemical fertilisers, fertilisers themselves coming from fossils) depleted lots of world soils resulting of humus breakdown and escape to the atmosphere as CO<sub>2</sub>. This process is reversible though. If we could somehow massively “enrich” the world soils in humus and prevent the decomposition processes so that humus stayed there, we could “drawdown and store” most of CO<sub>2</sub> that causes dangerous global warming. That’s very safe “geo-engineering without side-effects” process. Bush regeneration is the important part of it: restoring the original ecological systems helps rebuilding healthy soil full of humus. We should be striving to achieve that. And our practices should avoid erosion, because erosion is the biggest enemy of humus formation. Plan your regeneration so that weedy species are gradually replaced by the natives, making sure that soil rebuilds in the process from leaf litter and other mulch.

(BOM data, 2013) <http://www.bom.gov.au/climate/change/>

(Climate change impacts in NSW, 2013) <http://www.climatechange.gov.au/climate-change/climate-science/climate-change-impacts/new-south-wales>