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Soil Salinity: Causes and Rehabilitation

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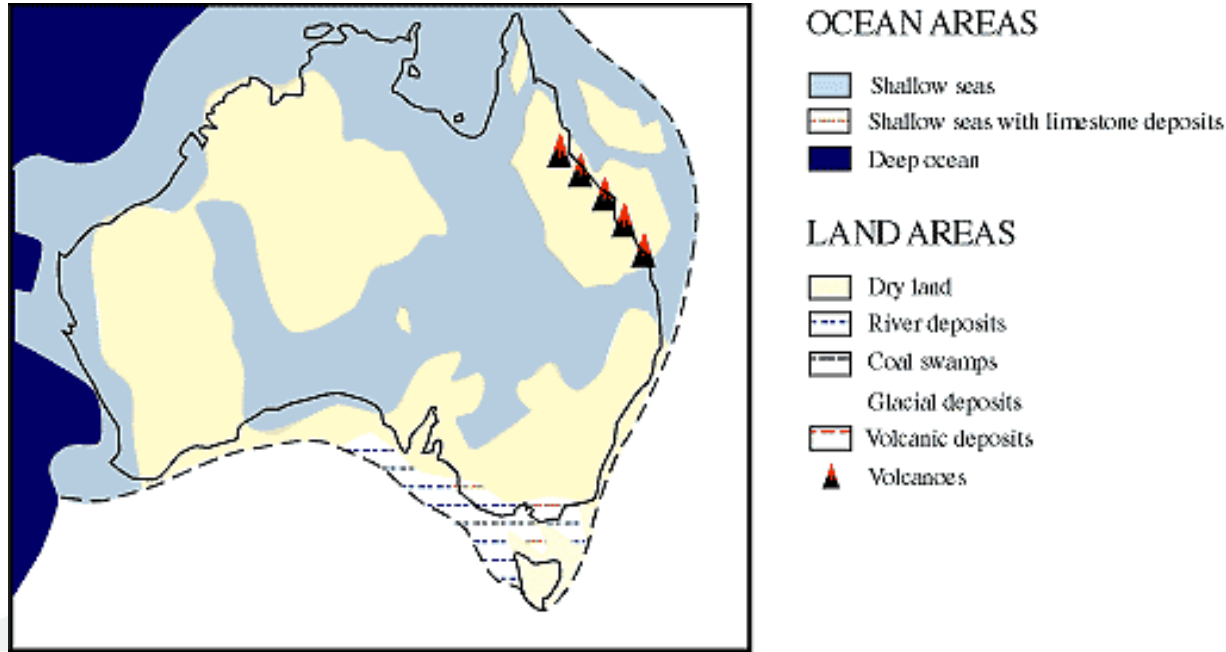


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Where does the salt come from?

- Fossil (connate) salt was deposited when sedimentary rocks formed in ancient seas



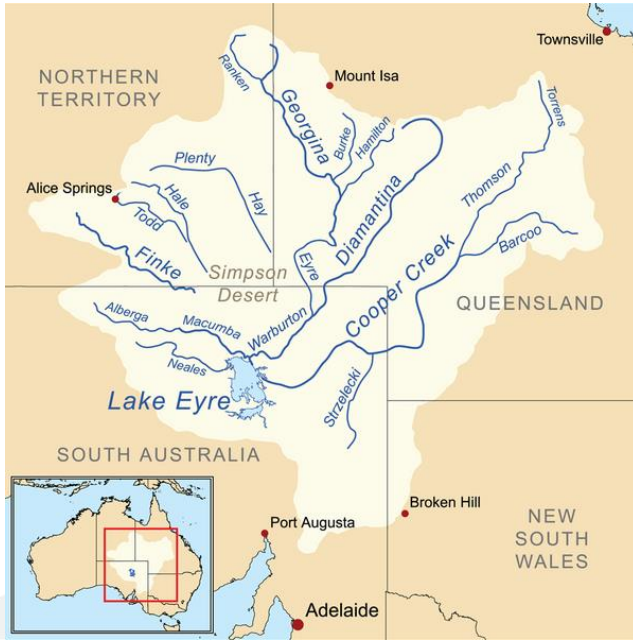
Where does the salt come from?

- Aeolian salt is blown inland from sea spray or salt-bearing sedimentary rock deposits



Where does the salt come from?

- Weathering of rocks releases salts
- Australia's topography concentrates salt inland

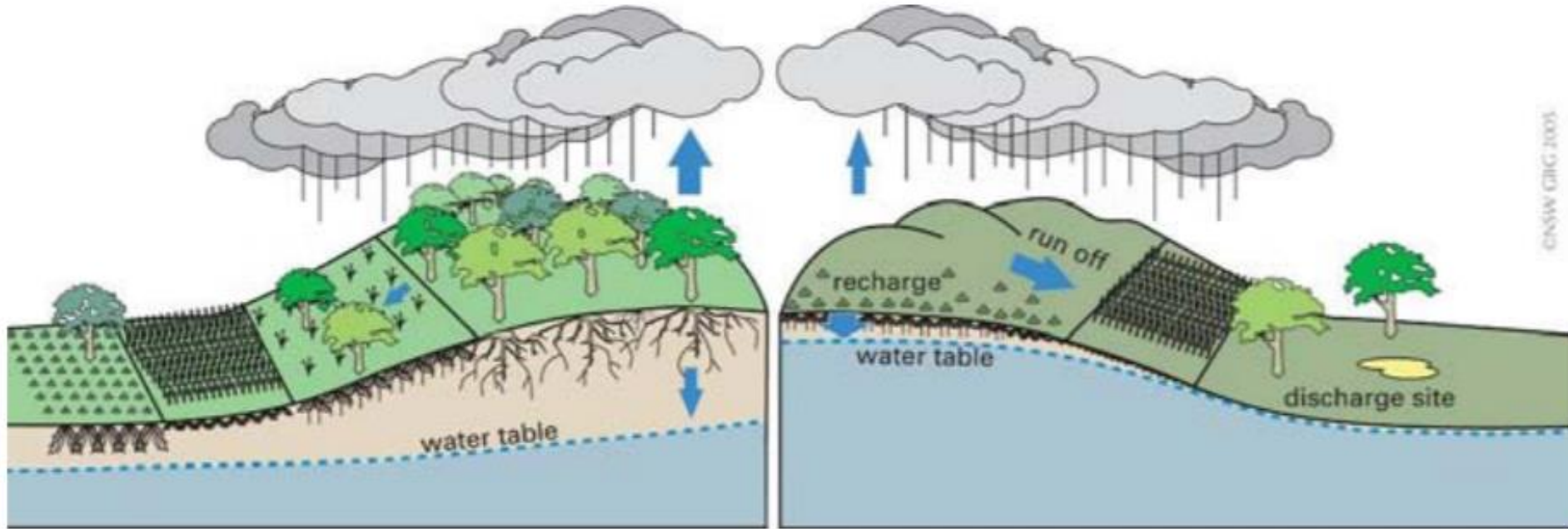


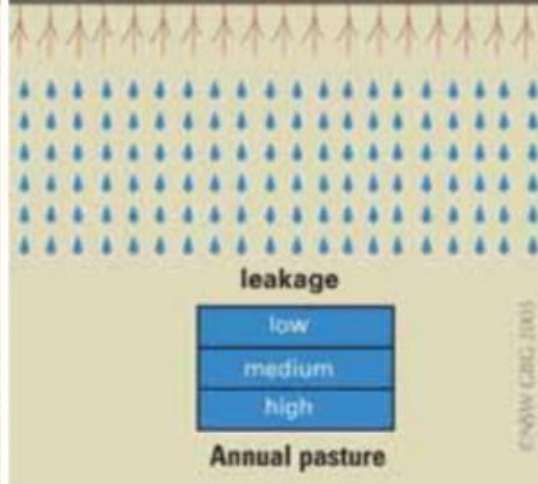
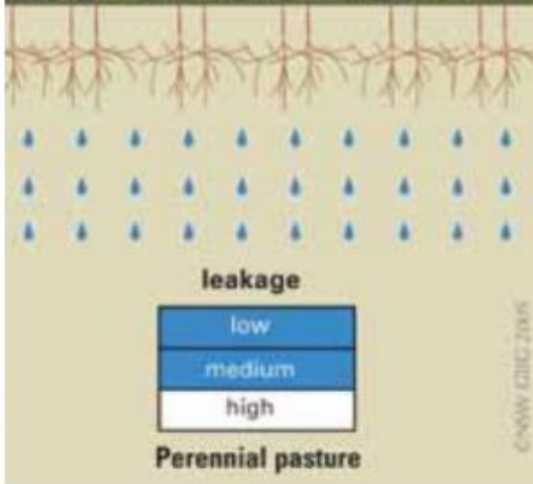
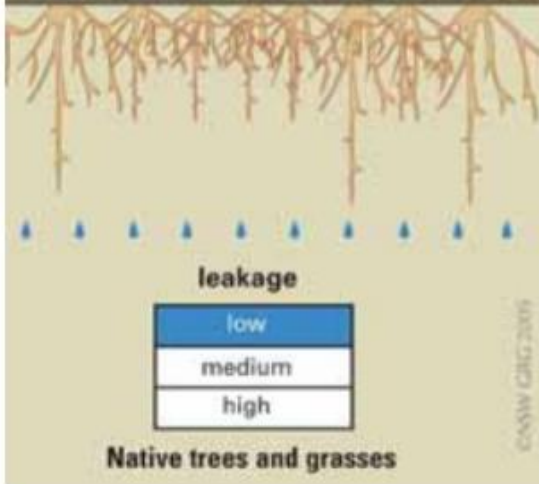
Types of salinity

- Dryland salinity
- Irrigation Salinity
- Urban salinity



Dryland salinity





Irrigation salinity

- The addition of water from irrigation speeds up water table rise
- Usually accompanied by land clearing for agriculture



Urban salinity

- Affects large areas of Western Sydney and Wagga Wagga
- Trees are cleared, surfaces sealed and grasses planted



Effects of salinity

- Plant death



Effects of salinity

- Erosion



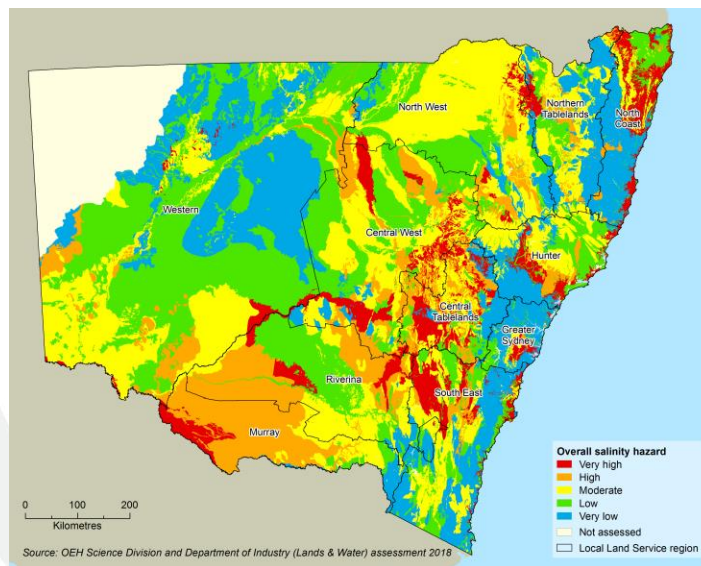
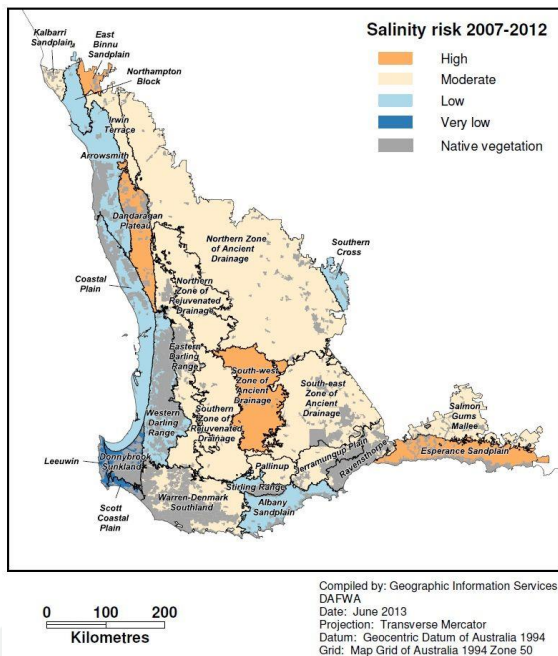
Effects of salinity

- Crumbling infrastructure



Extent of the problem

- Expected to increase from 5.7 million hectares in 2001 to 17 million hectares by 2050



Solutions

Must address the excess water infiltration



Strategic use of vegetation – trees on hills



Strategic use of vegetation – salt-tolerant plants in low areas and perennial vegetation



Saltbush



Puccinellia



Strawberry clover



Water-efficient irrigation tailored to soil type



Best for heavy clay soils



Best for permeable soils

Salt in the city

- Plant trees
- Avoid overwatering
- Native gardens
- Replace leaky pipes



Dewatering bores

- Extract saline groundwater and release to:
 - Local waterways
 - Evaporation basins



Image sources

Images not listed below are from the AusEarthEd collection or are licensed for use

- Causes of dryland salinity from Slinger & Tension 2007, *Salinity Glove Box Guide: NSW Murray & Murrumbidgee Catchments*, NSW Department of Primary Industries
- Eromanga Sea from Oz fossils, [ABC Science](#)
- Lake Eyre drainage basin by K Musser 2010, [Creative Commons](#)
- Leakage comparison between vegetation types on similar landscapes from Slinger & Tension 2007, *Salinity Glove Box Guide: NSW Murray & Murrumbidgee Catchments*, NSW Department of Primary Industries
- *Puccinellia* by K Thiele 2012, [Creative Commons](#)
- Salinity affected area, 2013, from [CSIRO Science Image](#)
- Salinity hazard assessment for NSW, 2017, from [OEHS Science Division and Department of Industry \(Lands & Water\) assessment 2018](#)
- Salinity risk map for the south-west agricultural region (WA), [Geographic Information Services, DAFWA 2013](#)
- Salt weathering of building stone by S M MacLeod 2005, [public domain](#)
- Salt weathering of foundations of Dry Creek explosives depot by Bahudhara 2015, [Creative Commons](#)
- Soil erosion caused by high salinity in the ACT 2003, from [CSIRO Science Image](#)
- Strawberry clover (*Trifolium fragiferum*) by S Iefnaer 2018, [Creative Commons](#)





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