

UK Groundwater Forum Drought – How Resilient are we?

Groundwater Drought – risks and opportunities

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Groundwater Drought: Risks and Opportunities



What makes Drought 2011/12 different?

- Media?
- Political?
- Public?

The Media?



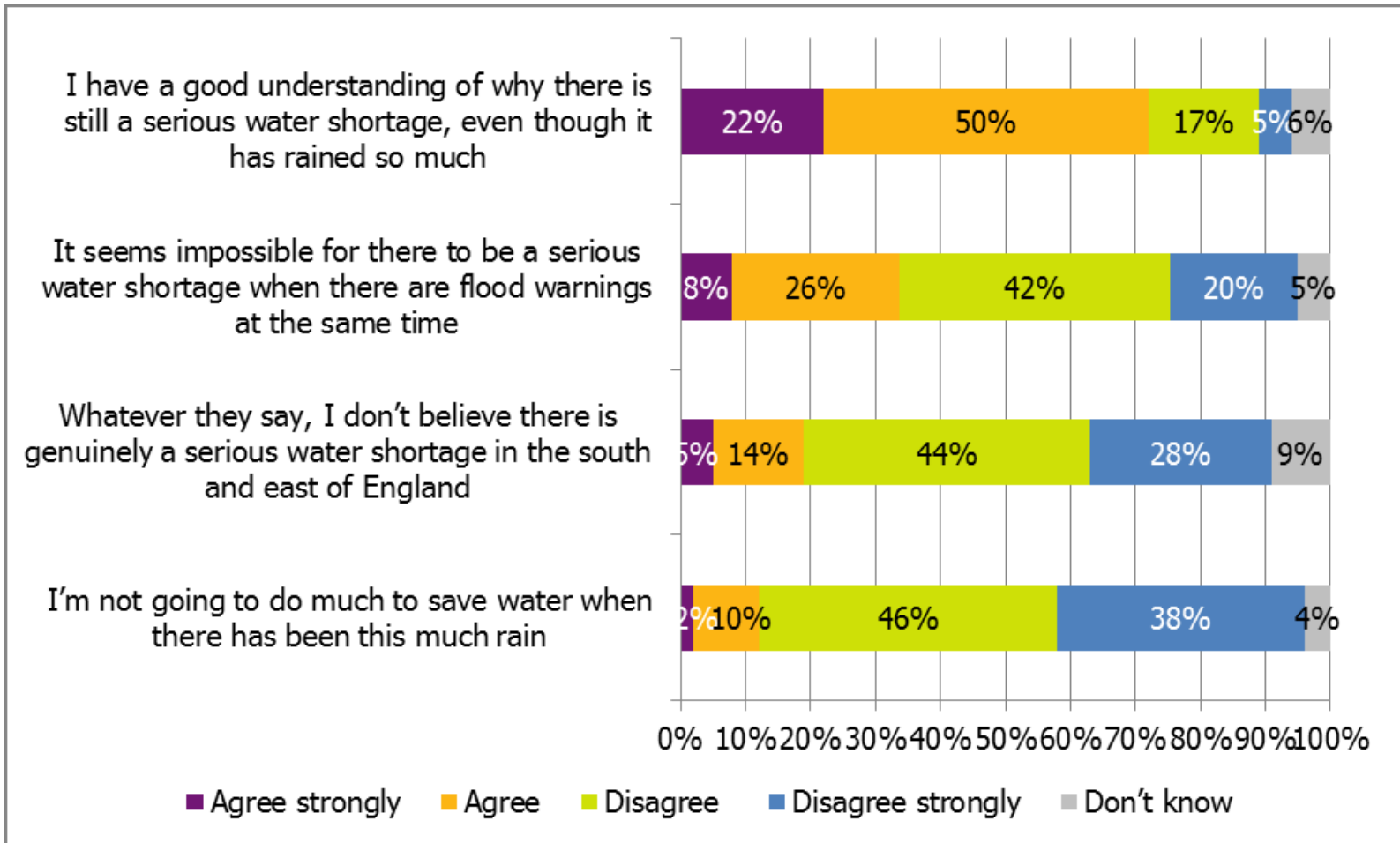
The Politics?



- **Drought Summits**
- **National Drought Group**
- **Cross Whitehall**

The Public?

Perception about the current situation (Thames Water Customers)

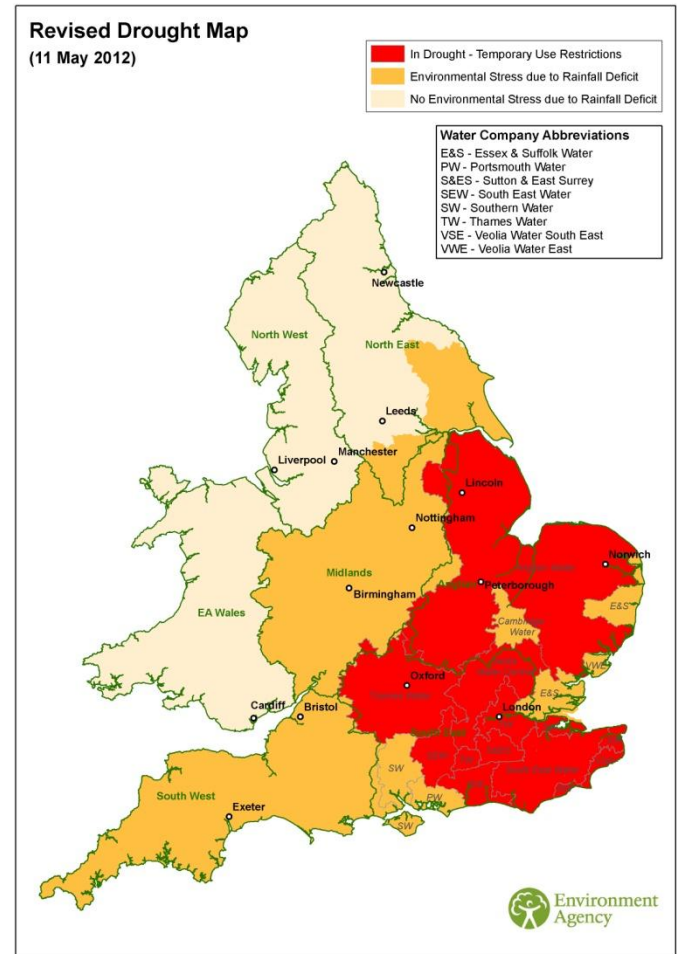


Groundwater: Risks and Opportunities?

- **Groundwater has taken centre stage!**
- **Risks –**
 - Can we communicate what we know?
 - Can we answer the questions?
 - Is our science ready for tomorrow?
- **Opportunities –**
 - The tools to do the job are ours for the asking
 - Scientific Renaissance

Communicating the Invisible Drought - 2012

- Exceptional rain in April/May/June
 - benefit for farmers, wildlife and water companies, but
 - Flooding for others
 - Some groundwater units showing recovery, others in deficit
- Communicating Drought?



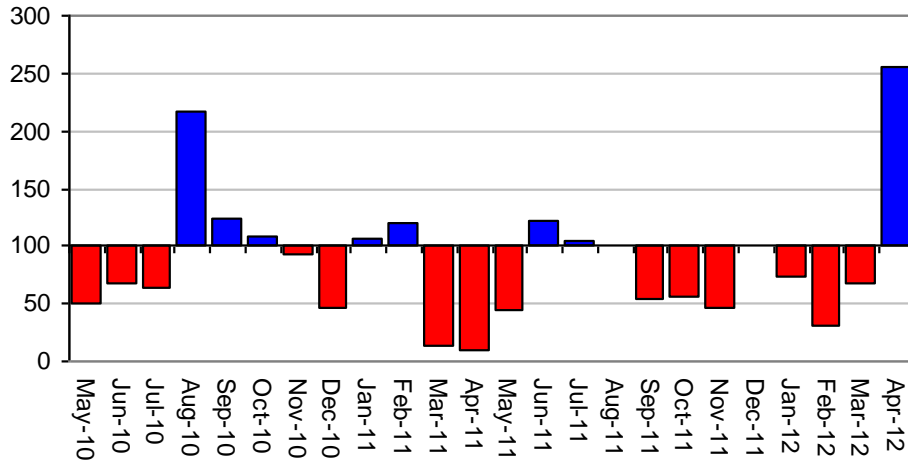
Questions decision makers need answered – is our science fit for purpose?

- Groundwater resilience is pivotal for:
 - Economic
 - Social
 - Environmental
- Effective Rainfall?
- How much is in the Tank?

Rainfall/Drought?

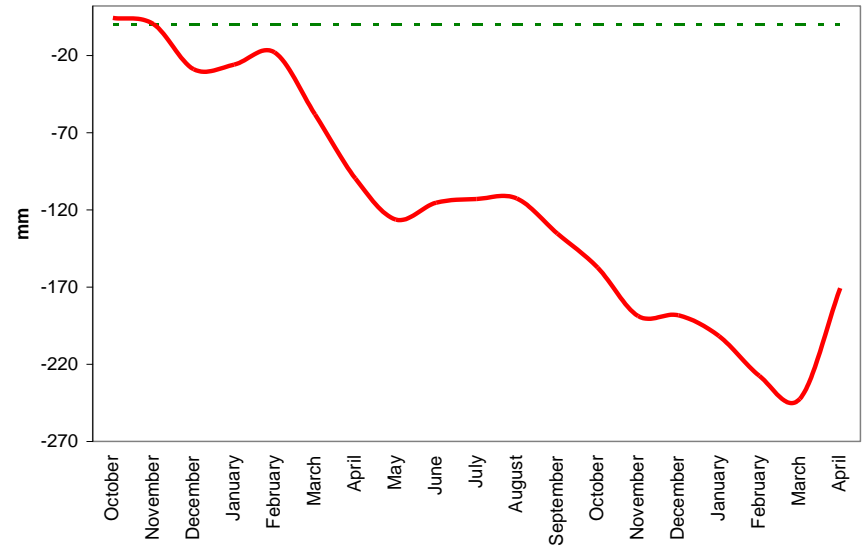
Rainfall Monthly Totals

Anglian Region



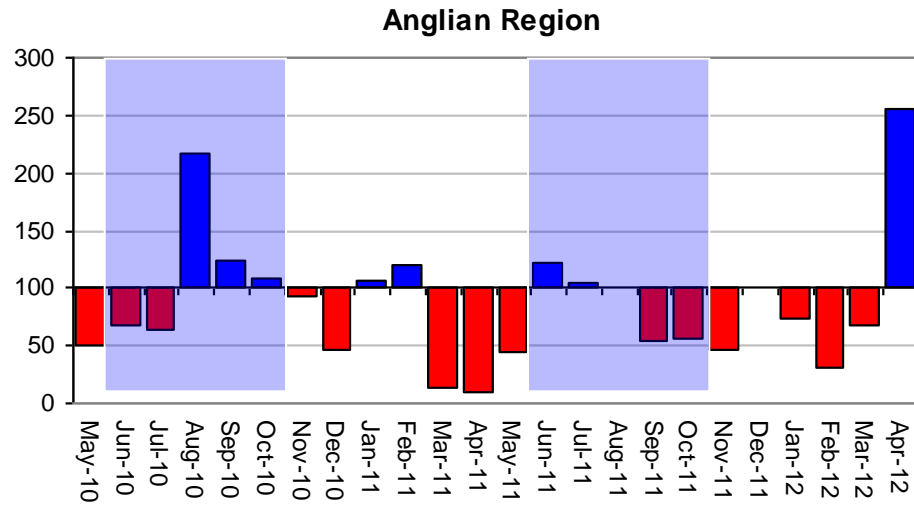
Cumulative rainfall difference from LTA

19 month cumulative difference from LTA rainfall - Anglian Region



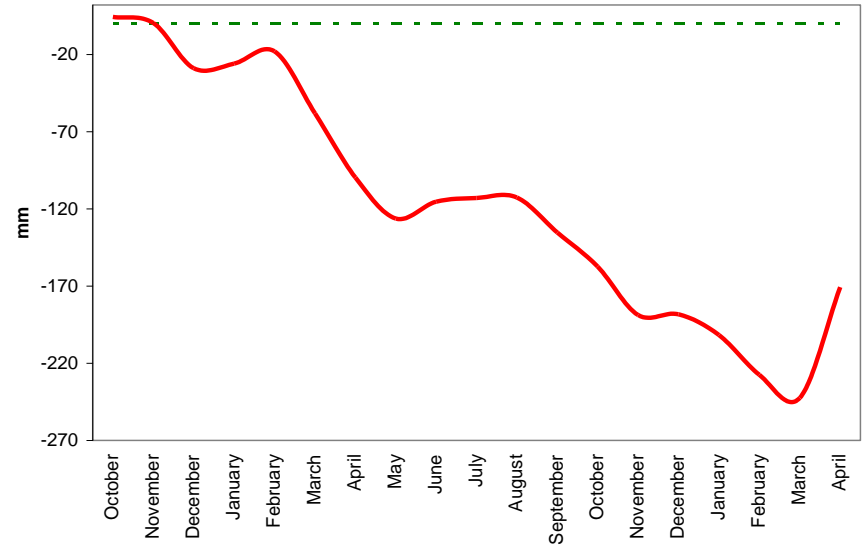
Rainfall/Drought?

Rainfall Monthly Totals



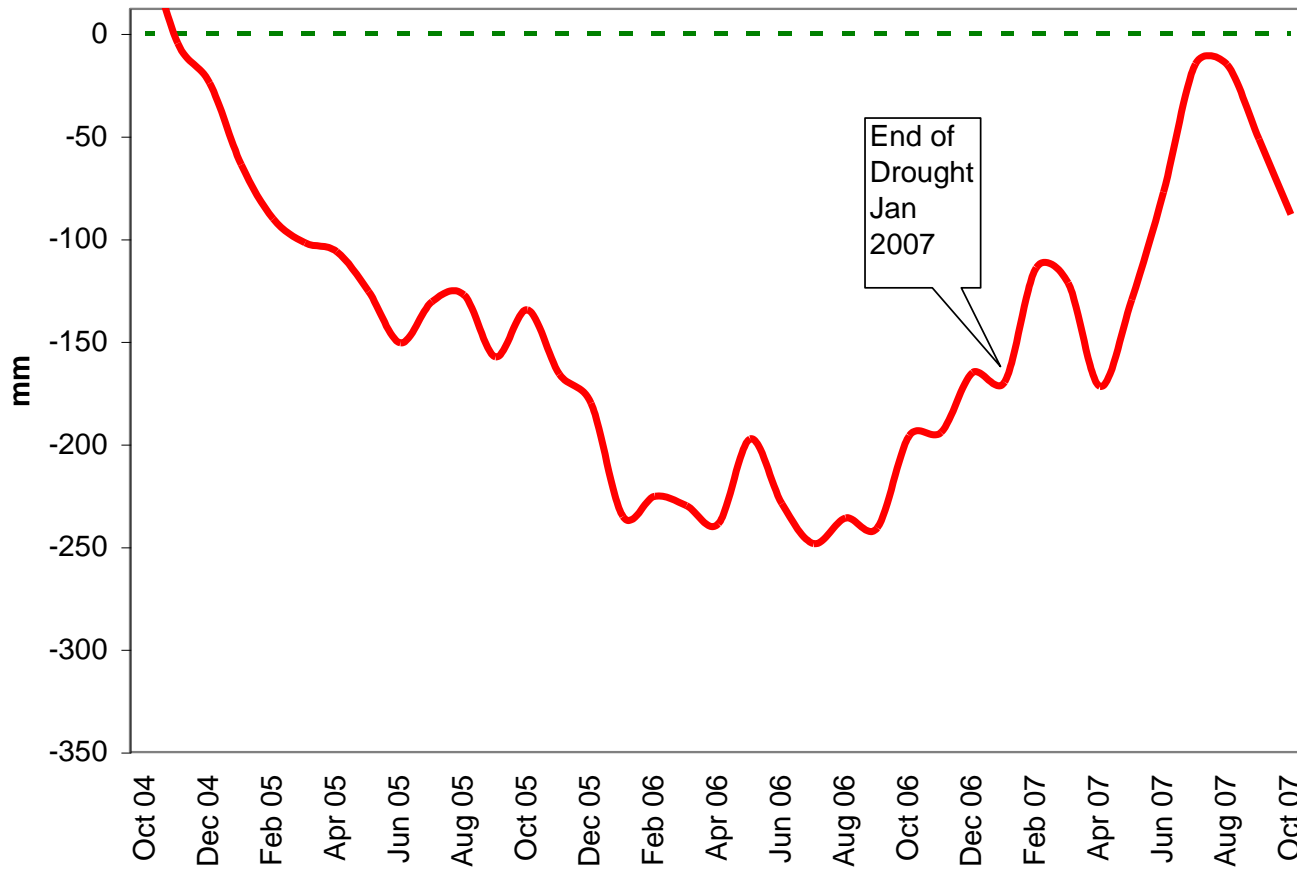
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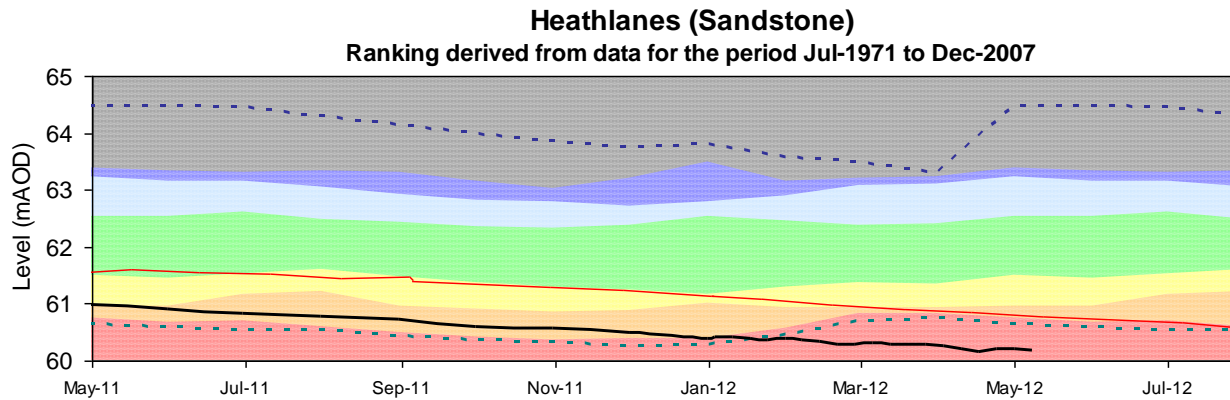
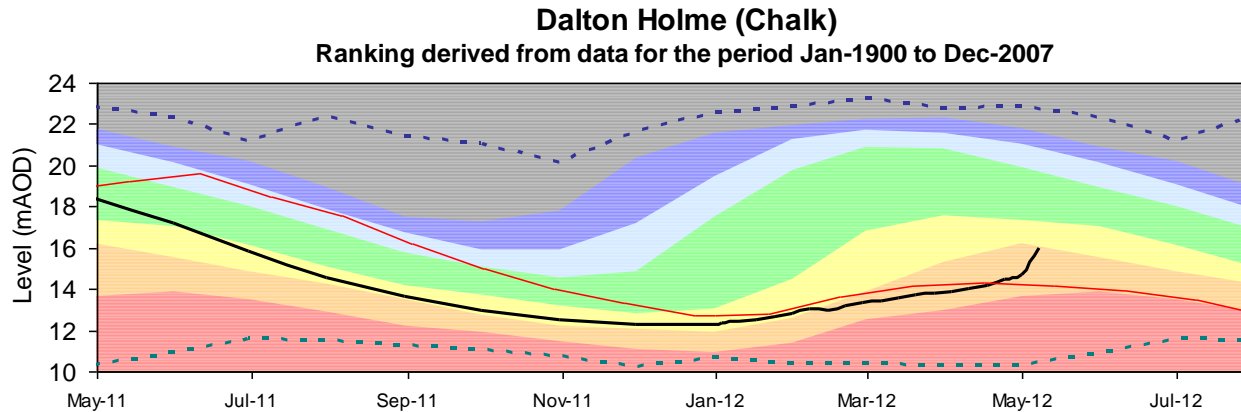


Effective Rainfall?

36 month cumulative difference from LTA rainfall -
Southern Region 2004-2007

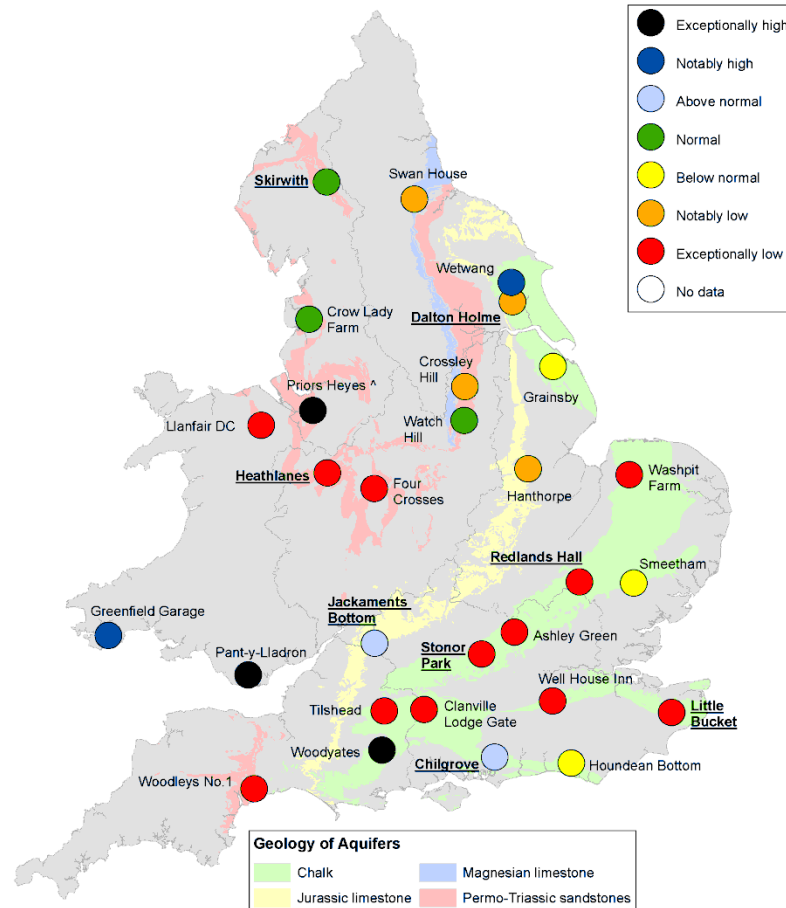


Groundwater responses to spring rainfall



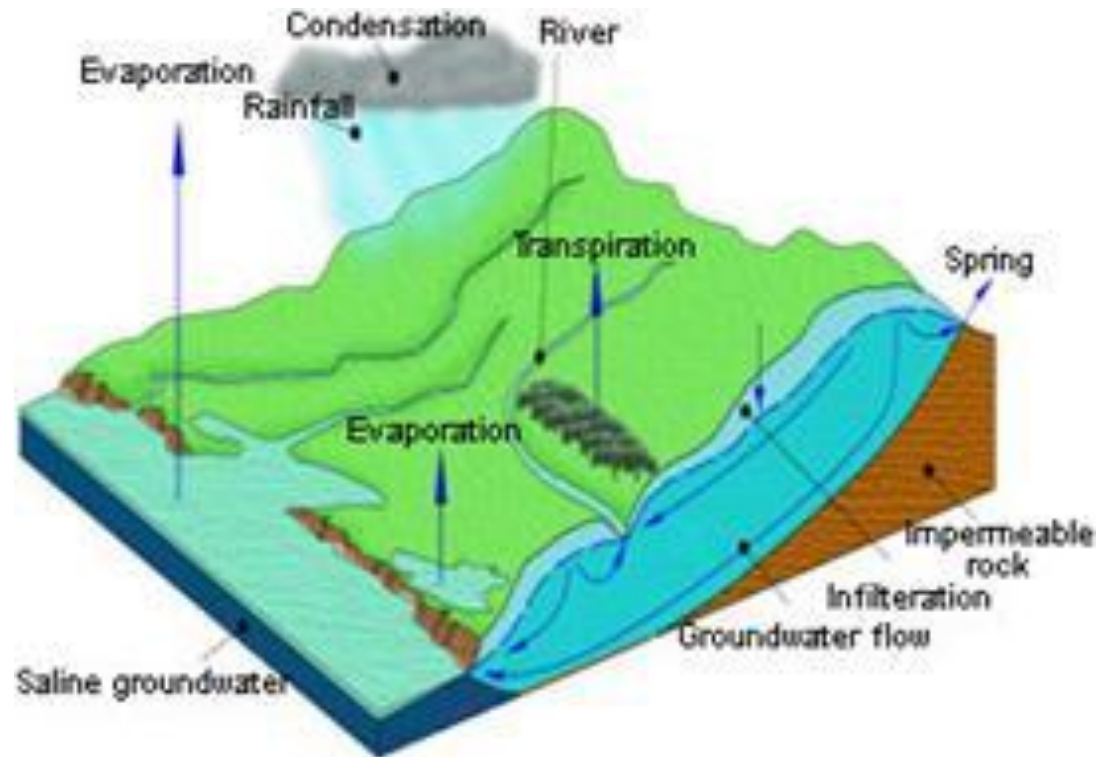
| | | | |
|--------------------|-----------------|-------------------|-------------|
| Exceptionally high | Notably high | Above normal | Normal |
| Below normal | Notably low | Exceptionally low | |
| Monthly maximum | Monthly minimum | Latest data | 1975 - 1976 |

Groundwater: How much is in the tank?



Groundwater: How much is in the tank?

- Rainfall?
- Evaporate/transpired?
- Run off?
- Infiltrated?
- Storage?
- Recharge to storage?
- Recharge on way?



Catchment water balance?

Groundwater Resilience Issue Tomorrow

Always a risk of drought outside of recent historic record – but in the future:

- Growth will mean that the resource balance becomes increasingly finely balanced
- Groundwater is in a broadly dynamic balance today which is critical for buffering drought but chronic and acute shifts in climate risk eroding this buffer
- We will build infrastructure resilience, access and allocation resilience and resilience through demand management if we fail to maintain a broad dynamic groundwater balance in a changing world water resources will become unsustainable for people, the economy and the environment