Understanding salt contributions in the Fitzroy – an ACARP project

Tony Weber – Alluvium

Joel Rahman – Flow Matters

Damion Cavanagh – BMT WBM

Nathan Johnston - FPRH

Overview

- Salt contributions in the Fitzroy basin come from a range of sources

- We have detailed models of the basin, and these can be adapted to represent salt

- It is important to understand the contributions of salt from different land uses

- It is important to understand the effect of salt on the ecosystem services that the catchments provide (healthy streams and rivers, irrigation water, stock water, drinking water)

ACARP Project

- Australian Coal Association Research Partnership project

- Spread over two years

- Involvement of a range of stakeholders (government, FPRH, resource companies, and consultants)

- Builds on previous work building a model of the Fitzroy catchments as part of the State Government Paddock to Reef Program

- Uses the latest software and adapts it to model salt

Concept understanding

Salt in the Fitzroy can come from many sources:

- Natural groundwater releases

- Irrigation activities

- High groundwater tables due to land clearing

- Point sources from coal seam gas, power stations, wastewater treatment plants and coal mines

- Important to understand the magnitude of these
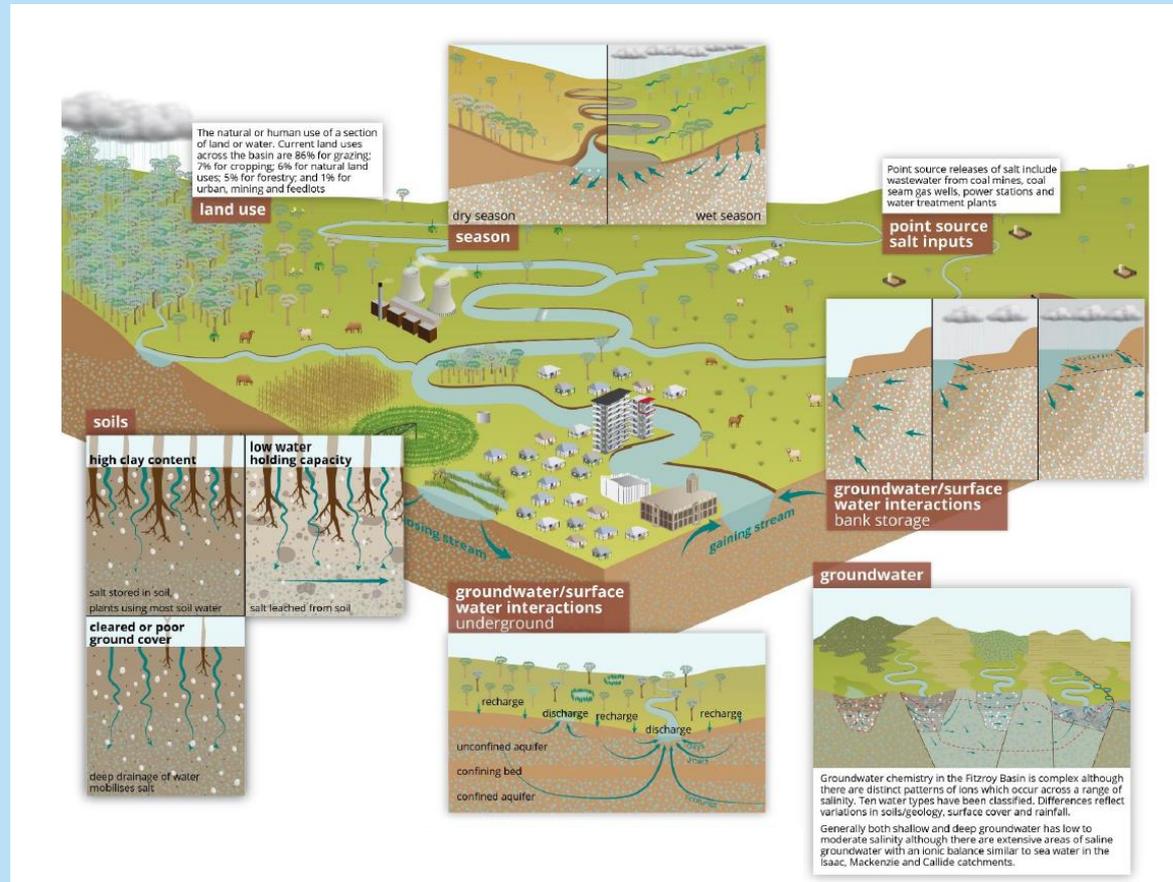
Building a model

Using the Source model framework

- Applied across the whole GBR

- Using the previously developed model of Fitzroy

- 1900 subcatchments defined in the model

- Grouped up to the same catchment regions as in the FPRH report card

- Will provide daily and mean annual salt loads across the basin
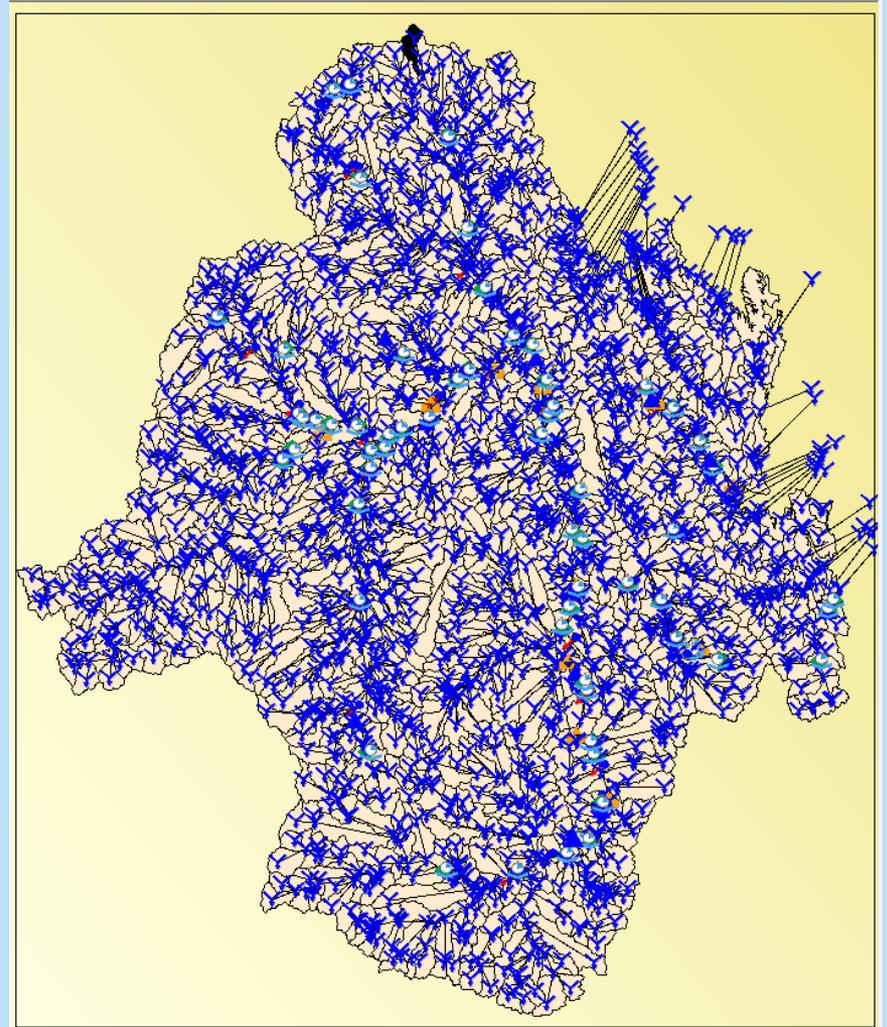
Is driven by large amounts of data

Salinity data for the basin

Water management area

Groundwater dependent ecosystems

Vegetation mapping

Vegetation mapping

Groundwater zones

EPP subcatchments

EPP water types

Groundwater boundaries

WRP boundaries

Salt content

Salt store

Salinity Hazard

Recharge

Permeability

Soil Drainage

Discharge

Dryland salinity risk / hazard

Split mining into coal and other

Locations of dams and weirs

Catchment boundaries

Stream network

Mining leases

Salinity module – a plug in for the Source model

Plugin uses previous science

- Uses the concept of a salt "bucket" that is added to or reduced by flows from surface and ground waters

- Will include point sources

- Accounts for groundwater release after wet weather and salt accumulation in dry weather

- Has been tested and is currently being calibrated
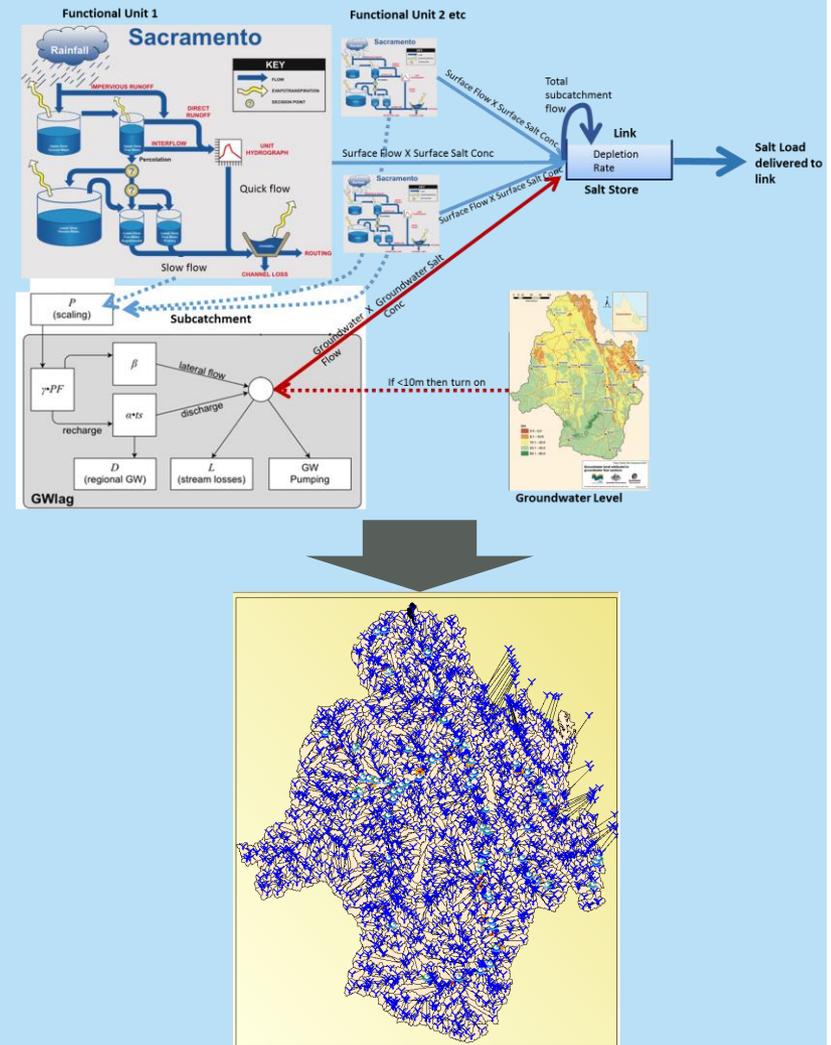
Conclusions

- ACARP funded project

- 75% completed

- Models and information to be provided to stakeholders for use

- Collaborative project

- Builds on previous work

Questions?