Comparing Futures: Appendix C

Delta Hydrodynamics and Water Salinity with Future Conditions

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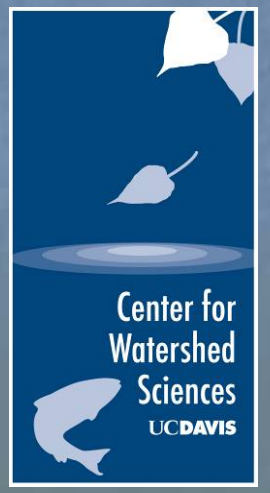


Four Delta Alternatives

- Through-Delta Pumping
- Peripheral Canal
- Dual Conveyance
- End Exports

To Qualify Alternatives

Understand WQ (salinity) consequences of change:

- Sea Level Rise
- Levee Failures
- Operation Alternatives

How WQ affects ecosystem and economics

To React Quickly

Use available modeling tools

Mine existing data

Avoid system re-operation

Primary Model

Tidally Averaged Model (WAM)

- Downstream BC in north bay
- Aggregates some channels
- Minor channels are regressions
- Aggregates DICU returns
- Improved dispersion

Model Criteria

20 water years 1981-2000

(7 critical/8 wet years)

Maintain operations for 1981-2000

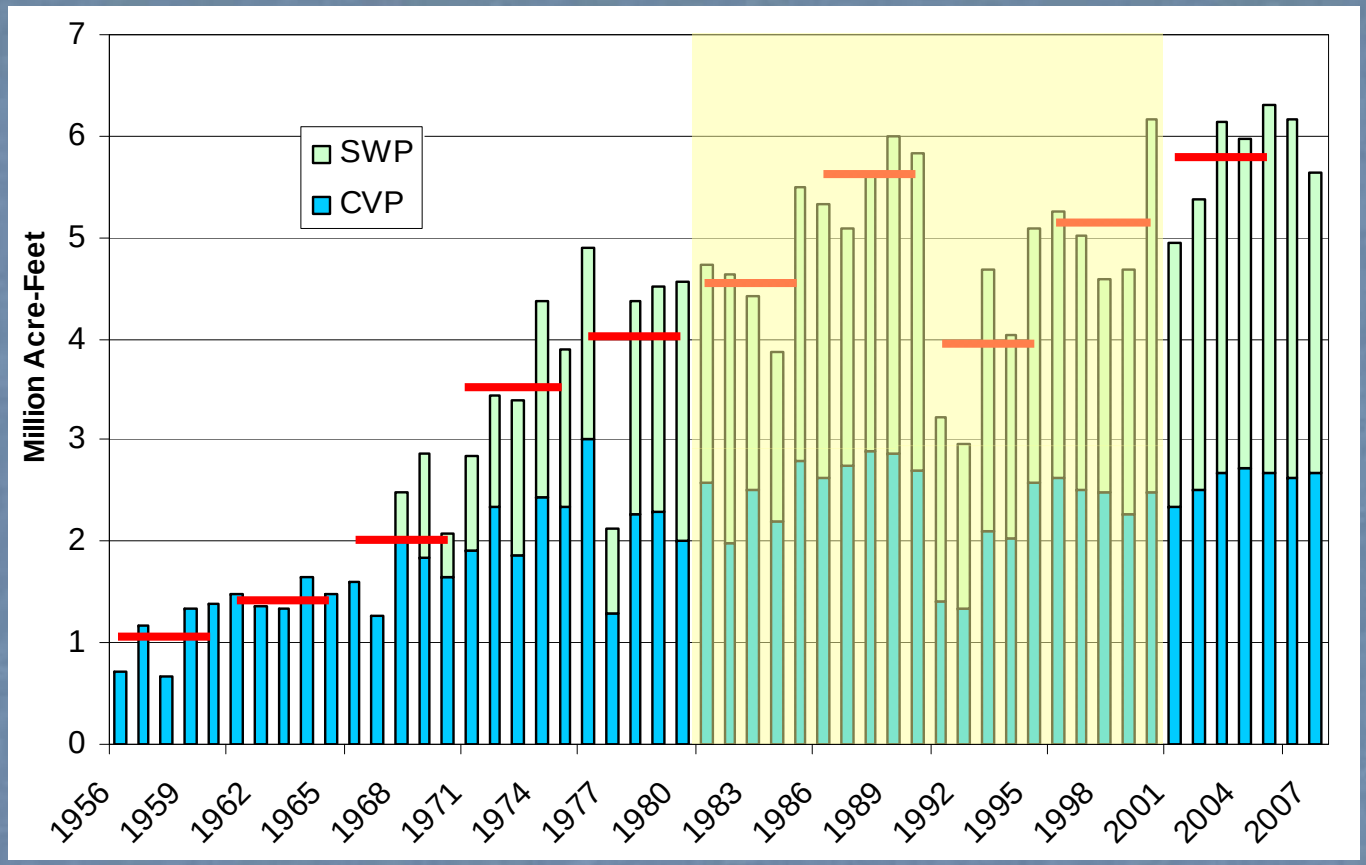
(gates, barriers, export levels, etc.)

Maintain minimum 10K cfs in SR

Net outflow remains the same

(except in no exports and unimpaired)

Water Exports



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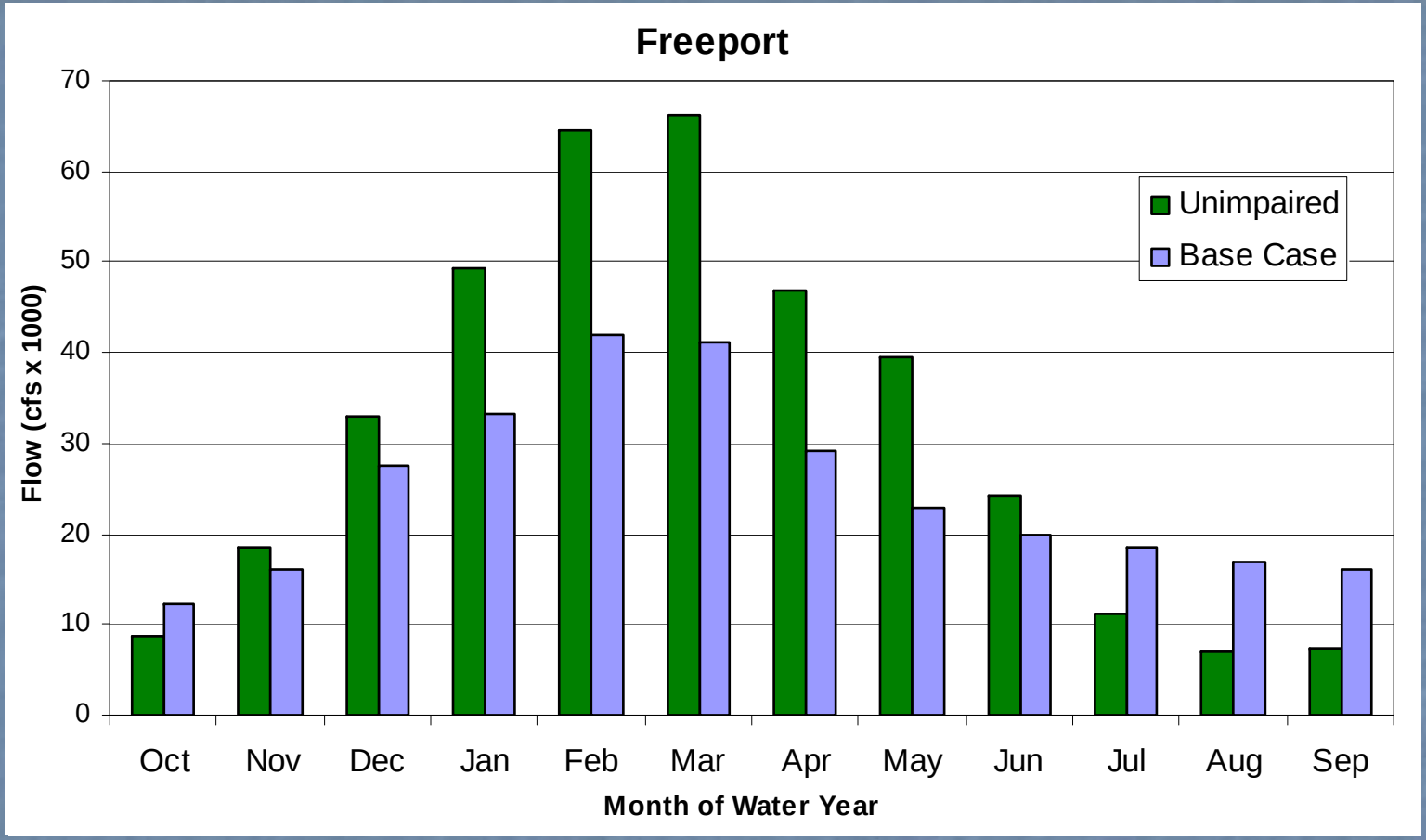
Sacramento Inflows



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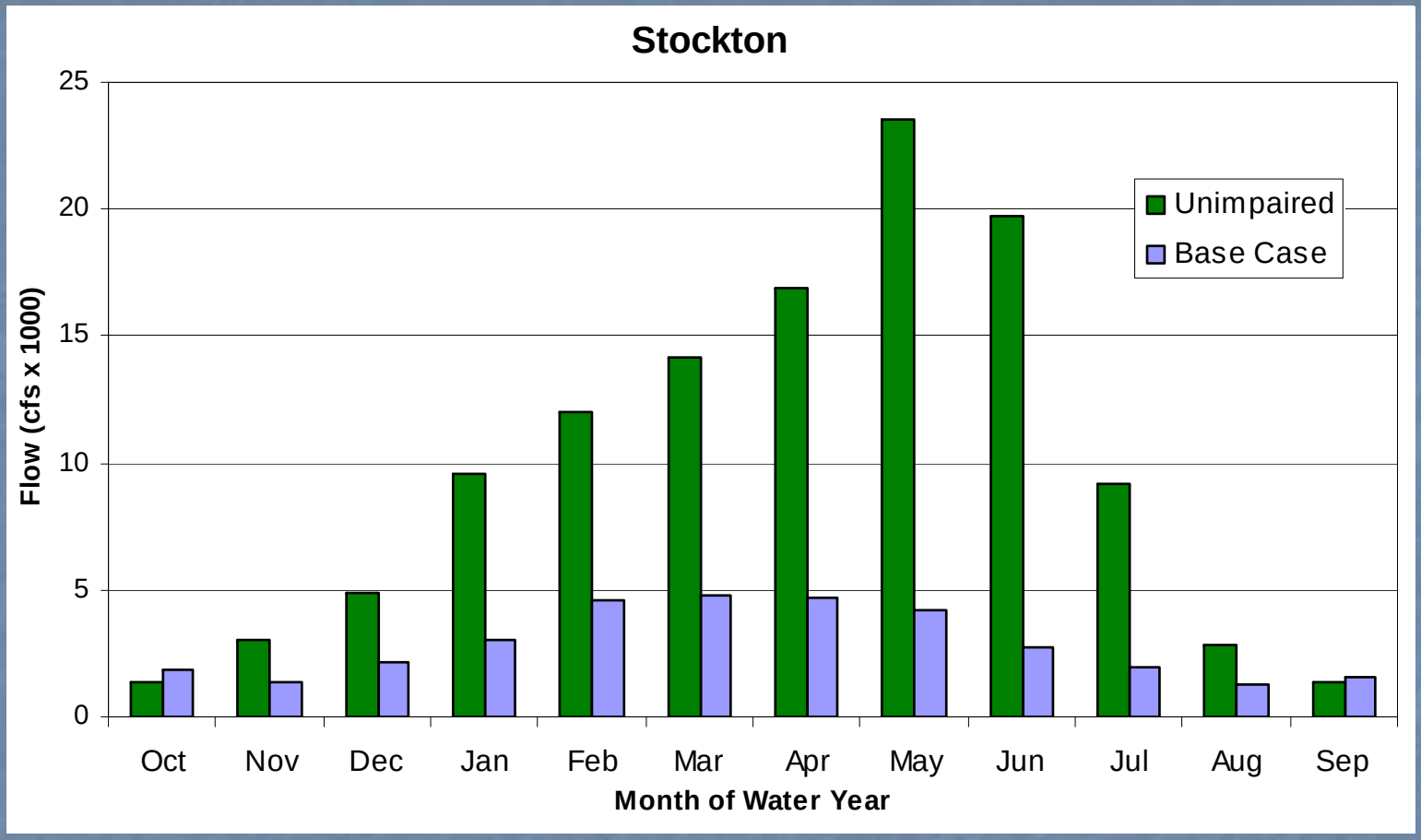
Stockton Inflows



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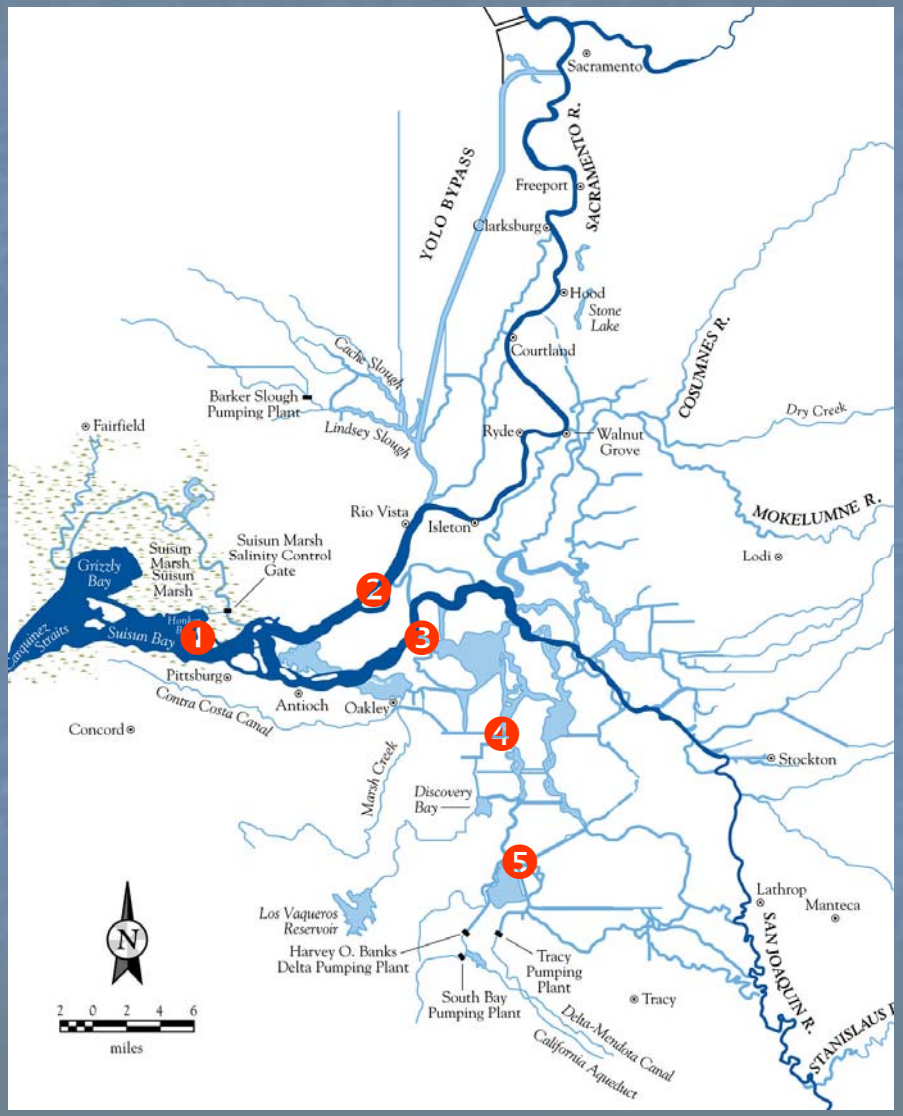
Locations to note

1. Chipps Island
2. Emmaton
3. Jersey Point
4. CCWD
5. Banks



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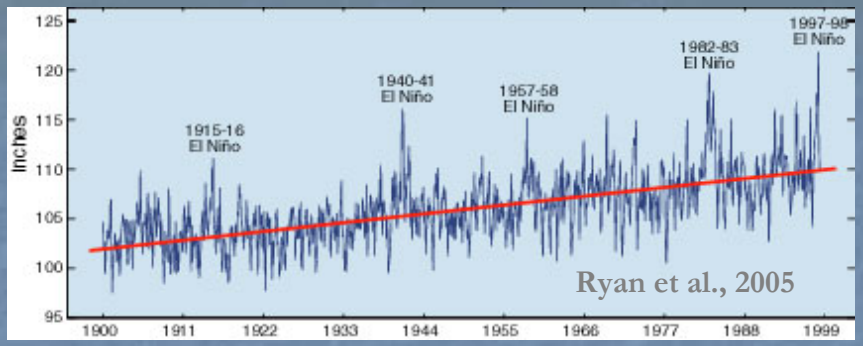
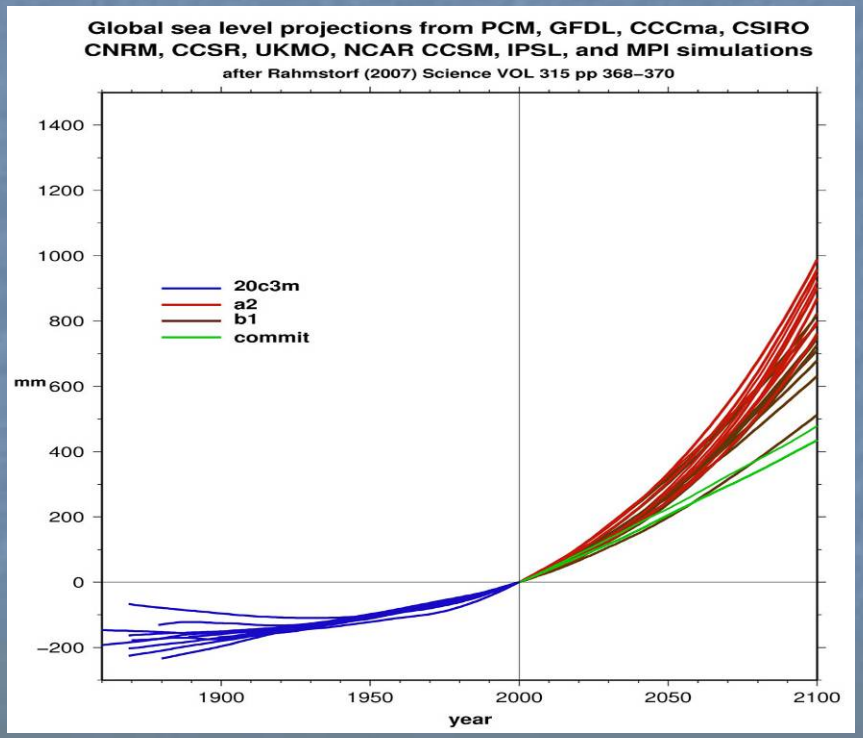
Sea Level Rise





- Character of Delta based on sea level
- All hydrodynamics, habitat conditions and levee heights tied to sea level
- Rate of sea level rise increasing
- A modest rise overwhelms current Delta levee network

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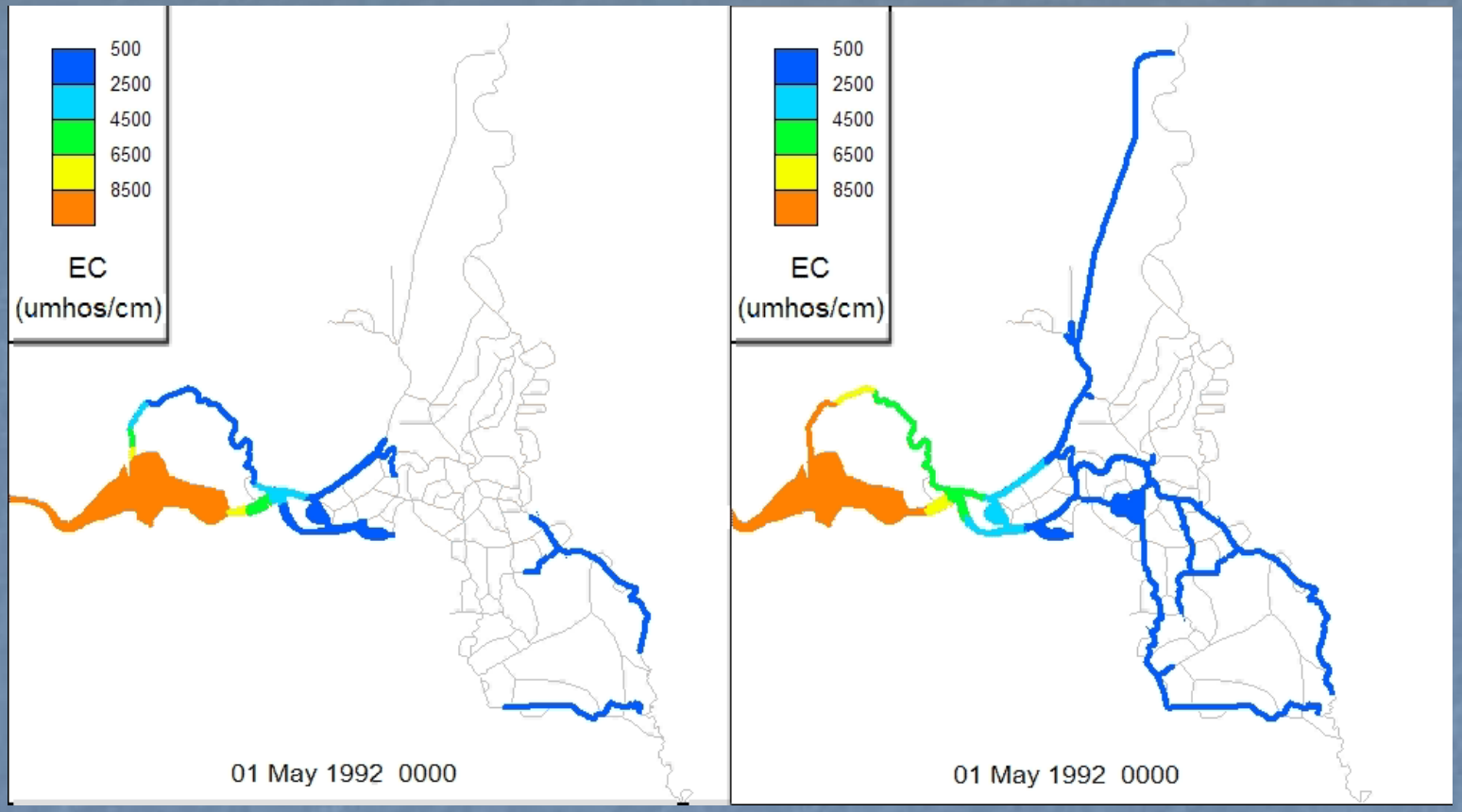
Base vs 3-ft SLR



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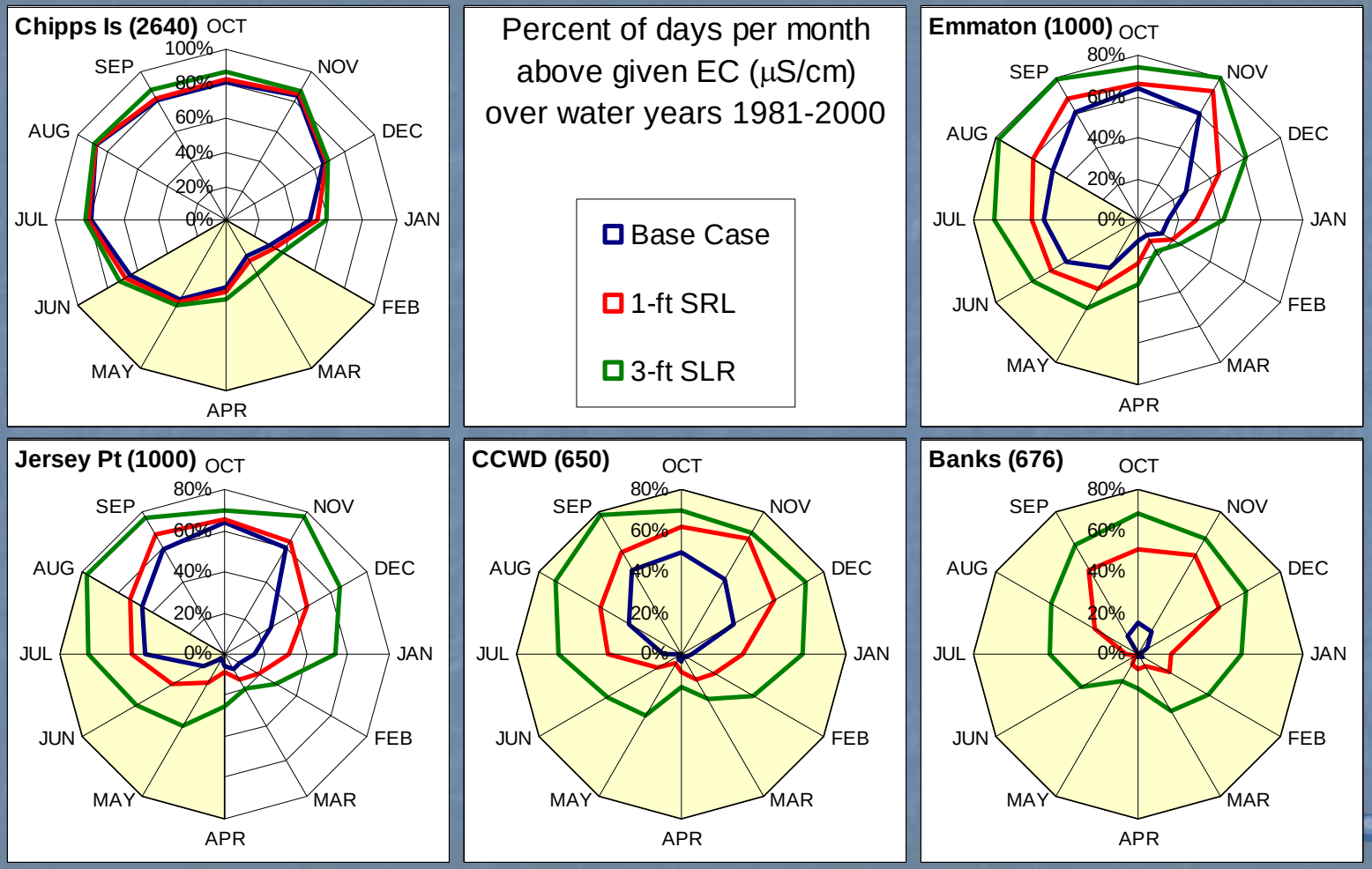
Sea Level Rise



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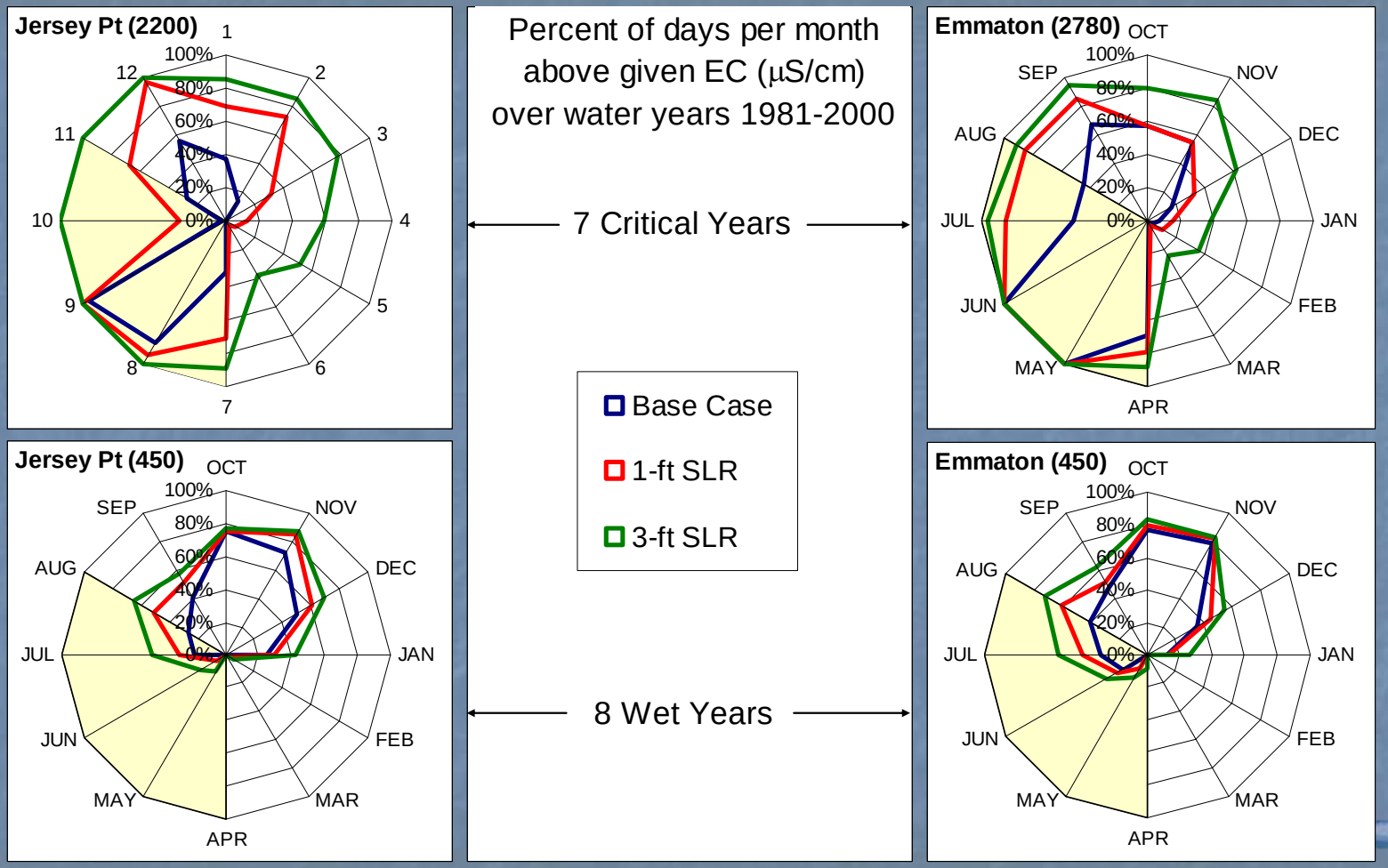
Sea Level Rise



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Island Failures

WAM model not appropriate

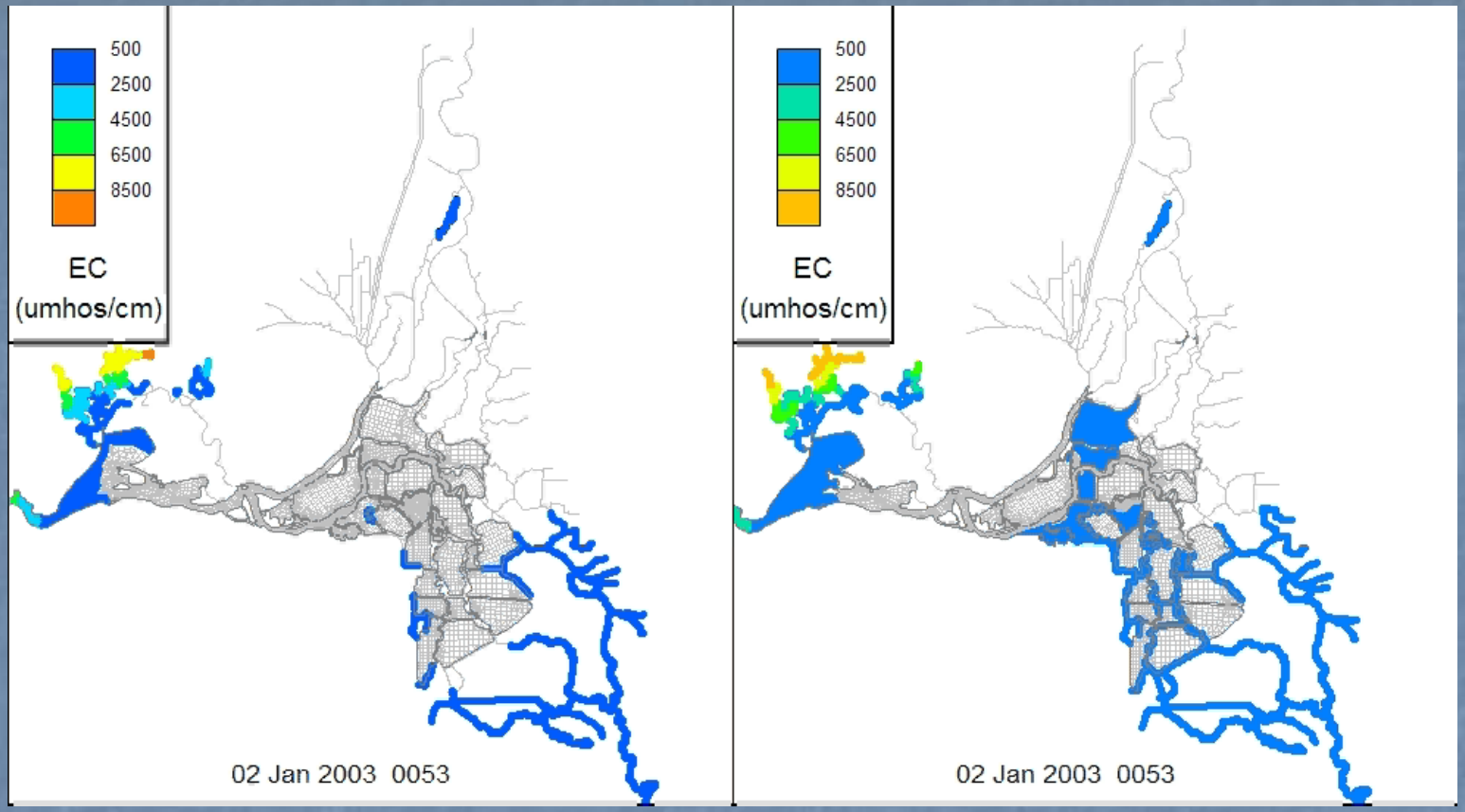
island exchange and dispersion invalid

20 water years 1981-2000

too computationally intensive

RMA2 Flooded Island for DRMS

Base vs West



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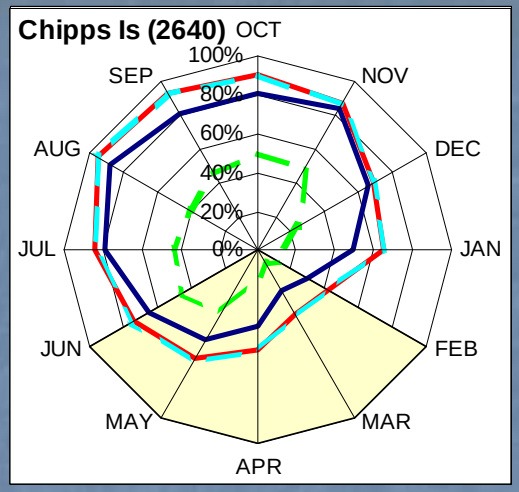
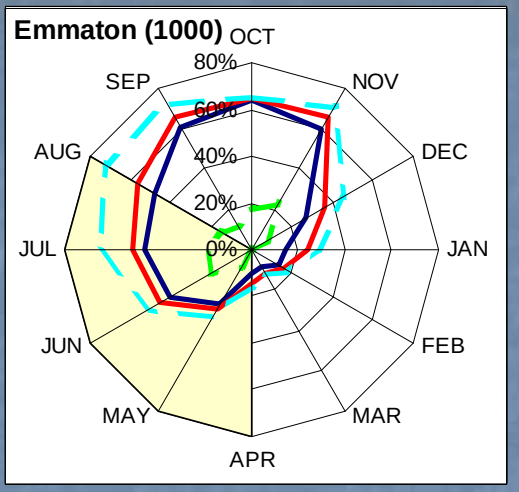
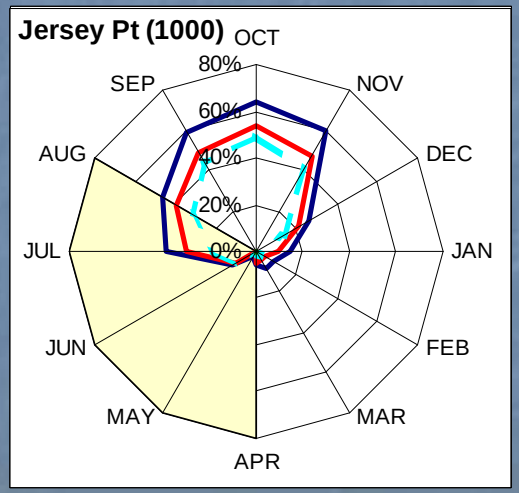
Operational Changes

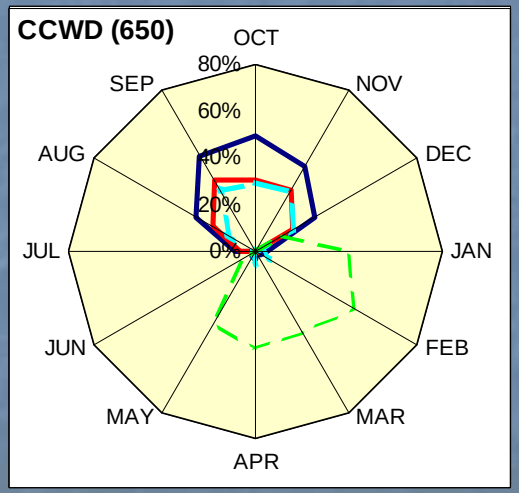


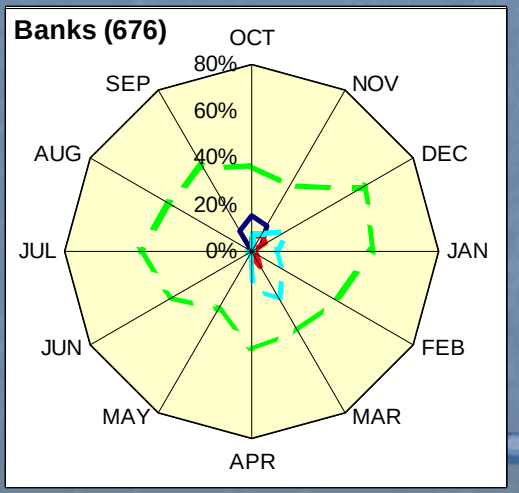
Percent of days per month above given EC (μS/cm) over water years 1981-2000 (no sea level rise)

- Base Case
- No Exports
- 2K PC
- 7.5K cfs









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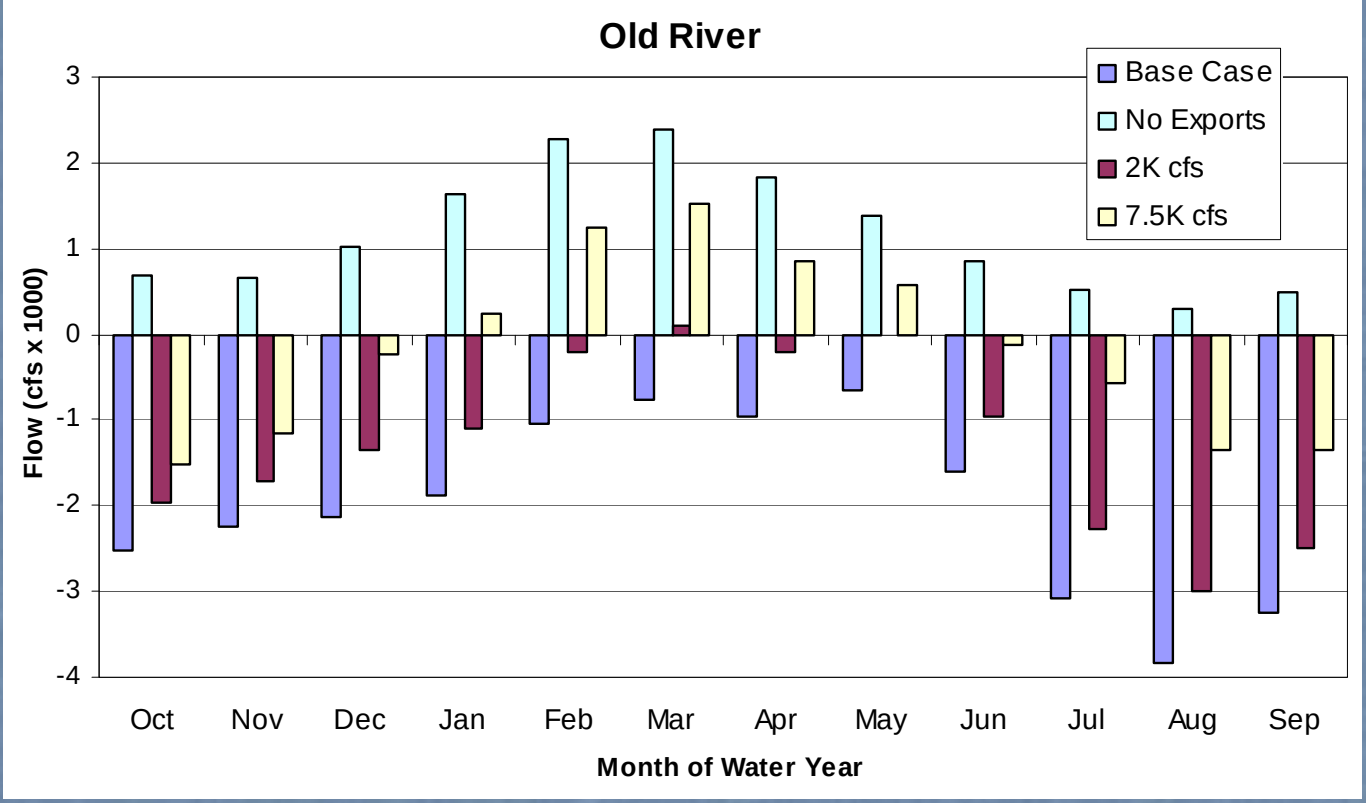
Old River Flows



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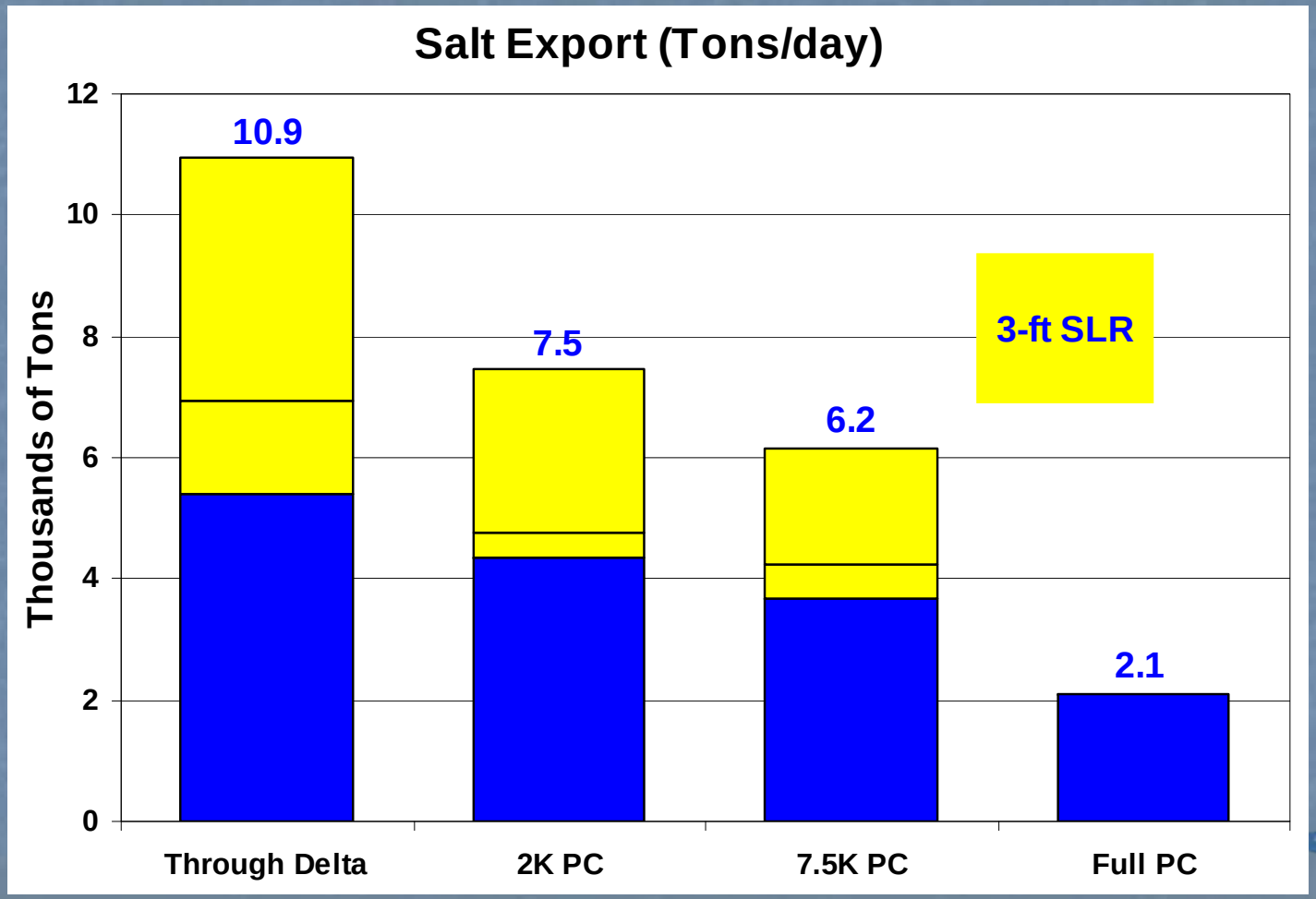
Southern Salt Exports



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Questions?

Sea Level Rise

Emmaton and Jersey Pt salinities increase with SLR

Pump salinities increase substantially with SLR

Emmaton and Jersey Pt inter-annual variability increases

Flooded Islands

Western Island failures greatly increase salinity

Others show little influence on salinity

Operations Changes

Emmaton salinity increases with upstream PC exports

Jersey Pt salinity decreases with upstream PC exports

Pump salinities change little with upstream PC exports

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