

Recruitment to the south component of South African sardine

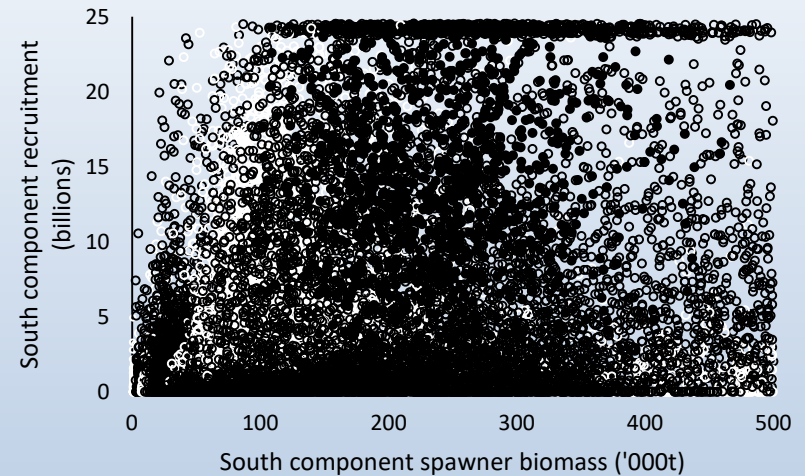
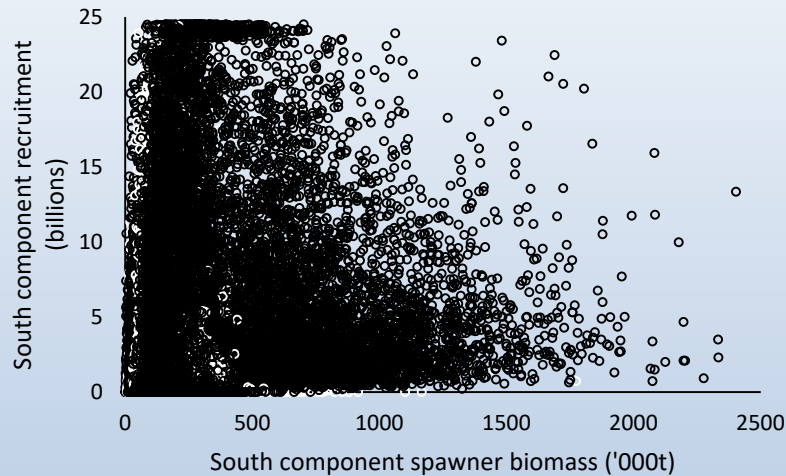
SWG-PEL Meeting
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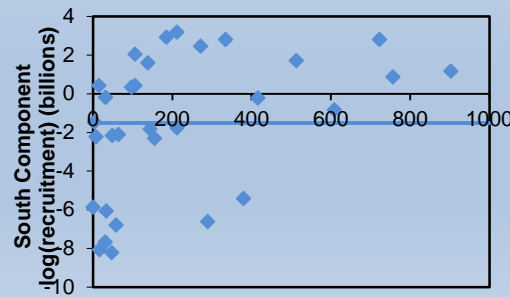
Historical south component recruitment v spawner biomass



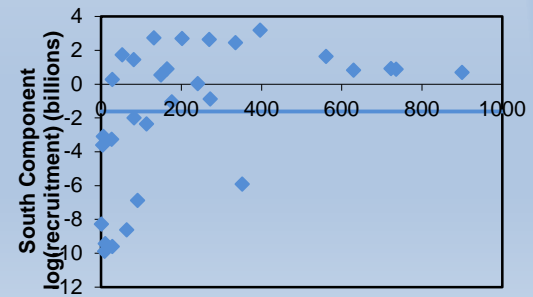
No obvious relationship...

Previous method

- Hockey-stick stock recruitment relationship
- For the most part recruitment varies lognormally about a straight line ($b=0.01K$)
- Historical distribution is not lognormal, and recruitments were estimated without any constraining relationship, so difficult to simulate future recruitments in a distribution similar to that estimated historically, even with varying σ_R values.



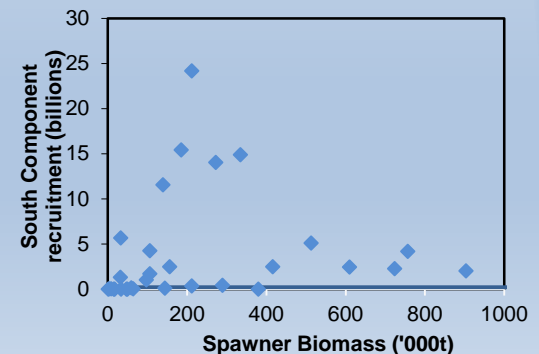
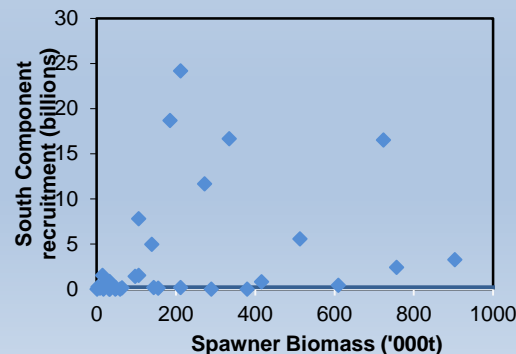
Spawner Biomass ('000t)



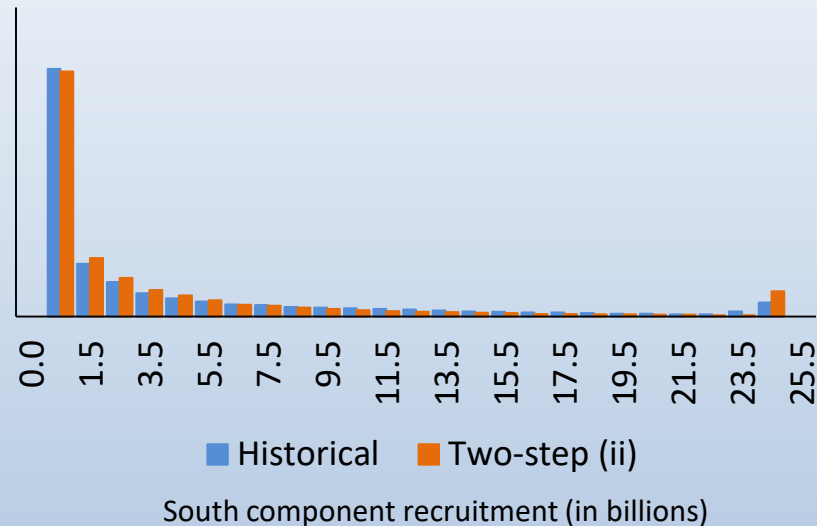
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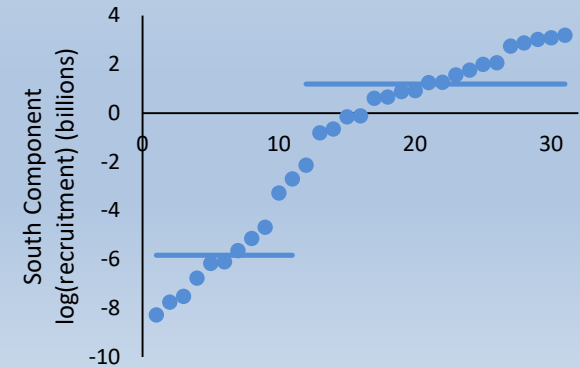
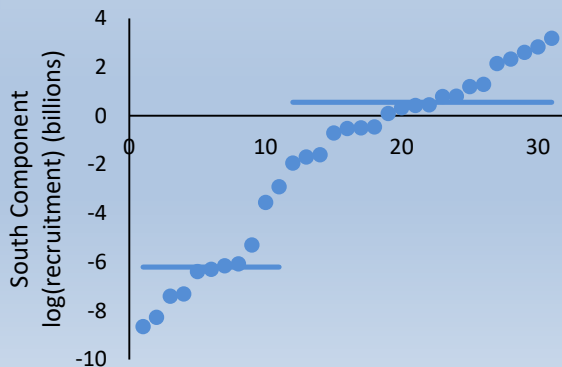
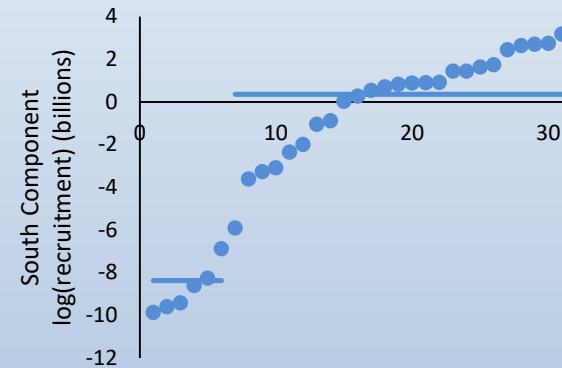
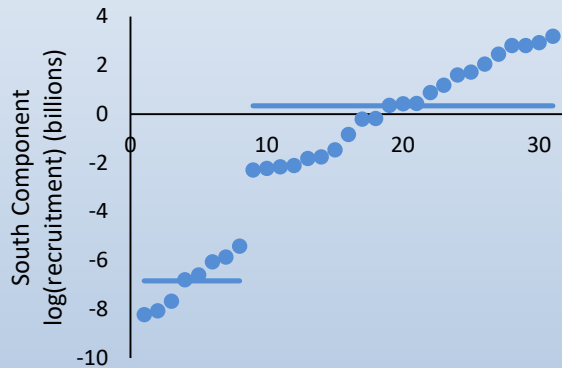
Historically estimated recruitment



Mostly low recruitment with the occasional higher recruitment?

Recommended method

- “Two-step” model
- Varies randomly about two different levels in log-space, independently of spawner biomass



Comparing distributions

	Historical	Hockey-stick (i)	Hockey-stick (ii)	Two-step (i)	Two-step (ii)
1%ile	0.0001	0.03	0.003	0.0001	0.0000
5%ile	0.001	0.06	0.01	0.0003	0.0003
10%ile	0.005	0.09	0.02	0.001	0.001
25%ile	0.58	0.16	0.08	0.02	0.01
50%ile	2.63	0.32	0.33	1.08	1.32
75%ile	8.69	0.63	1.30	4.07	4.32
90%ile	17.09	1.17	4.39	9.57	12.23
95%ile	23.52	1.67	9.10	13.93	21.73
99%ile	24.35	3.52	35.72	21.15	24.53
Average	5.71	0.54	2.49	3.11	3.88



Interim OMP-18 tuned using this

Time-series of south component recruitment

