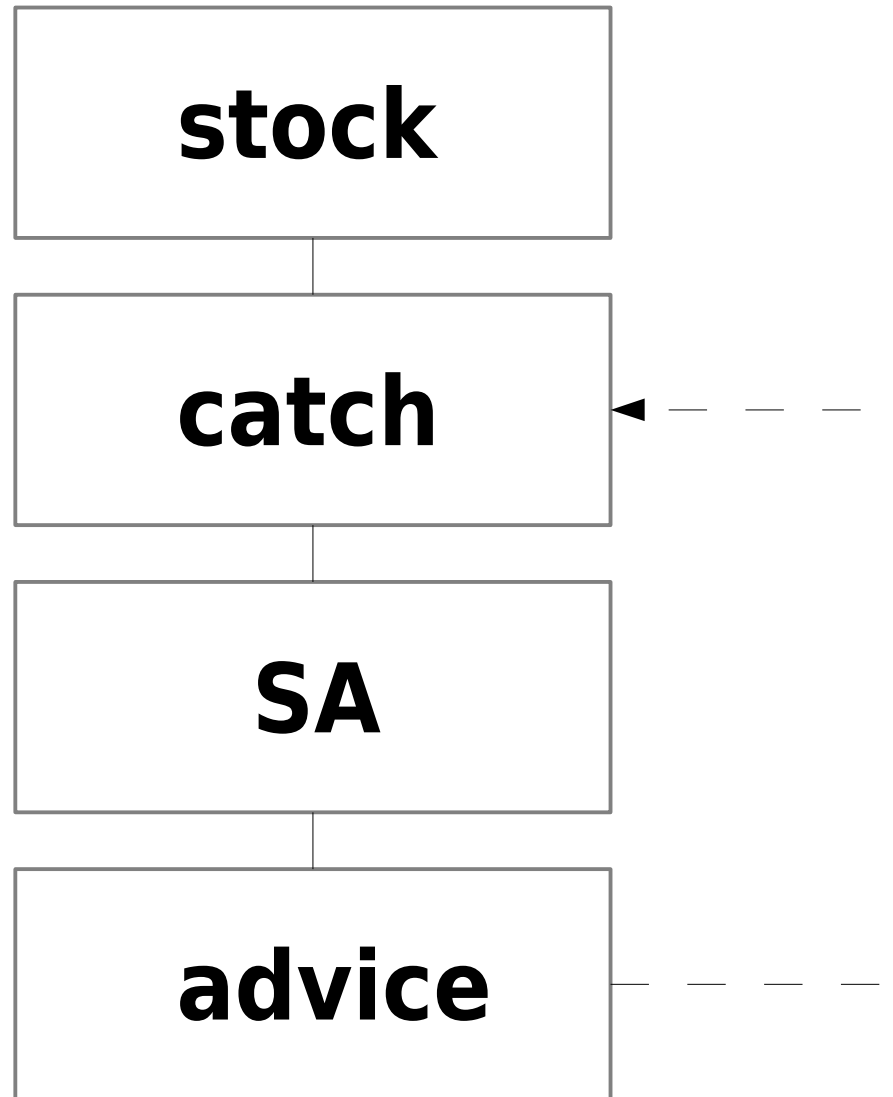


# What is MSE

Iago Mosqueira

July 12, 2012



**stock**

**fleet**

**data**

**SA**

**HCR**

**stock**

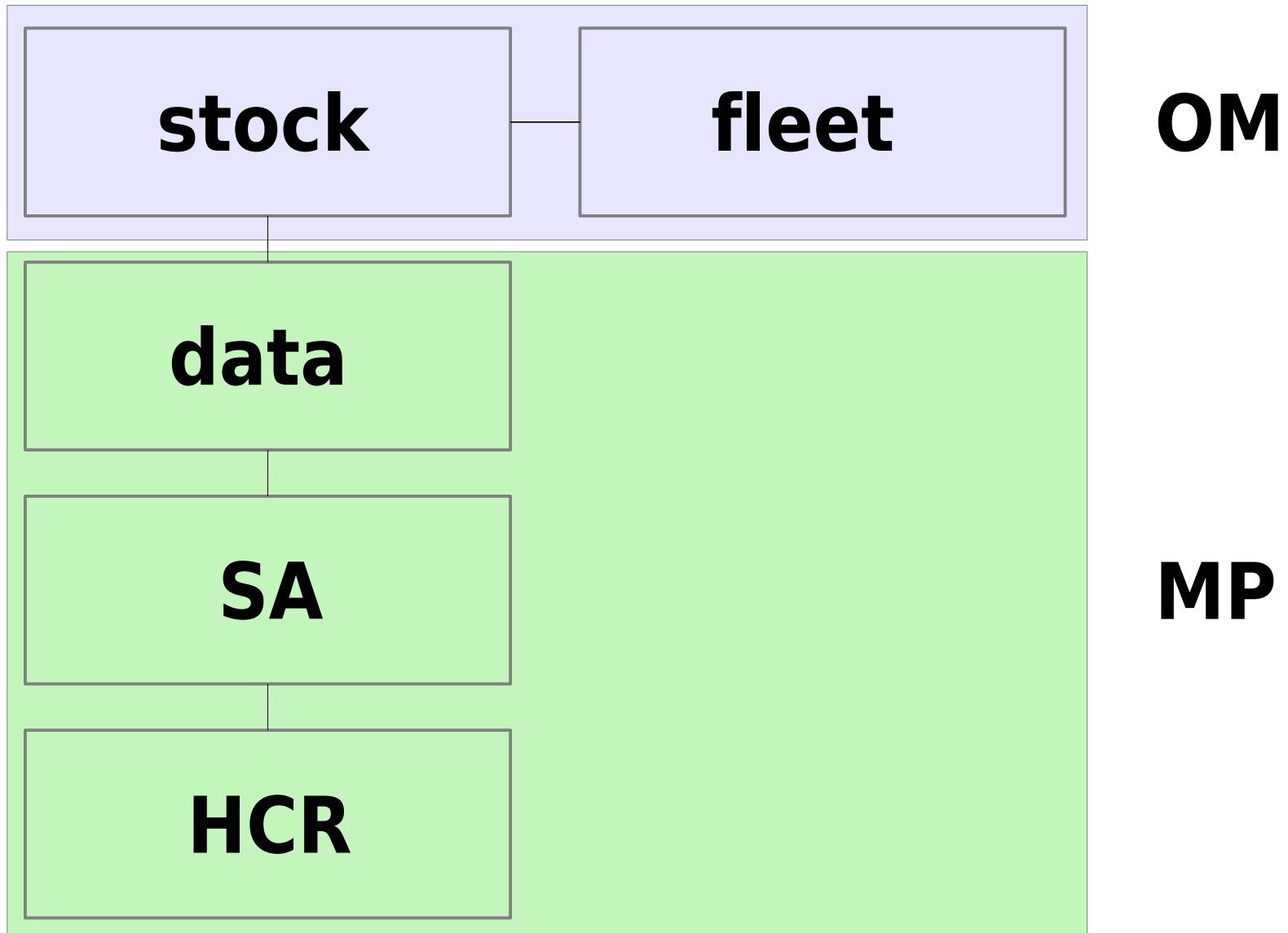
**fleet**

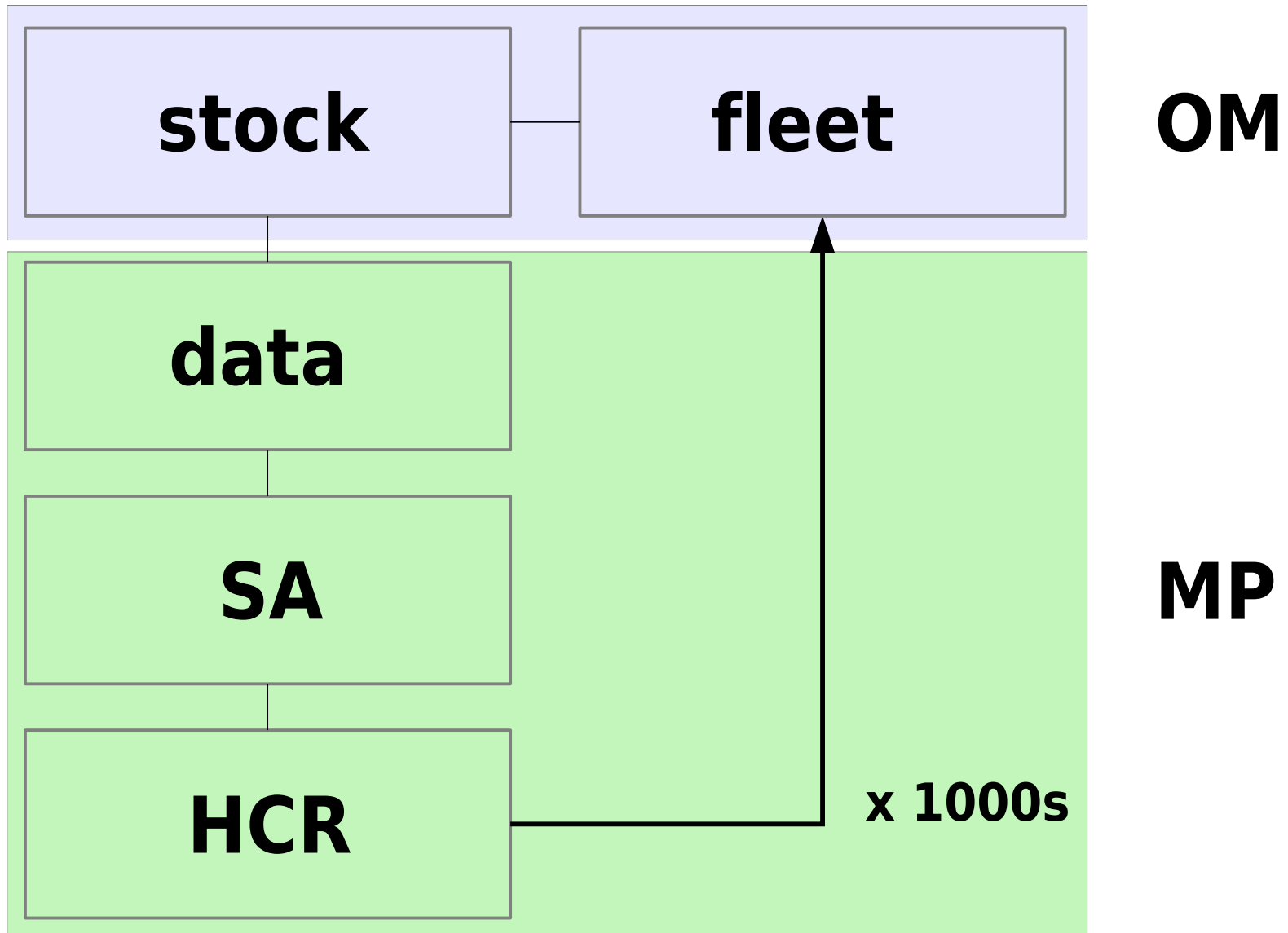
**OM**

**data**

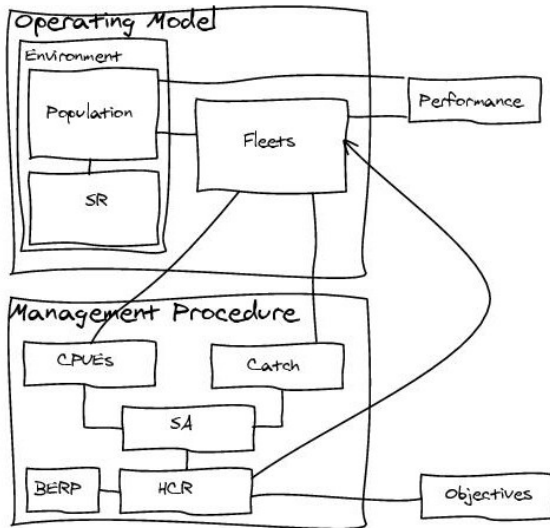
**SA**

**HCR**





# Fishery system model



## Steps to MSE

- Define and agree on **objectives & limits**
- Translate them into **performance indicators**
- Identify appropriate **Management Procedures**
- Define a set of **Operating Models**
- Conduct **simulations**
- **Summarize** performance
- Select **best MP**



# Specify & prioritize **objectives** ...



# Specify & prioritize **objectives & limits**



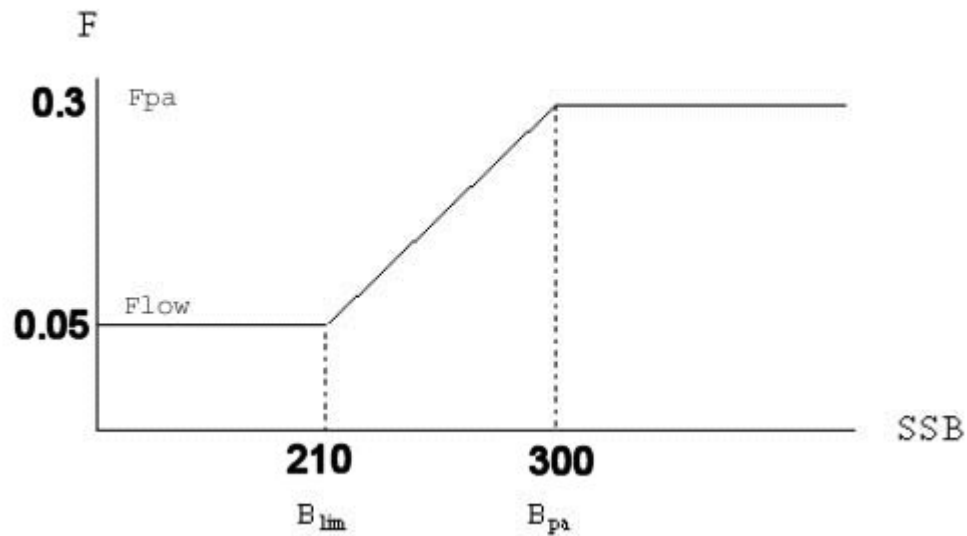
# Specify & prioritize **objectives & limits**

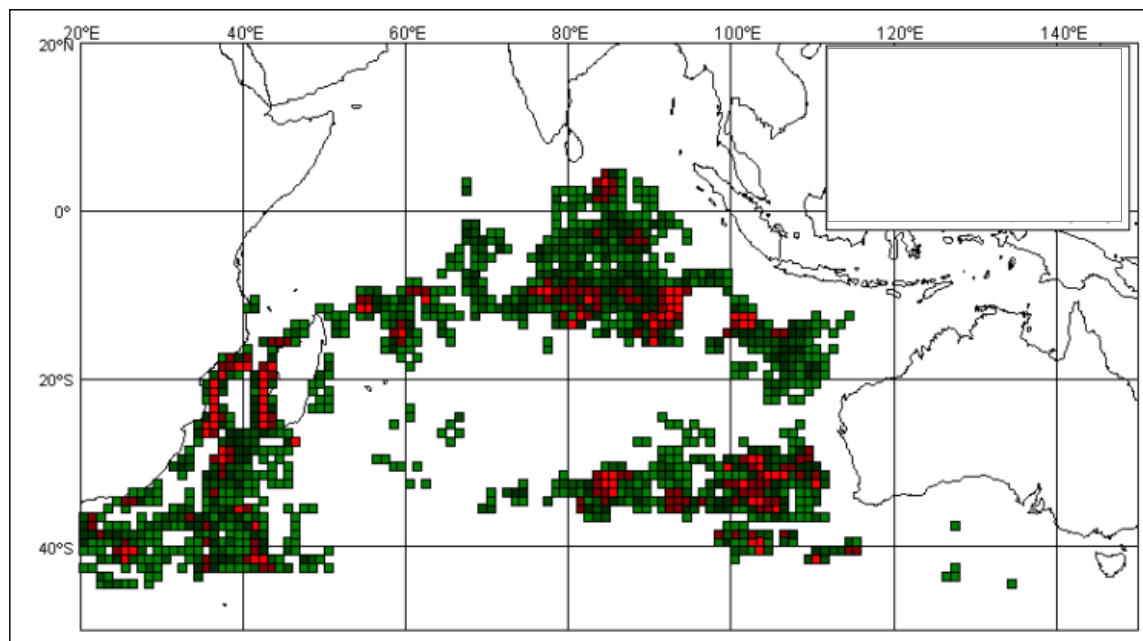
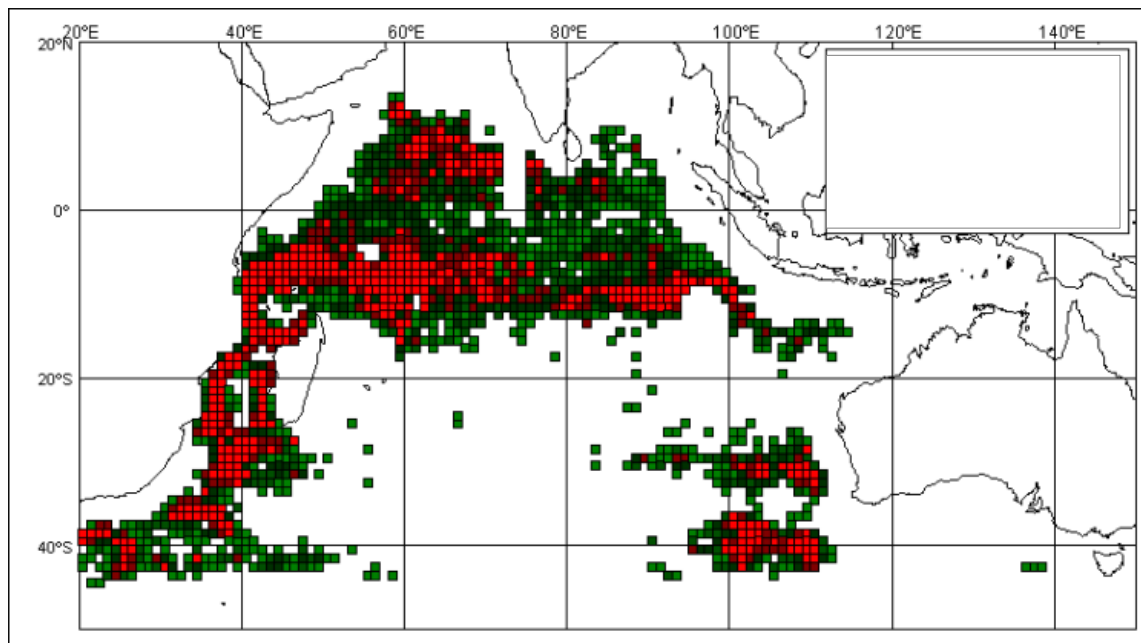


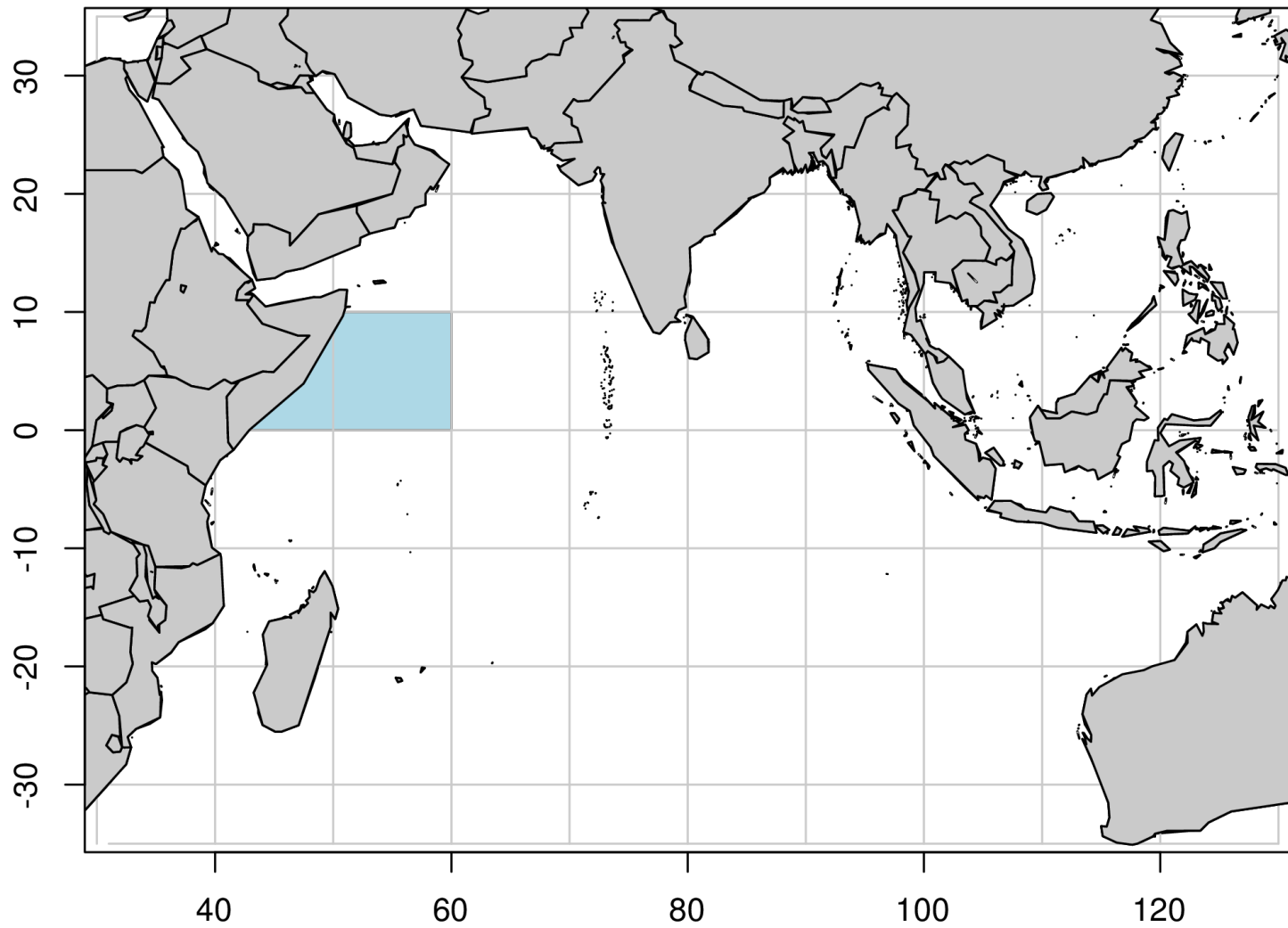
# Quantify performance measures



# Identify Management Procedures

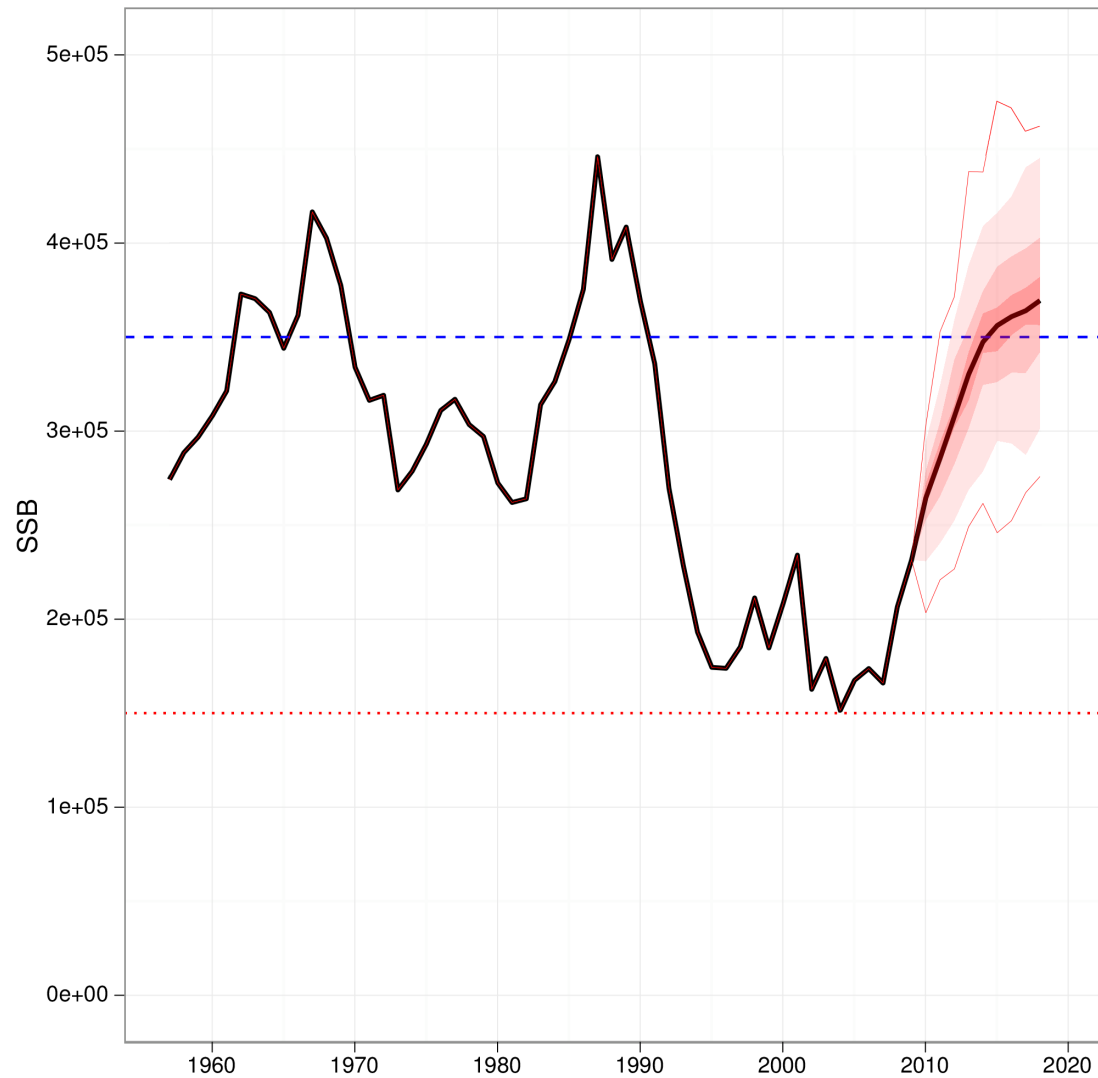






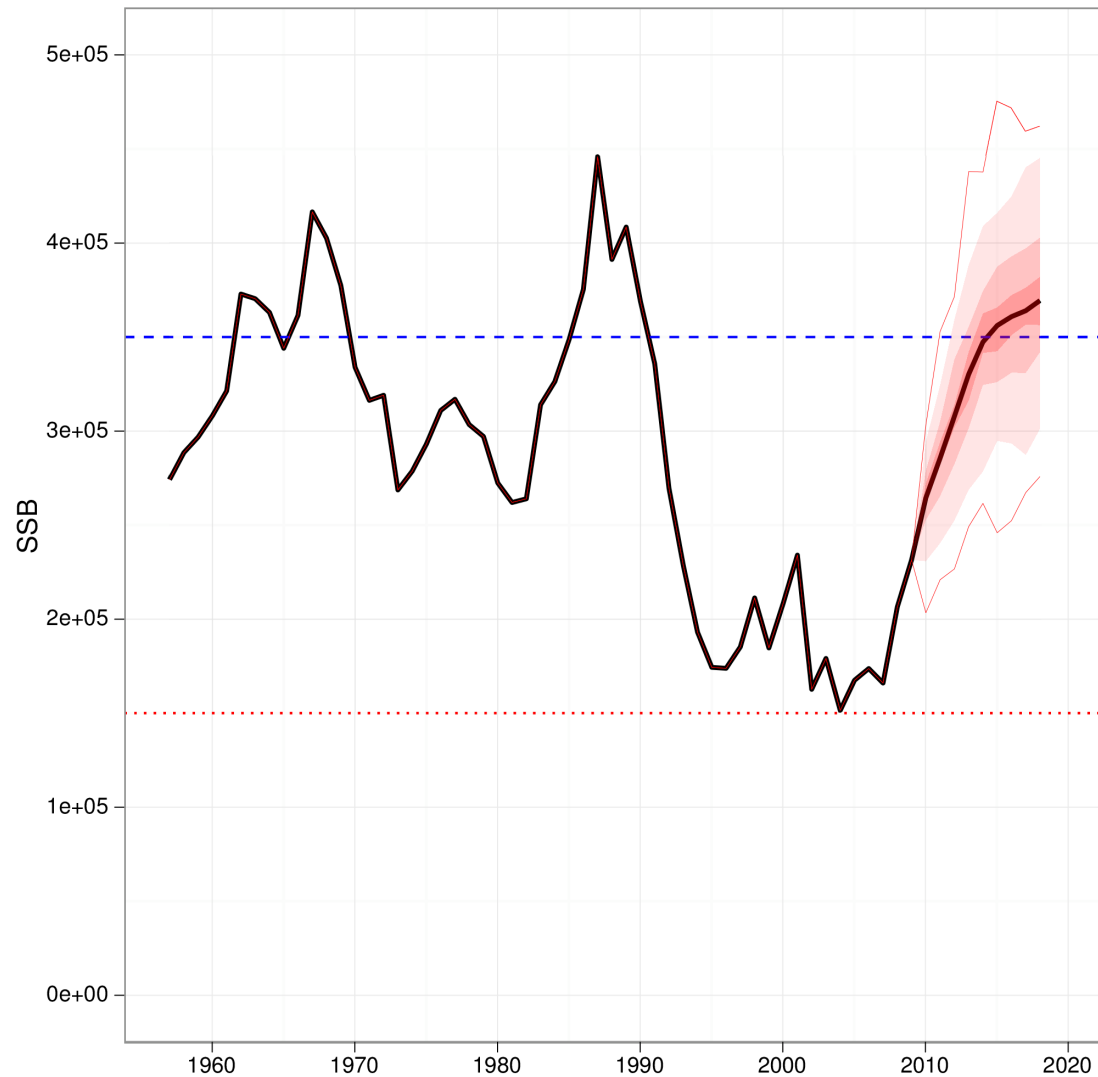
Closed areas/seasons

# Conduct simulations





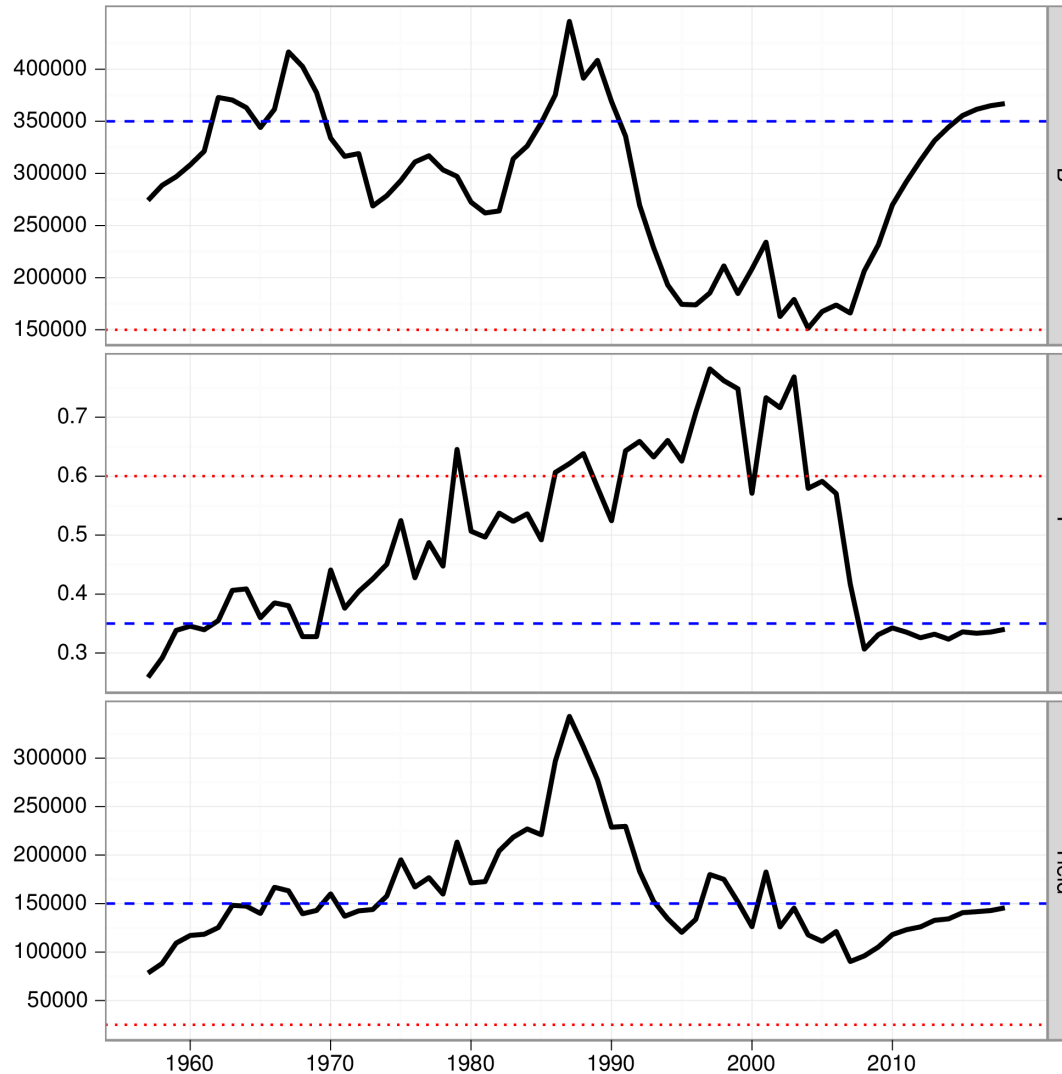
# Conduct simulations



**69%**  
 **$B > B_{MSY}$**

**0%**  
 **$B < B_{lim}$**

# Summarize performance of MPs

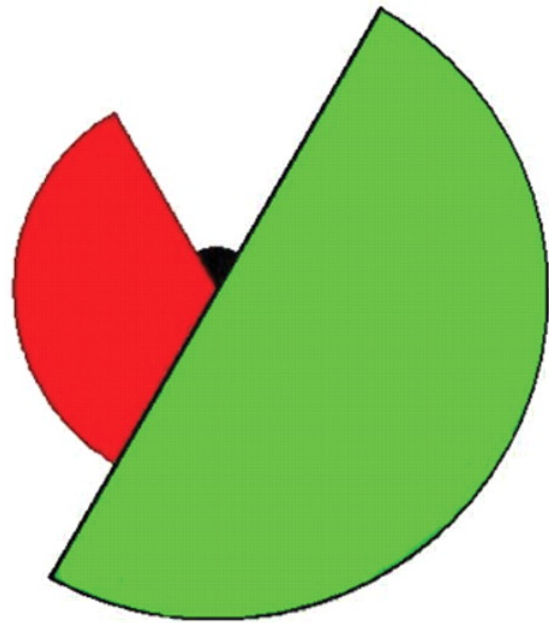


**69%**  
**B > BMSY**

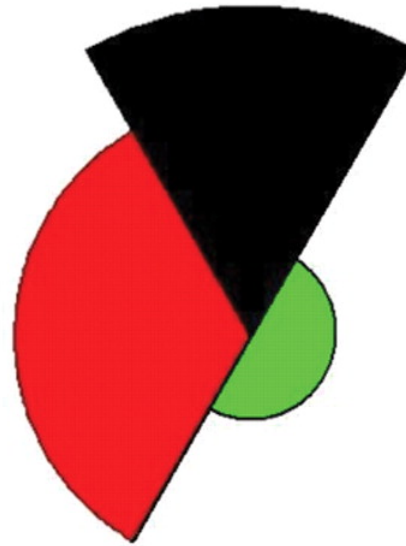
**32%**  
**F > FMSY**

**56%**  
**Y >= MSY**

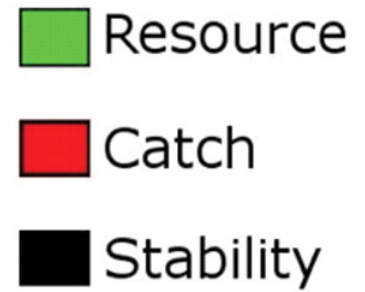
# Select best MP



*modFree*

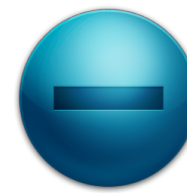


*rbPlan*





Avoid yearly variability in SA  
Long-term trade-offs  
Less haggling  
No 'wrong' best assessment  
Default decision  
Risk on board  
Consistent with PA  
Interaction across the table



Lengthy development  
Overly rigid  
Autopilot  
Data still essential  
Results dependent on model

## Some references

- ICES JMS Vol. 64 Issue 4 MSE Symposium

<http://icesjms.oxfordjournals.org/content/vol64/issue4/index.dtl>

- IWC Revised Management Procedure
- AUS 4-tier fisheries management system