IO YFT stock assessment by ASPIC (revised version 3)

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Revised scenarios

Fine scale STD_CPUE

- **SET+Tropical** (1980-2009) （Nishida & Chang)

  (1) JPN (same as before)

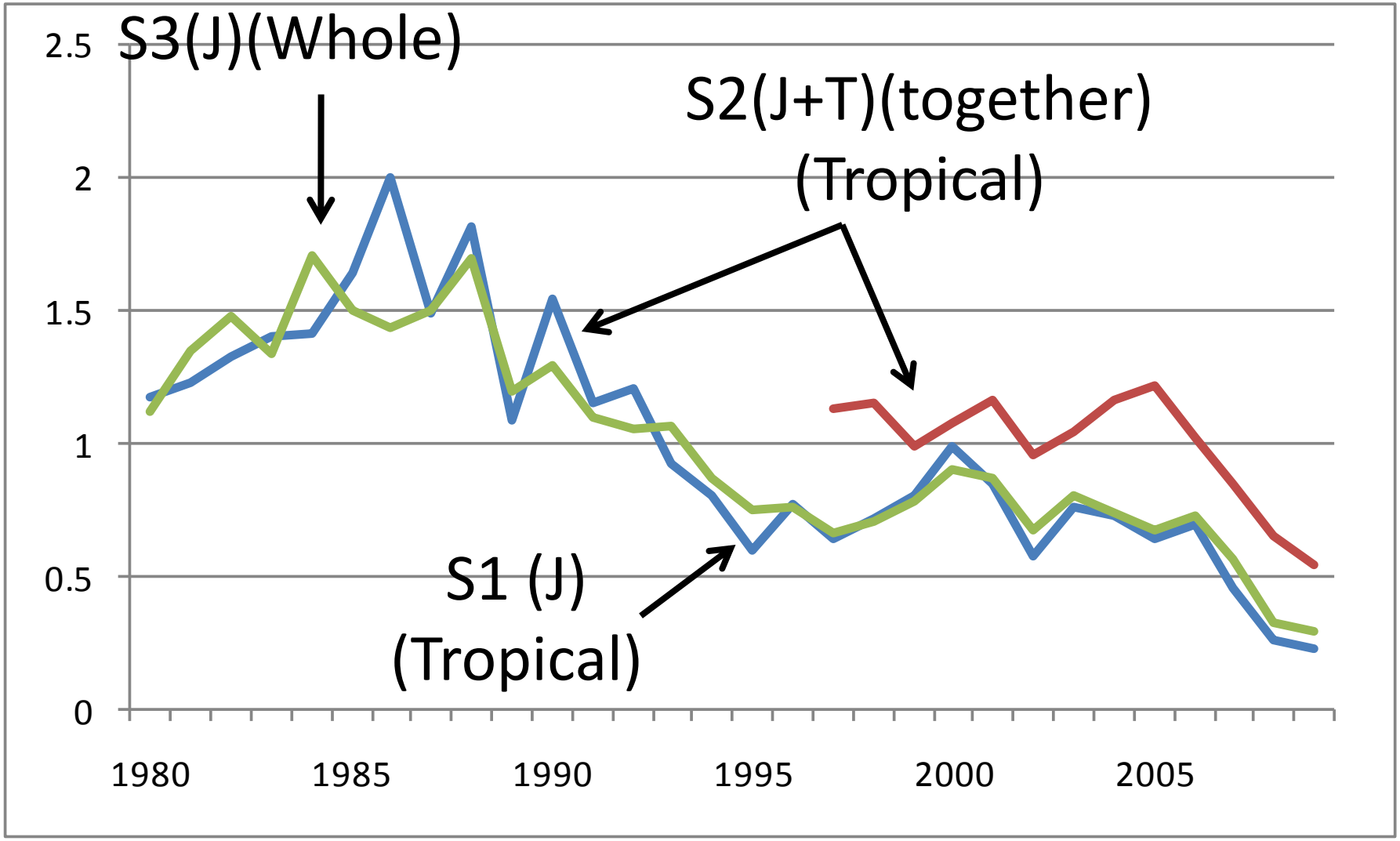
  (2) JPN+TWN (mean➔ problem : not used)

  (both can be used separately : Prager)

- **1x1+Whole** (1980-2009) (Okamoto & Shono)

  (3) JPN (similar index **MFCL** for comp.)

STD CPUE (3 scenarios)



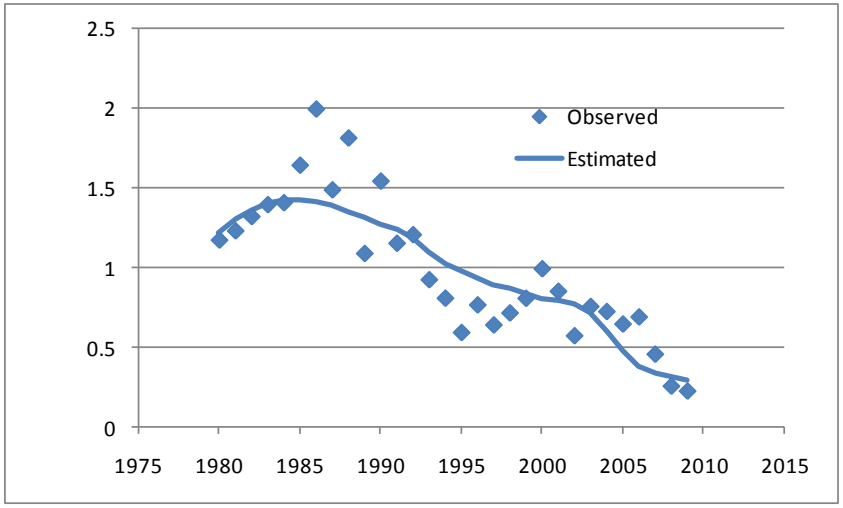
Results
結果

Results

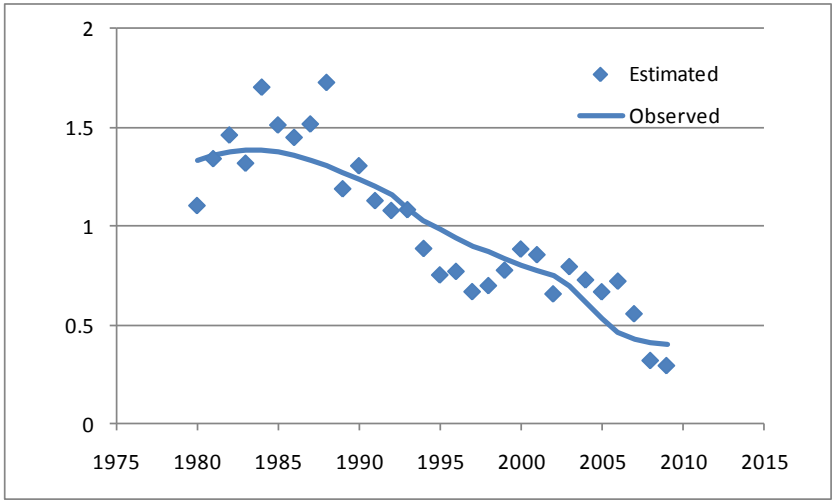
	S1(J) (Tropical)	S2(J+T) (Tropical)	S3(J) (Whole)
MSY (1,000t)	324	Not converged	287
F(ratio)	1.87		1.47
TB(ratio)	0.49		0.69

Residuals (estimated vs. observed STD_CPUE)

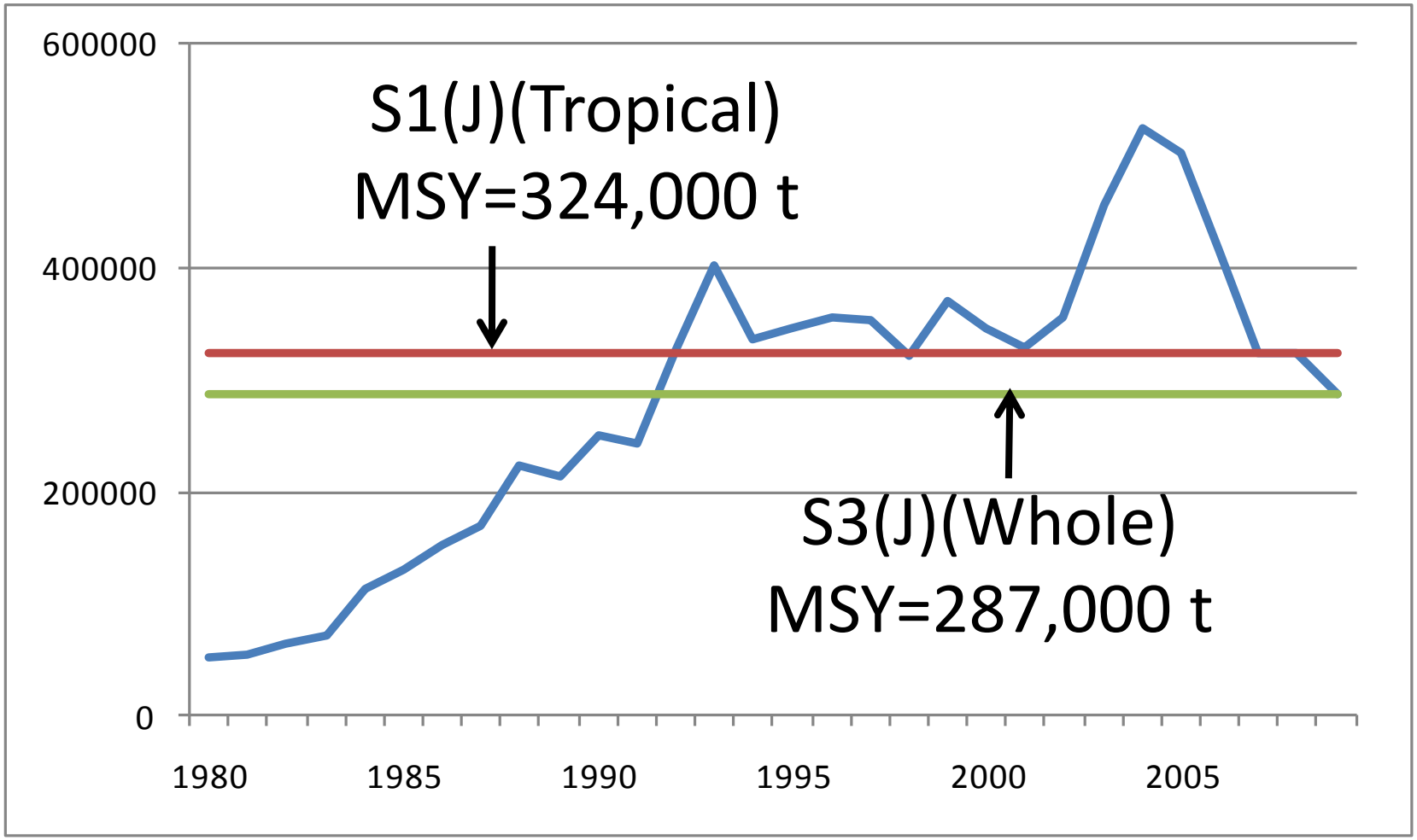
Scenario 1 (J)(Tropical)



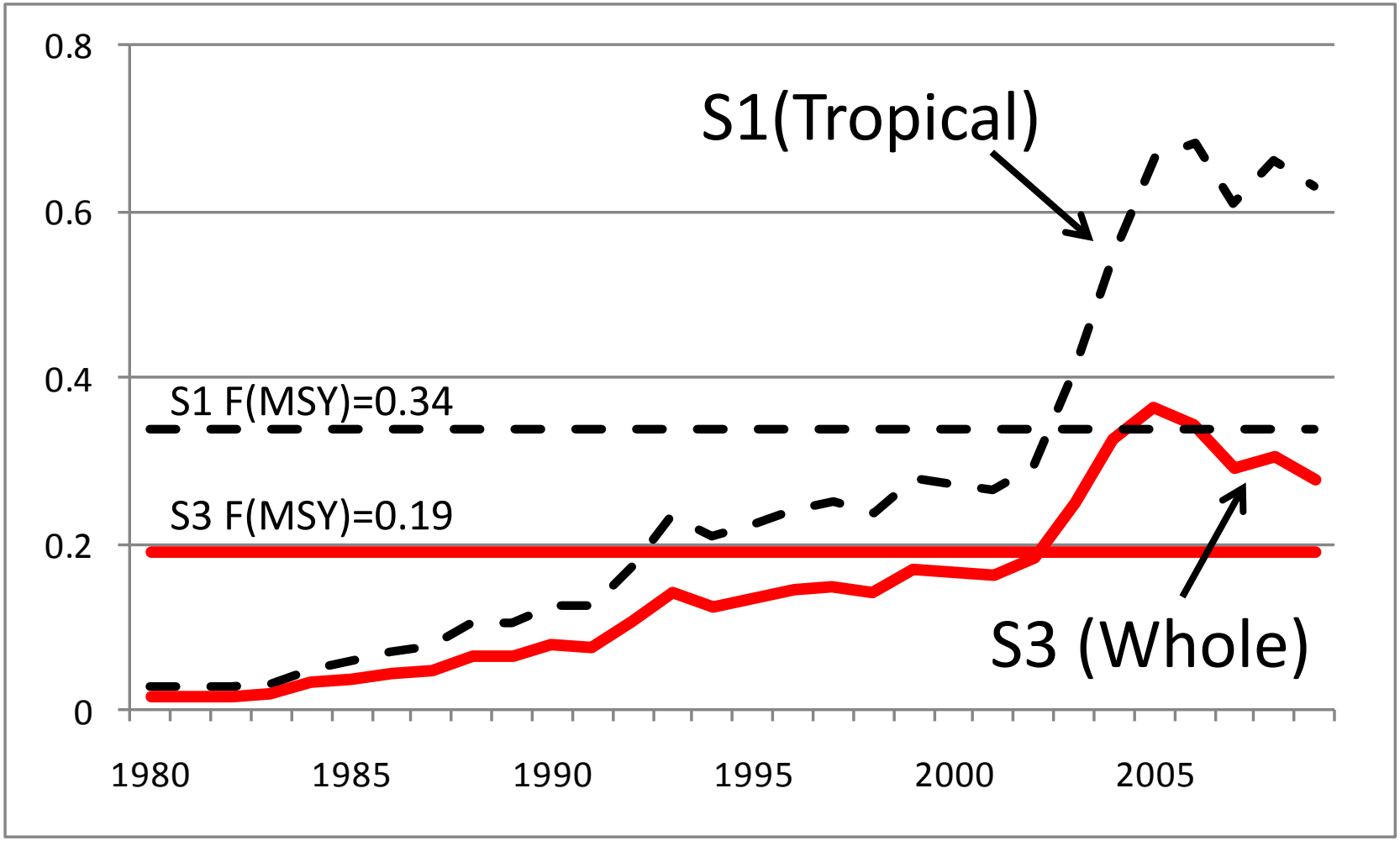
Scenario 3 (J)(Whole)



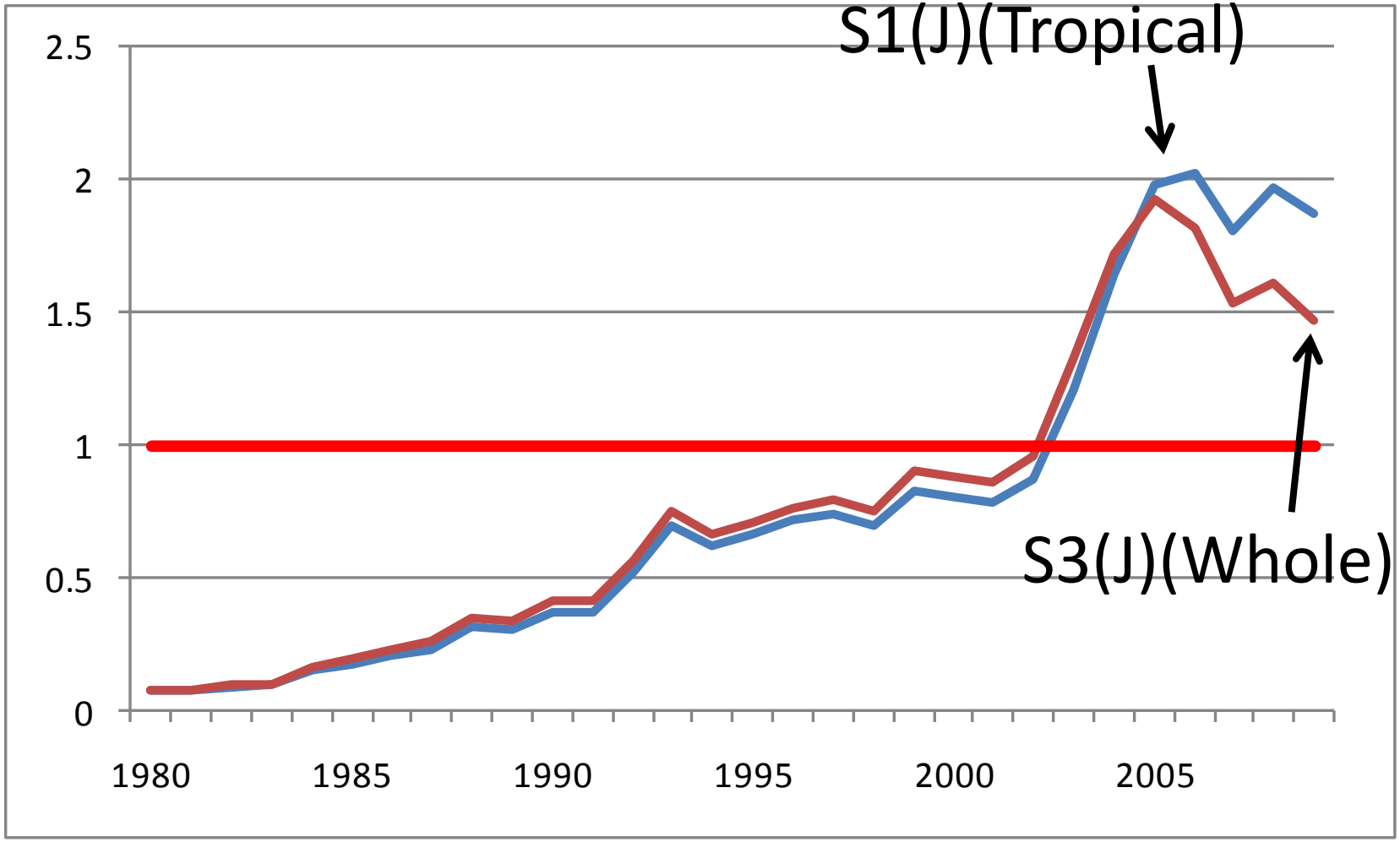
Catch vs. MSY


600000
400000
200000
0
1980
1985
1990
1995
2000
2005
S1(J)(Tropical)
MSY=324,000 t
S3(J)(Whole)
MSY=287,000 t

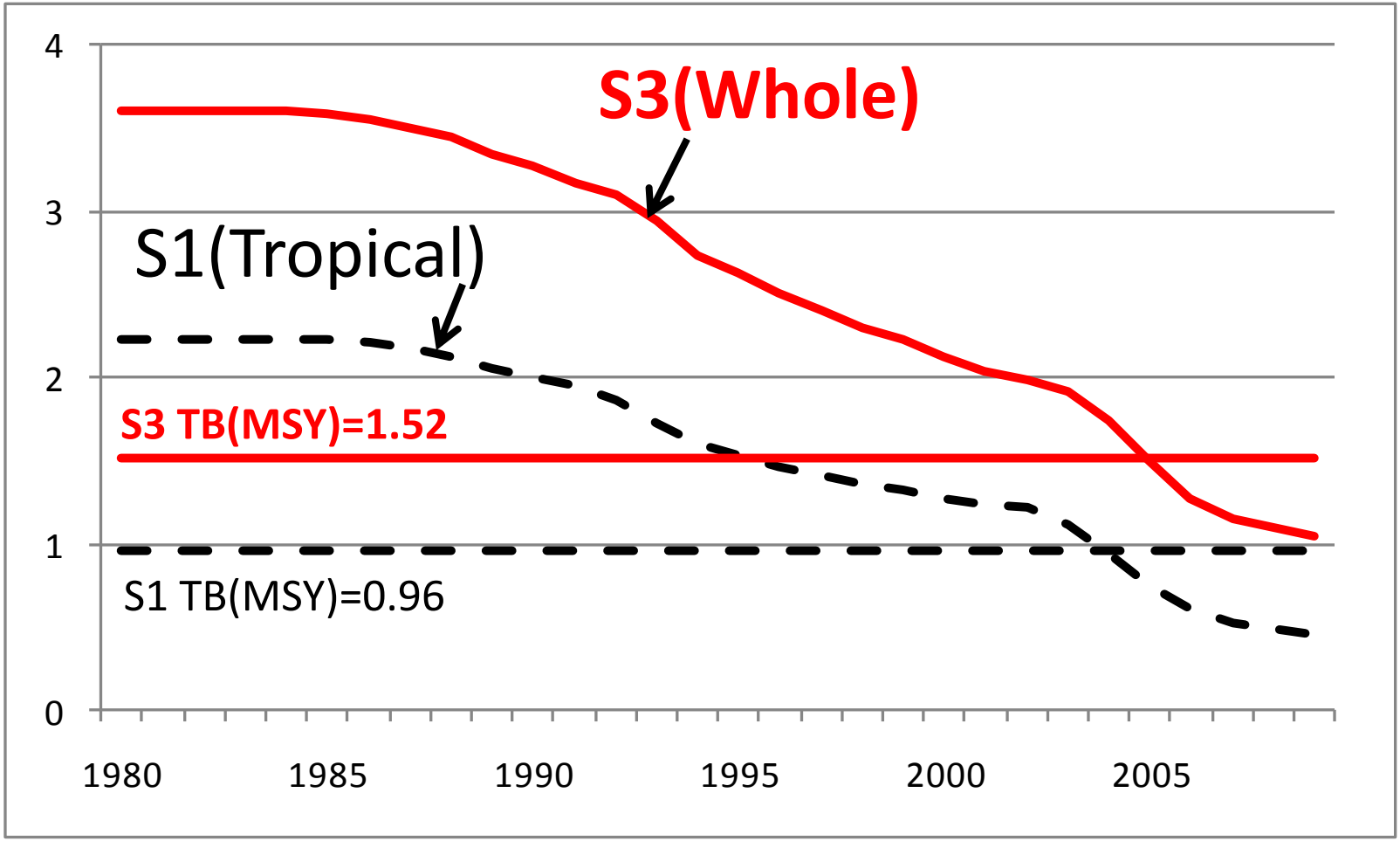
F


0.8
0.6
0.4
0.2
0
S1(Tropical)
S1 F(MSY)=0.34
S3 F(MSY)=0.19
S3 (Whole)
1980
1985
1990
1995
2000
2005

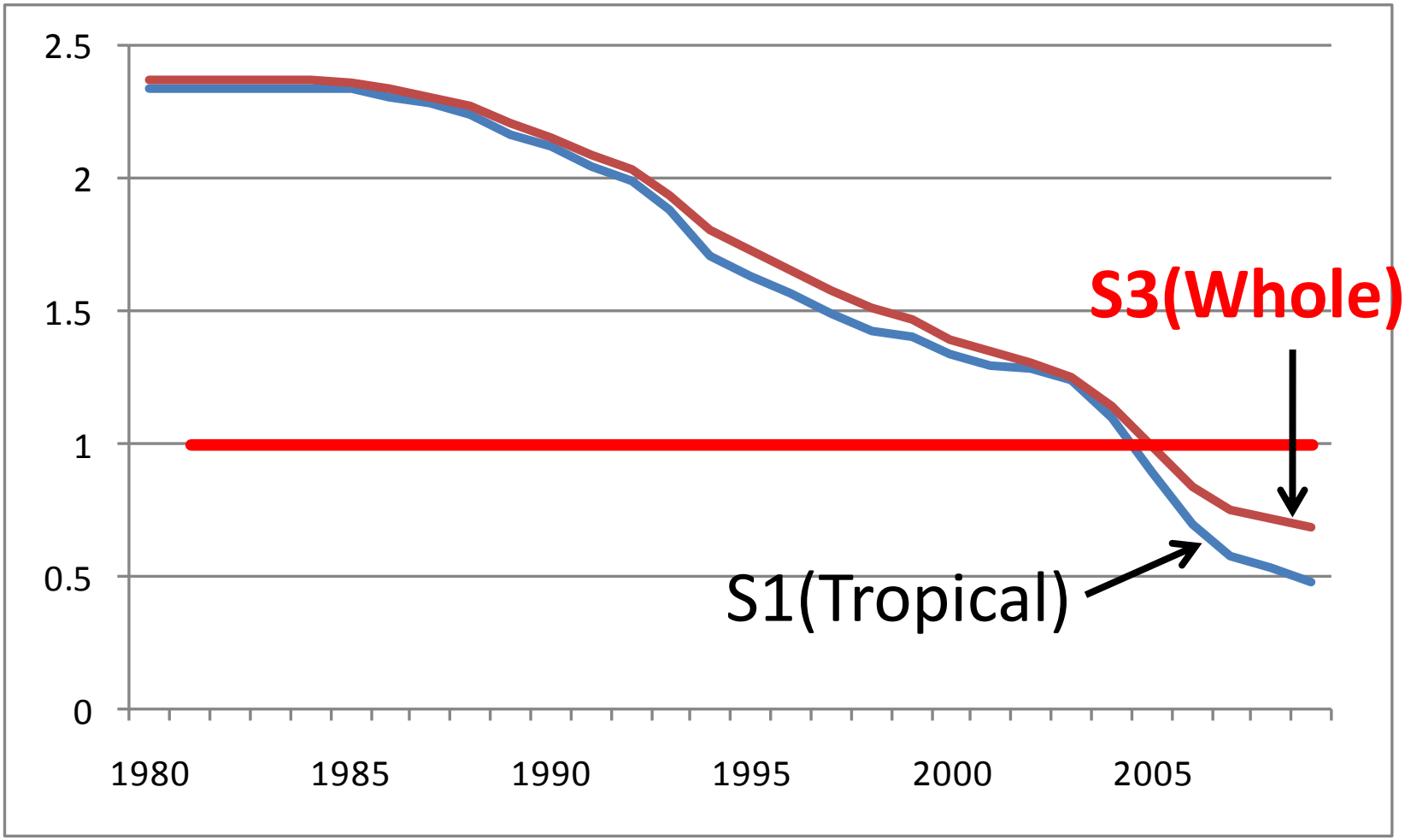
F(ratio)


S1(J)(Tropical)
S3(J)(Whole)
2.5
2
1.5
1
0.5
0
1980
1985
1990
1995
2000
2005

Total biomass (million tons)



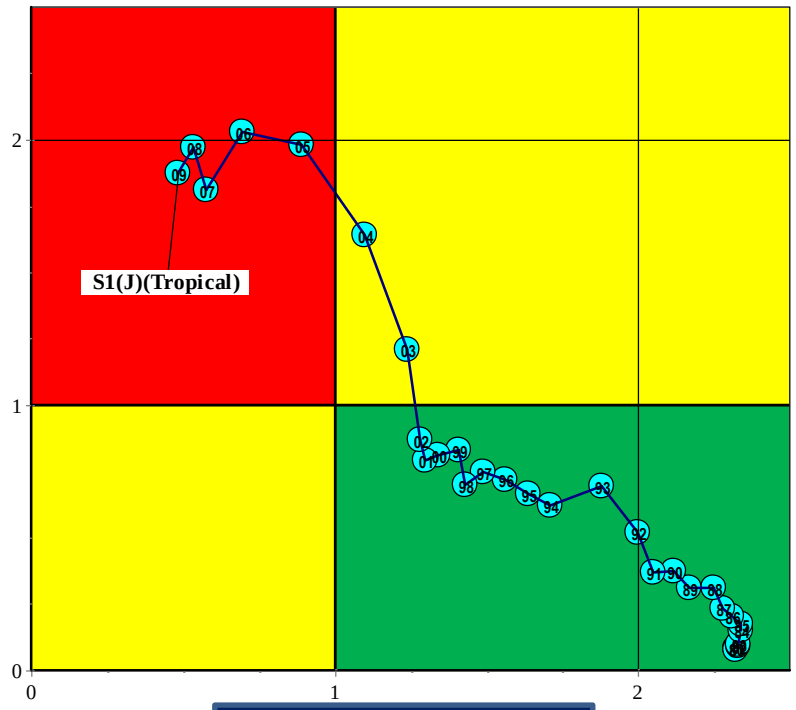
TB(ratio)


2.5
2
1.5
1
0.5
0
1980
1985
1990
1995
2000
2005
S3(Whole)
S1(Tropical)

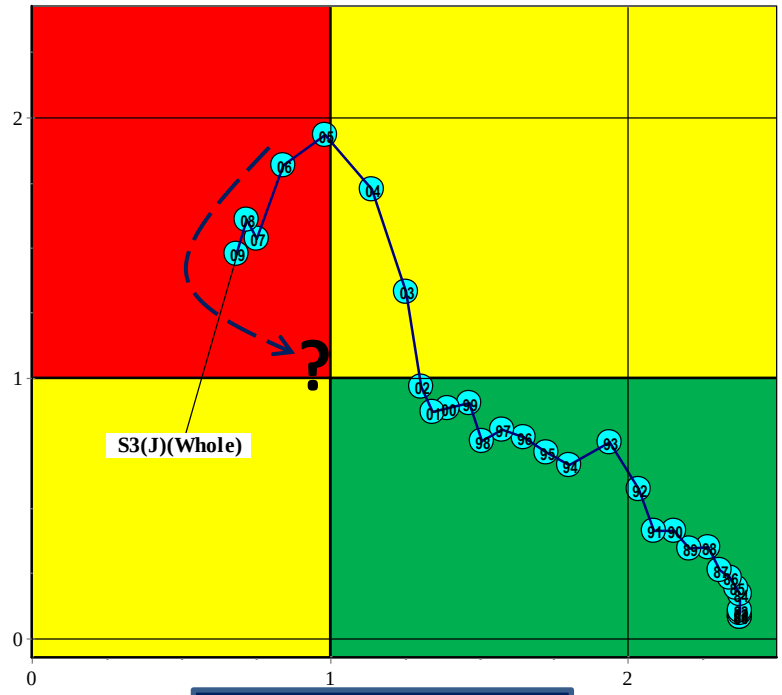
Scenario 1 (J)(Tropical) (pessimistic) (no sign of recover)

Scenario 3 (J)(Whole) (less pessimistic) (recovering?)

F/ F(MSY)

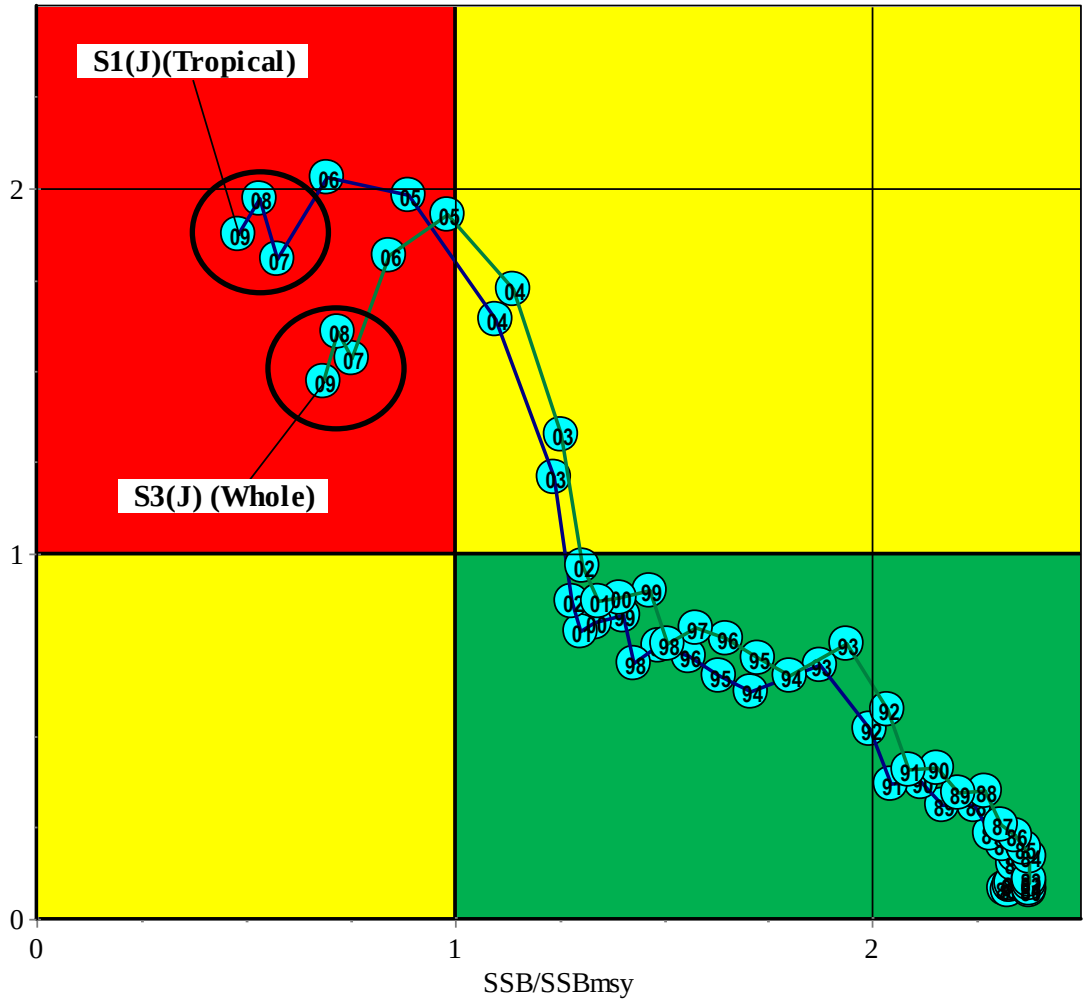


TB/TB(MSY)



TB/TB(MSY)

Tropical area: F(still high level)
Whole area : F(decreasing)
Biomass (both area) : last 3 yrs ➔ capped recovering sign ?



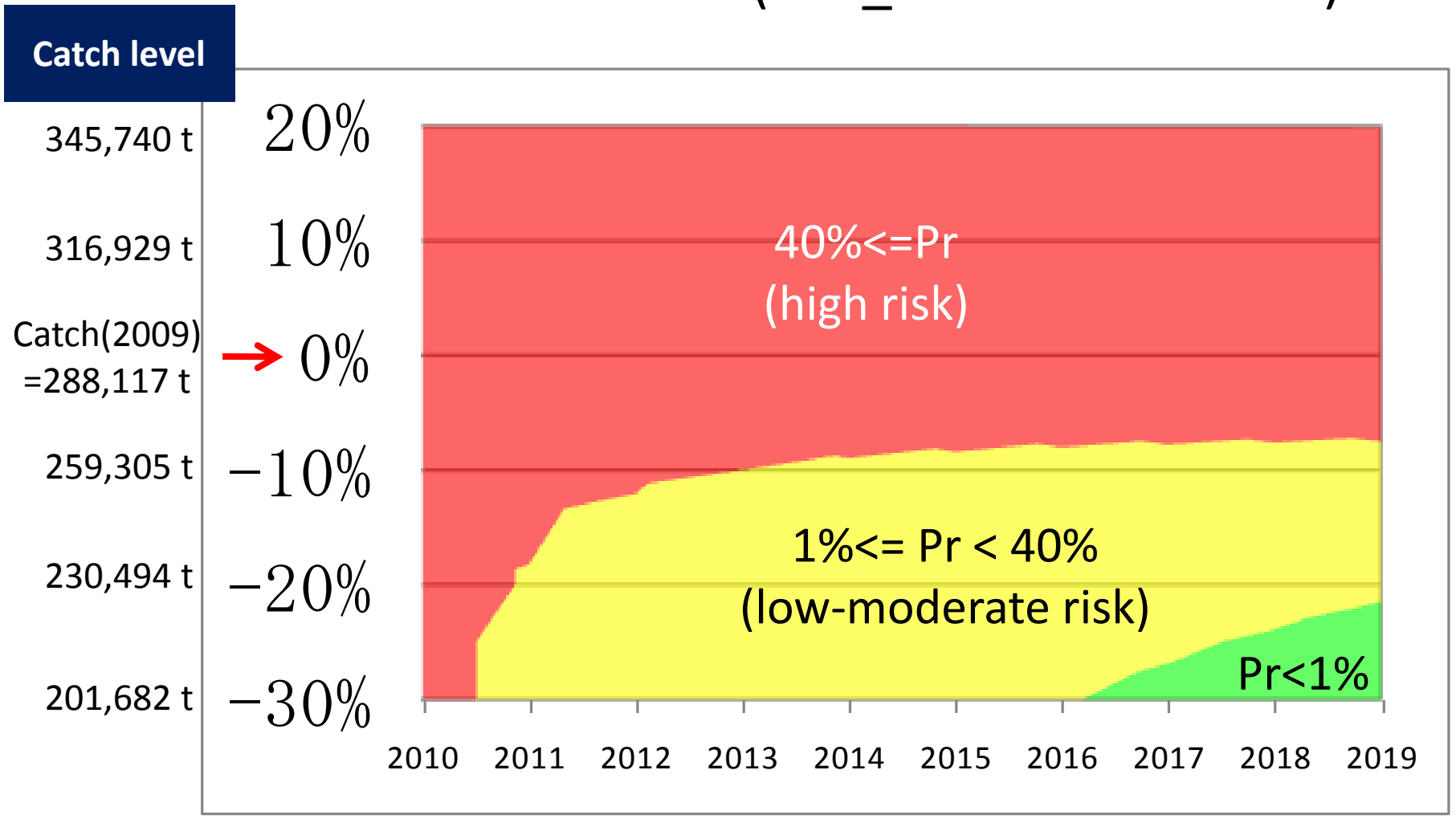
Kobe 2 risk management strategy matrix

based on ASPIC scenario 3 (STD_CPUE: whole area)

Stock status Reference point	Projection time frame	**Probability (%) (point estimate) violating the reference points** *under the constant catch scenario with C(2009)=288,117 t*			
		-30% (201,682 t)	-20% (230,494 t)	0% (288,117 t)	20% (345,740 t)
Pr(TB<TBmsy)	In 3 years	29	37	54	76
	In 10 years	< 1	3	95	100
Pr(F>Fmsy)	In 3 years	< 1	7	100	100
	In 10 years	< 1	< 1	100	100

Color classification
Green : Pr < 1% (low risk)
Yellow : 1%<=Pr<40% (low-moderate risk)
Red : 40%<=Pr (high risk)

Kobe plot 2 (MSE): (constant catch scenario)
Total biomass (TB) : Pr(%)(TB<TBmsy)
based on ASPIC scenario 3 (STD_CPUE: whole area)



Kobe plot 2 (MSE): (constant catch scenario)
Fishing mortality (F) : Pr(%)(F>Fmsy)
based on ASPIC scenario 3 (STD_CPUE: whole area)