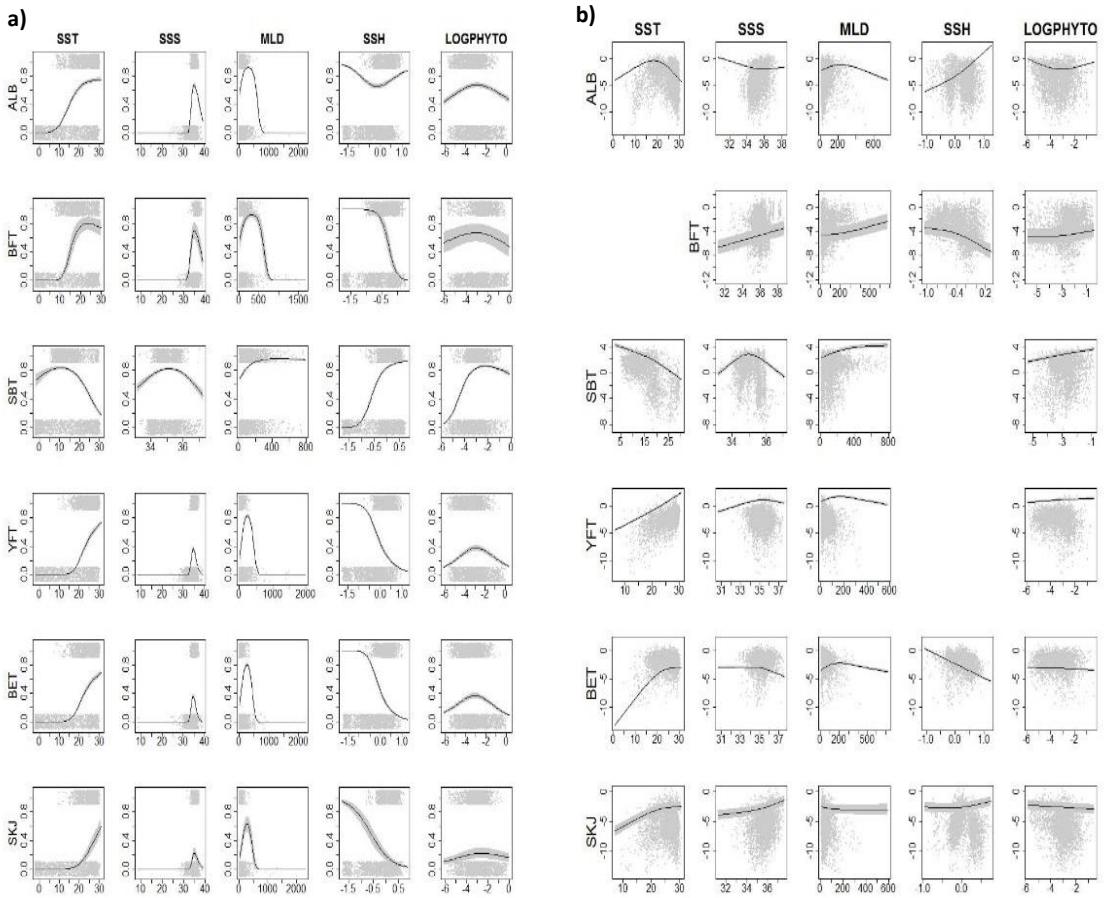

S. Figure 1: *Response curves of a) Presence/pseudo-absence (PA) and b) ABundance (AB) models for the six-tuna species (in rows: alb=albacore, bft=A. bluefin, sbt=S. bluefin, yft=yellowfin, bet=bigeye and skj=skipjack tunas) and different variables (in columns: SST=Sea Surface Temperature, SSS=Sea Surface Salinity, MLD=Mixed Layer Depth, SSH= Sea Surface Height and Logphyto=log-transformed phytoplankton concentration).*

1 **Supporting information**

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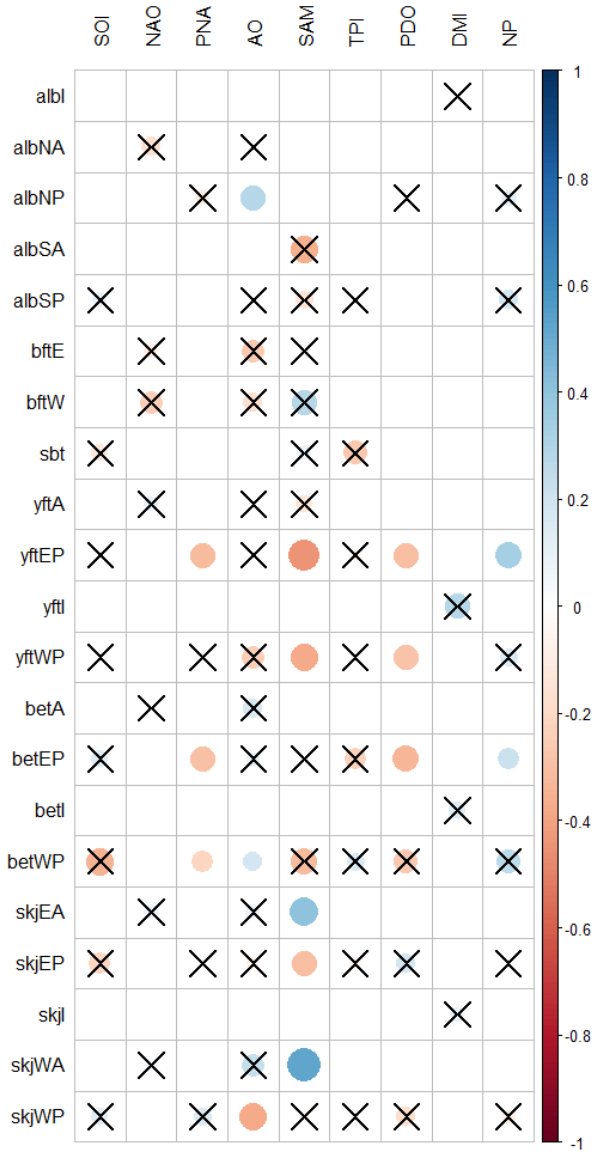
S. Table 1: Summary of the selected models (presence/pseudo-absence and abundance) with the environmental parameters, fixed factors and the interactions selected, and the deviance explained (%) by each of them.

Species	Model	(Intercept)	k = 3)	k = 3)	k = 3)	k = 3)	k = 3)	season	stock	year	season:stock	season:year	stock:year	season:stock:year	dev.expl
Albacore	PA	-2.4815944	+	+	+	+	+	+	+	+	+		+		36.98
	AB	-4.2214996	+	+	+	+	+	+	+	+	+		+		51.76
Bluefin tuna	PA	-2.9385521	+	+	+	+	+	+	+	+	+		+		43.67
	AB	-3.2971680	+	+	+	+		+	+	+	+	+	+		47.36
Southern bluefin tuna	PA	-0.7008228	+	+	+	+	+	+		+					35.54
	AB	0.3391786	+	+	+		+	+		+		+			52.62
Yellowfin	PA	-5.0097227	+	+	+	+	+	+	+	+	+		+		48.21
	AB	-2.5428113	+	+	+		+	+	+	+	+	+	+	+	49.02
Bigeye	PA	-4.5675182	+	+	+	+	+	+	+	+	+		+		45.75
	AB	-2.3488877	+	+	+	+	+	+	+	+	+	+	+	+	41.78
Skipjack	PA	-3.0985859	+	+	+	+	+	+	+	+	+		+		47.16
	AB	-5.7934399	+	+	+	+	+	+	+	+	+	+	+	+	62.41

S. Table 2: Model validation. Columns 1-7 (Threshold-Kappa) are related with PA models and column 8 (R^2) with abundance models.

	Threshold	AUC	Omision rate	Sensitivity	Specificity	Prop.correct	Kappa	R2
Albacore	0.590	0.7840197	0.1560905	0.8439095	0.7241298	0.7834647	0.5673885	0.598
A. bluefin	0.545	0.8383754	0.1289875	0.8710125	0.8057384	0.8375203	0.6754448	0.345
S. bluefin	0.580	0.7923346	0.2043011	0.7956989	0.7889702	0.7922580	0.5844537	0.424
Yellowfin	0.570	0.8359449	0.1176821	0.8823179	0.7895719	0.8354942	0.6712638	0.741
Bigeye	0.570	0.8250532	0.1225045	0.8774955	0.7726109	0.8244907	0.6493496	0.593
Skipjack	0.580	0.8321103	0.1385861	0.8614139	0.8028066	0.8319310	0.6639742	0.505

S. Table 3: Correlation significances (p-value) between tuna stocks changes in latitudinal GCs' and different climatic drivers: SOI (Southern Oscillation Index), NAO (North Atlantic Oscillation), PNA (Pacific/North American teleconnection pattern), AO (Artic Oscillation), SAM (Southern Annular Mode), TPI (Trans Polar Index), PDO (Pacific Decadal Oscillation) and DMI (Dipole Mode Index) and NP (North Pacific Index).



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S. Table 4: Excel file with six tuna species abundance changes (in absolute values and in %) for mid- and the end-of-the-century.

S. Mat. Table 5: Comparison of trends (increase or decrease) in Pacific countries skipjack abundance in the future (2050 mid-century and 2100 end-of-the-century) with Bell et al. (2013) and Senina et al. (2018).

Country	2050 (our study)	2100 (our study)	2050 (Bell et al. 2013)	2100 (Bell et al. 2013)	2050 (Senina et al. 2018)	2100 (Senina et al. 2018)
New Caledonia	+	+	+	+	+	+
Tonga	+	+	+	+	+	+
Fiji	+	+	+	+	+	+
French Polynesia	+	+	+	+	+	+
Vanuatu	+	+	+	+	+	+
Cook Is.	+	+	+	+	+	+
American Samoa	+	+	+	+	+	+
Samoa	+	+	+	+	+	+
Wallis & Futuna	+	+	+	+	+	+
Solomon Is.	+	+	-	-	-	-
Tokelau	+	+	+	+	-	-
Tuvalu	+	+	+	+	-	-
Kiribati	+	+	-	-	+	-
Papua New Guinea	+	+	+	+	-	-
Nauru	+	+	+	+	-	-
Palau	-	-	+	-	-	-
Marshall Is.	+	+	+	+	-	-

13

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