



Supplement of

Micronekton indicators evolution based on biophysically defined provinces

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Supplementary material

Figure S1: Annual time series of global mean epipelagic layer temperature T (°C, top panel), stratification of the mesopelagic ocean Str (°C, middle panel) and NPP (mgC/m²/day, bottom panel) from 1998 to 2023 (spatially averaged over the whole domain).

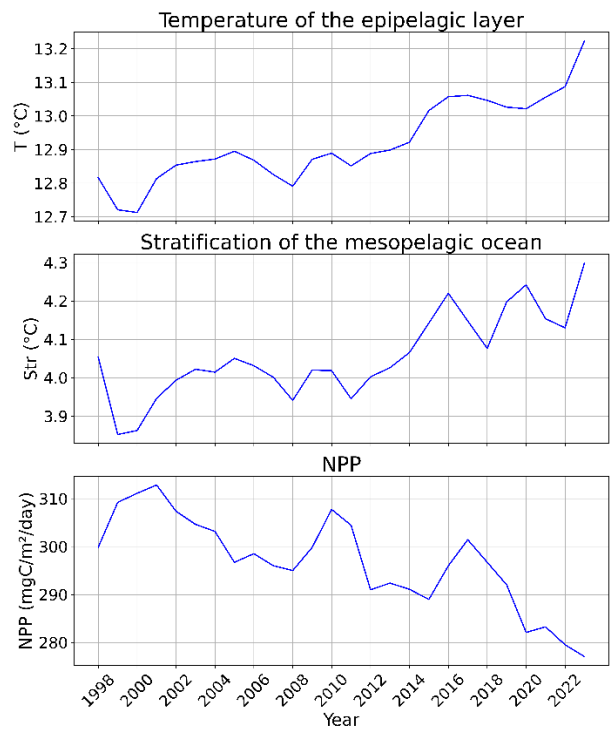
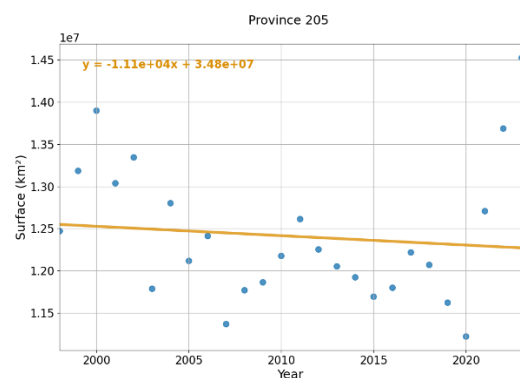
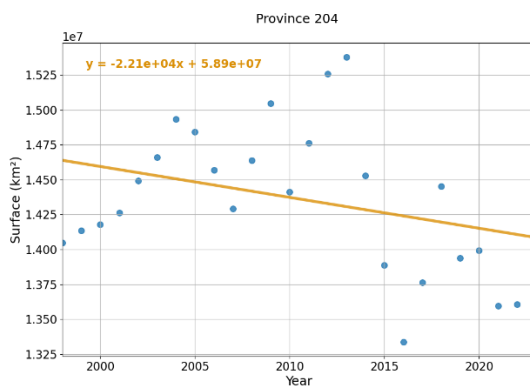
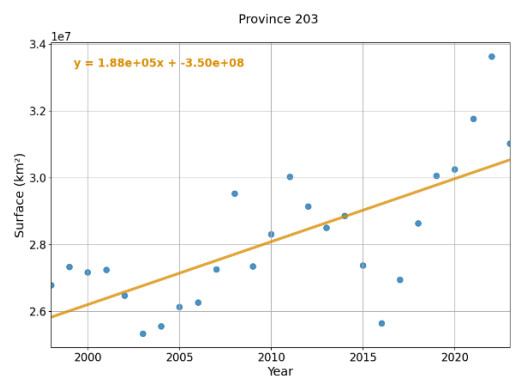
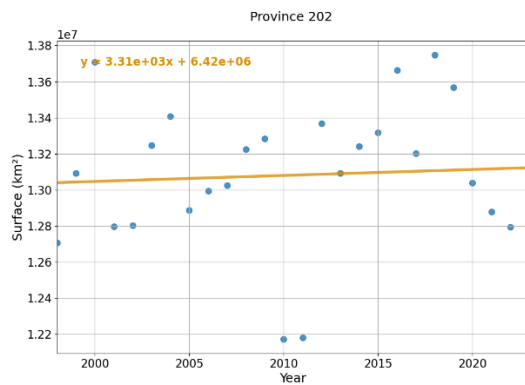
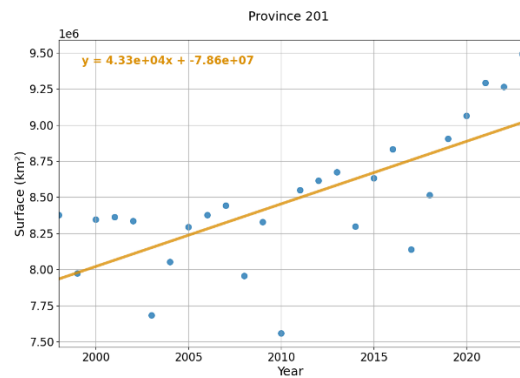
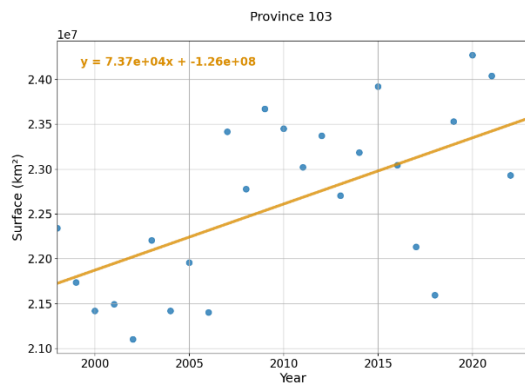
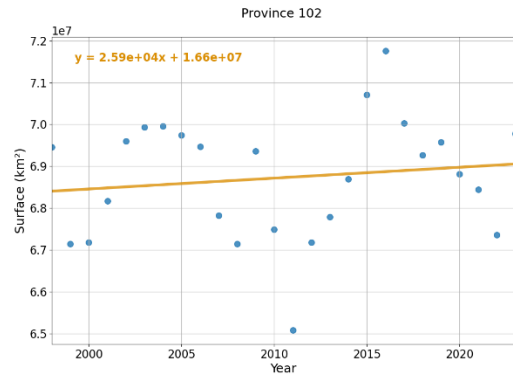
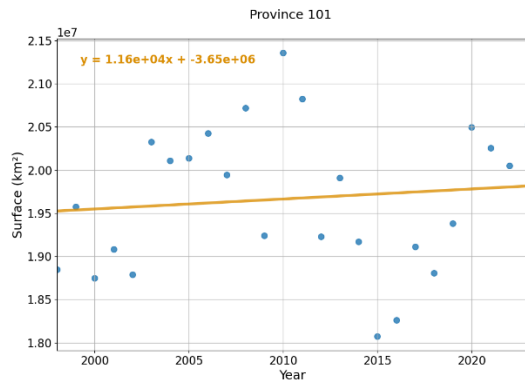
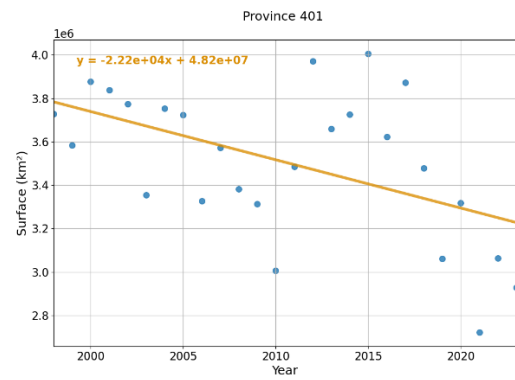
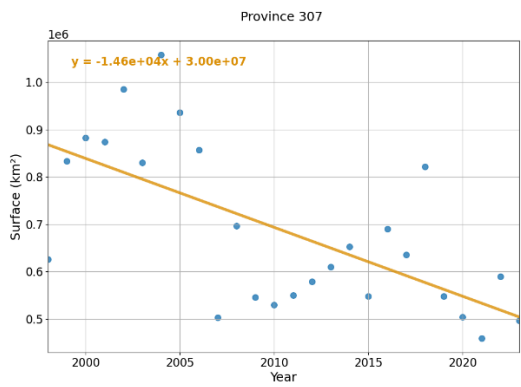
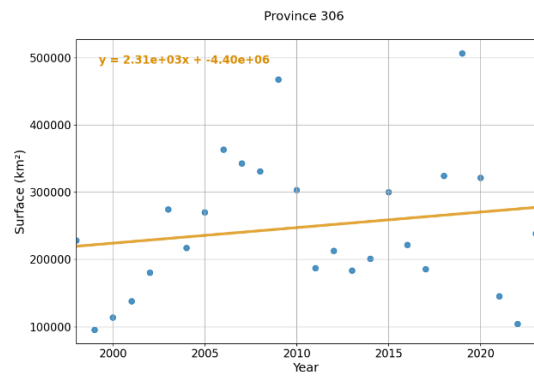
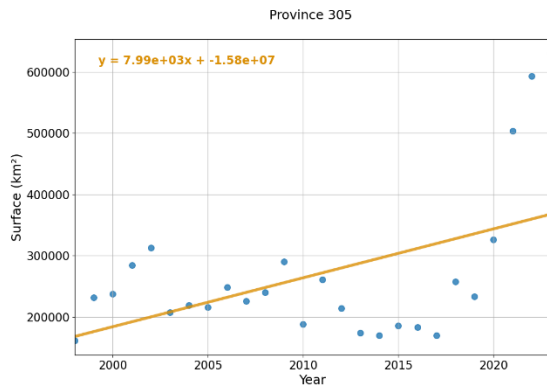
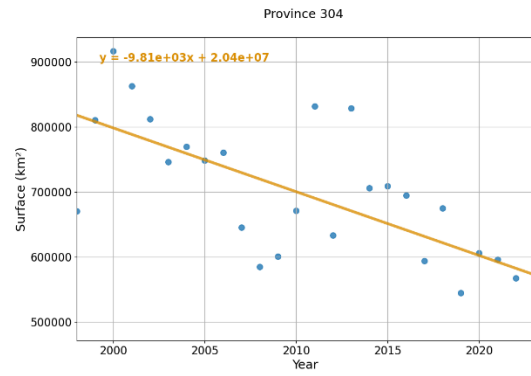
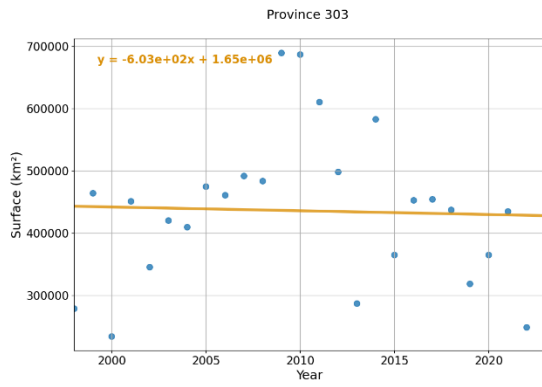
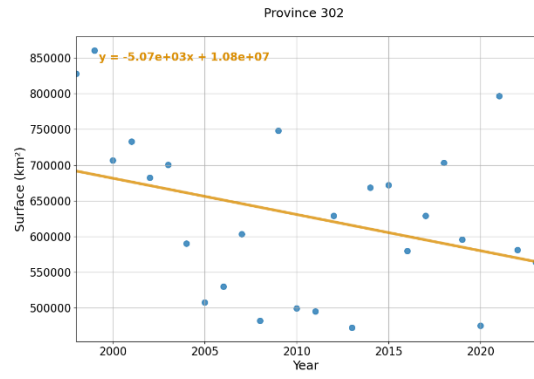
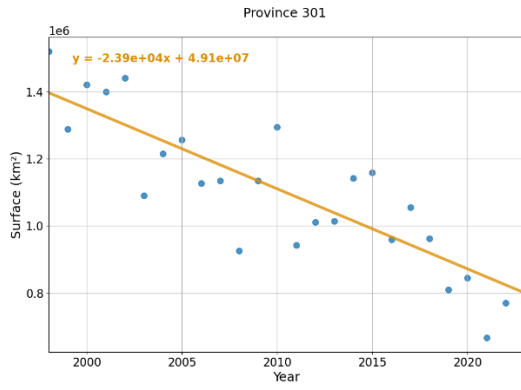
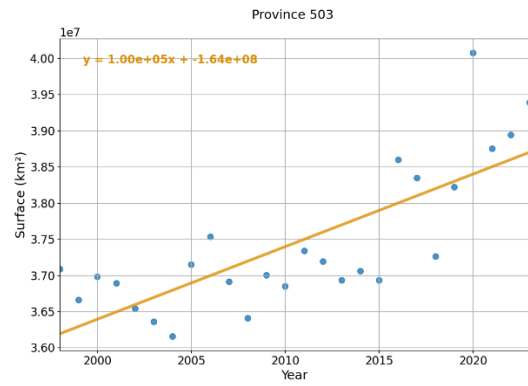
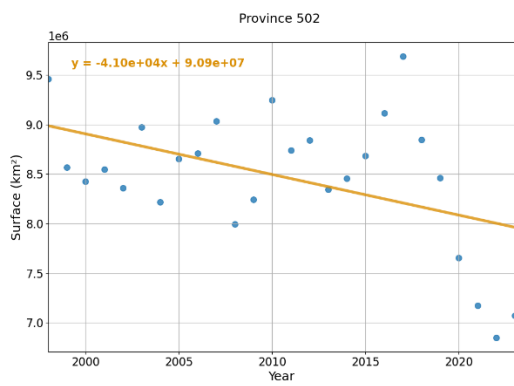
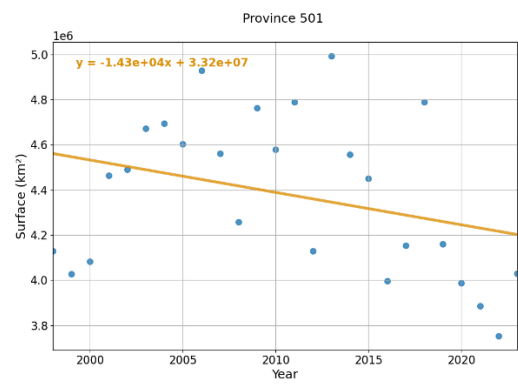
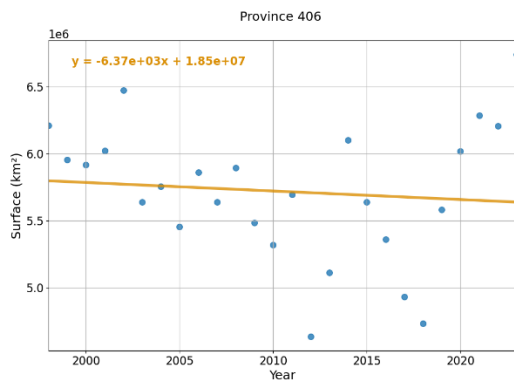
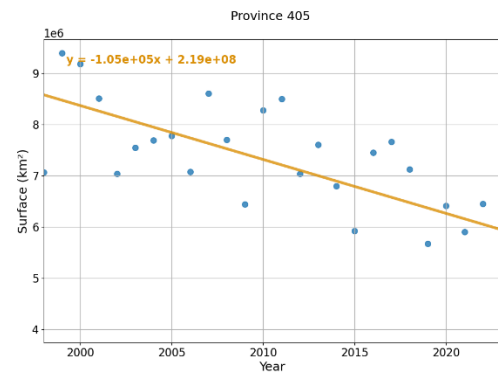
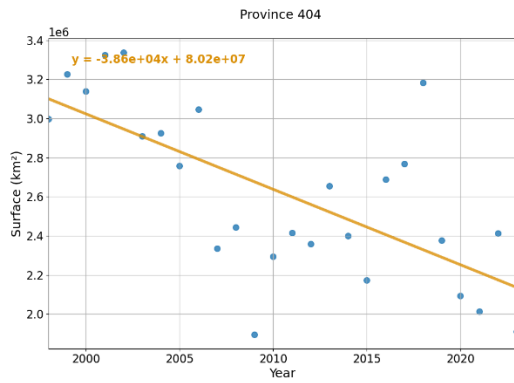
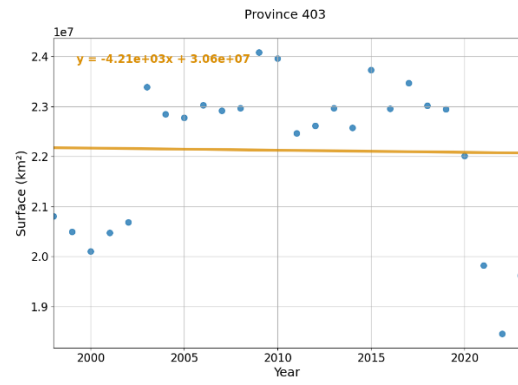
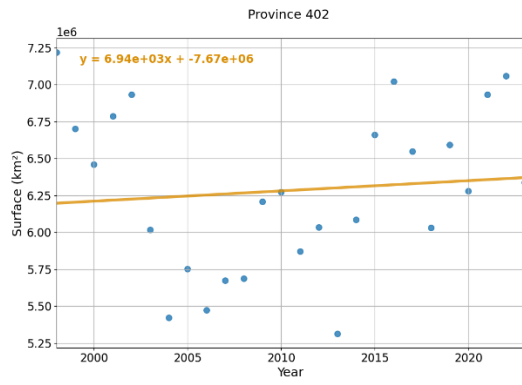


Figure S2: Scatter plots of the annual surface area (km²) on the period 1998-2023 (blue dots), with the associated linear regression (orange line), for each province. The linear regression equation is displayed in orange.







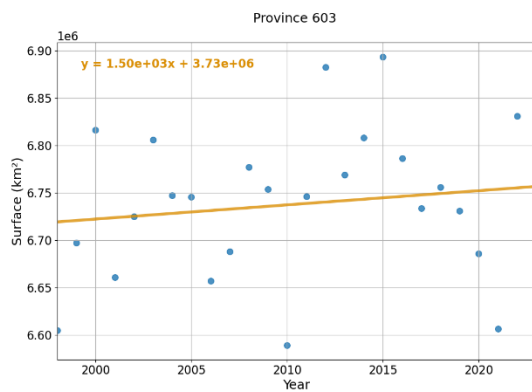
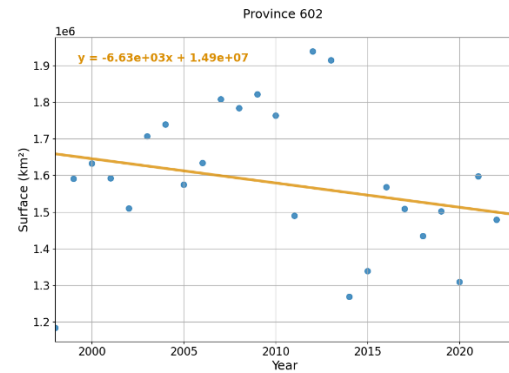
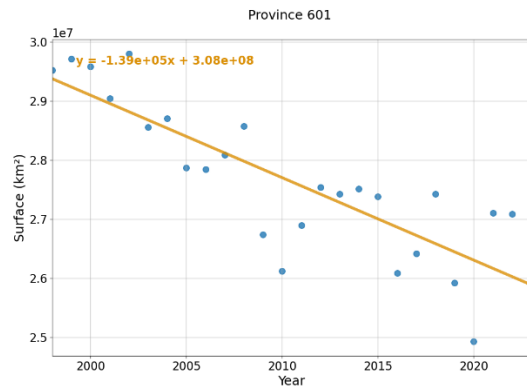
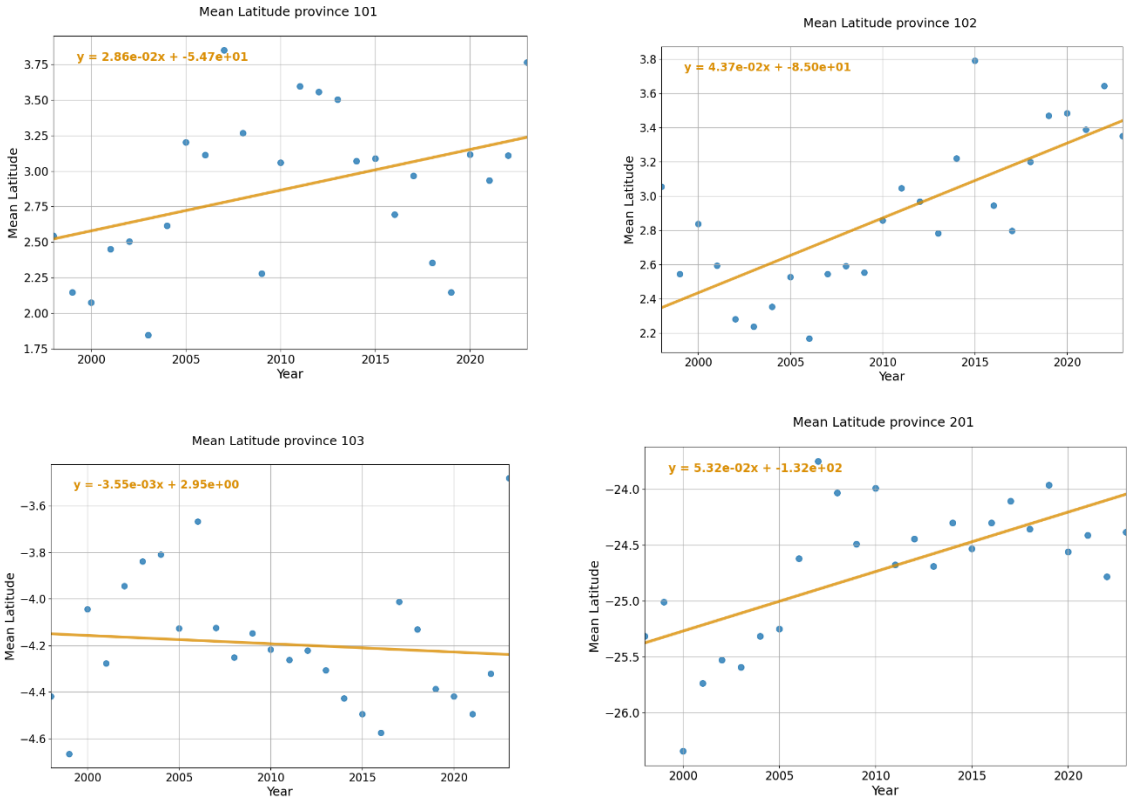


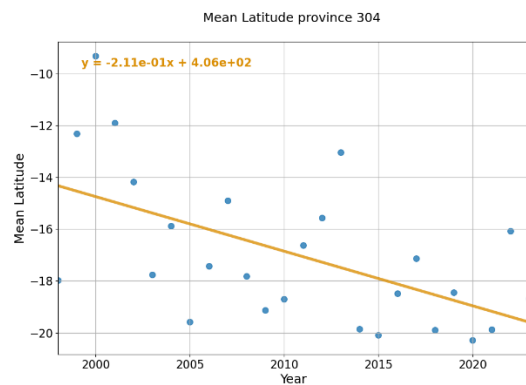
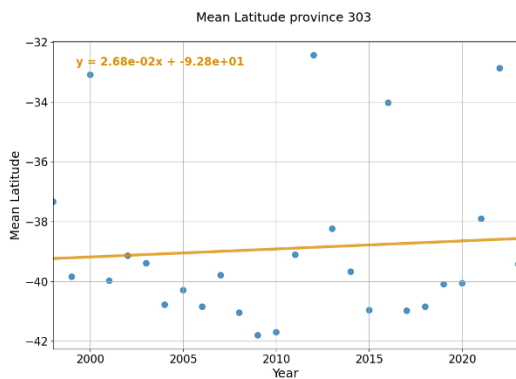
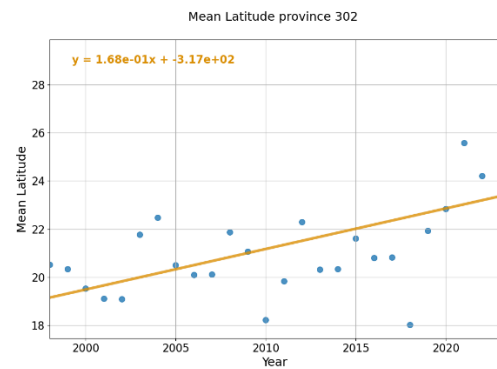
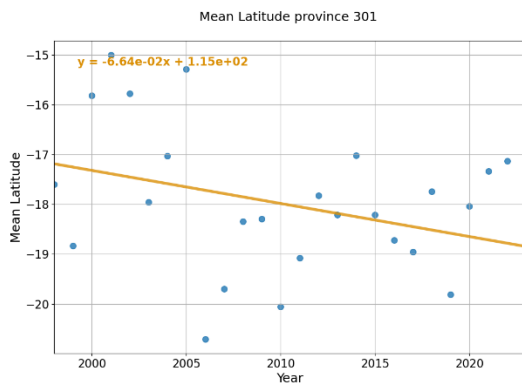
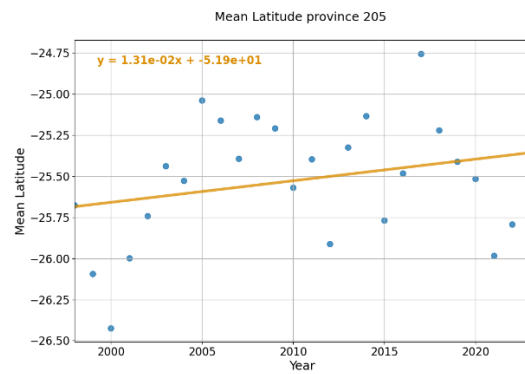
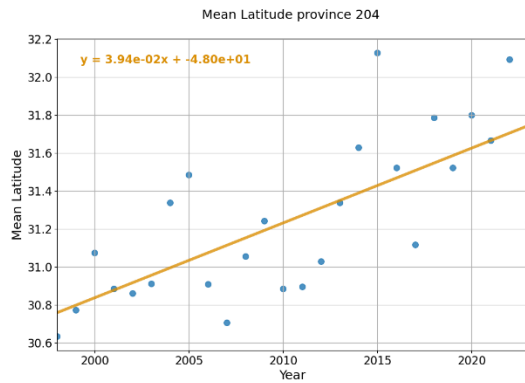
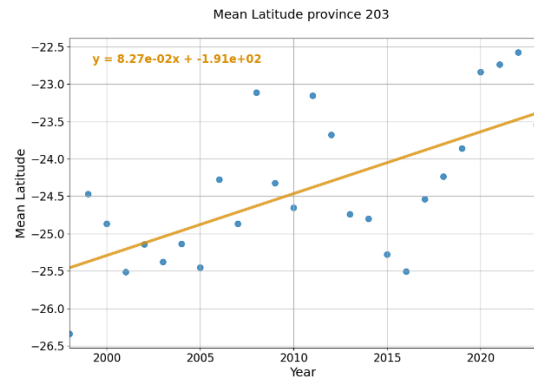
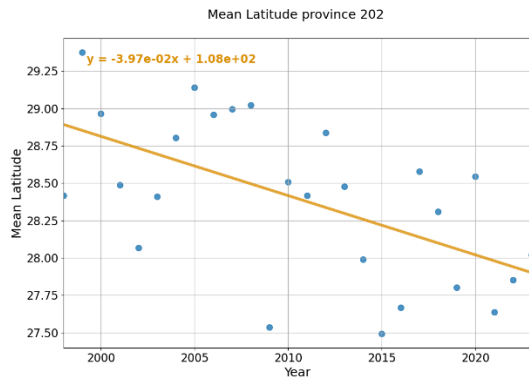
Table S1: Trend in the linear regression model computed from provinces' surface evolution, in km²/year. This is computed from an annual timeseries of provinces' surface (km²). From the linear regression, the percentage of variation of the provinces' surface between 1998 and 2023 is computed (in %), based on the difference between the first and last point of the regression (respectively matching 1998 and 2023). The last column shows the coefficients of determination (R²) of each linear regression model.

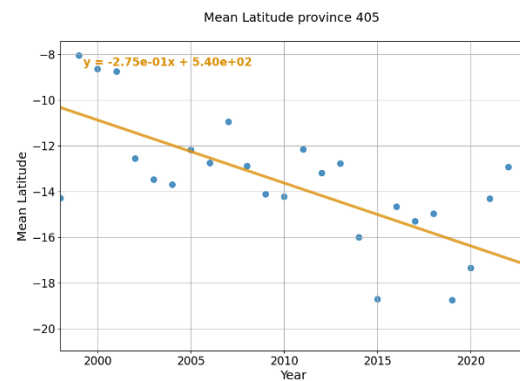
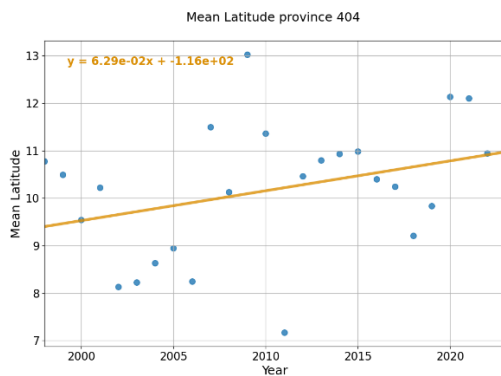
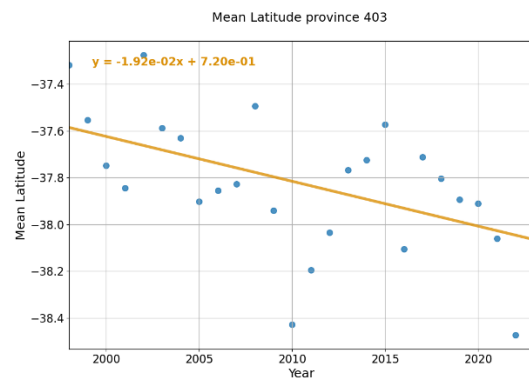
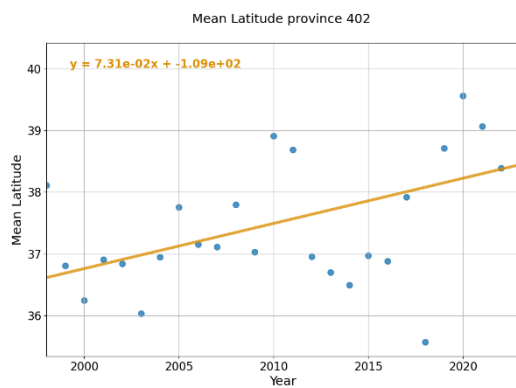
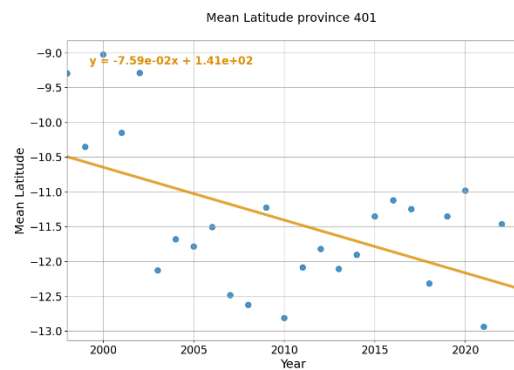
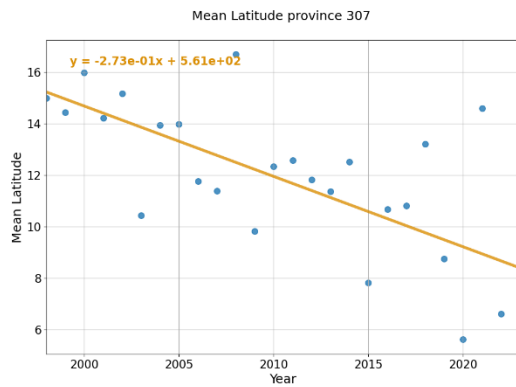
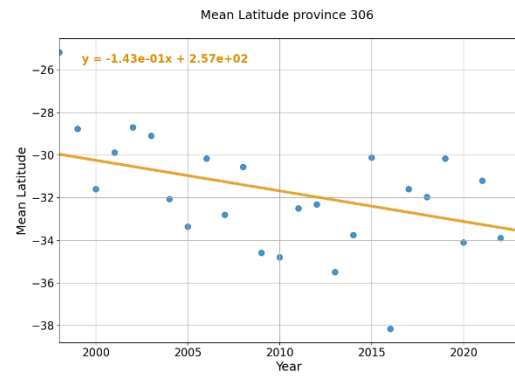
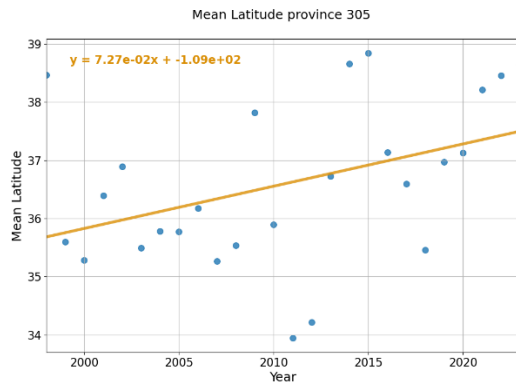
Biome	Province	Trend in provinces' surface (km ² /year)	Variation (% of evolution of provinces' surface between 1998 and 2023)	R ²
1	101	+1,16E+04	+1,545	0,011
	102	+2,59E+04	+0,986	0,019
	103	+7,37E+04	+8,822	0,367
	201	+4,33E+04	+14,202	0,498
	202	+3,31E+03	+0,661	0,004
2	203	+1,88E+05	+18,948	0,490
	204	-2,21E+04	-3,933	0,109
	205	-1,11E+04	-2,308	0,011
	301	-2,39E+04	-44,440	0,708
3	302	-5,07E+03	-19,073	0,121
	303	-6,03E+02	-3,540	0,002
	304	-9,81E+03	-31,185	0,480
	305	+7,99E+03	+123,472	0,248

4	306	+2,31E+03	+27,405	0,029
	307	-1,46E+04	-43,604	0,417
	401	-2,22E+04	-15,279	0,248
	402	+6,94E+03	+2,911	0,010
	403	-4,21E+03	-0,494	0,000
	404	-3,86E+04	-32,347	0,447
	405	-1,05E+05	-31,875	0,470
	406	-6,37E+03	-2,856	0,009
	501	-1,43E+04	-8,180	0,099
5	502	-4,10E+04	-11,861	0,207
	503	+1,00E+05	+7,211	0,587
	601	-1,39E+05	-12,344	0,690
6	602	-6,63E+03	-10,389	0,064
	603	+1,50E+03	+0,579	0,021

Figure S3: Scatter plots of the annual province's average latitude on the period 1998-2023 (blue dots), with the associated linear regression (orange line), for each province. The linear regression equation is displayed in orange.







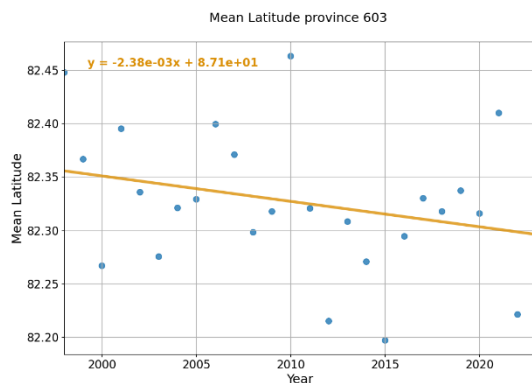
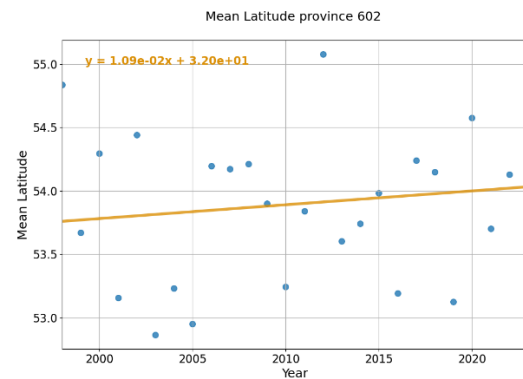
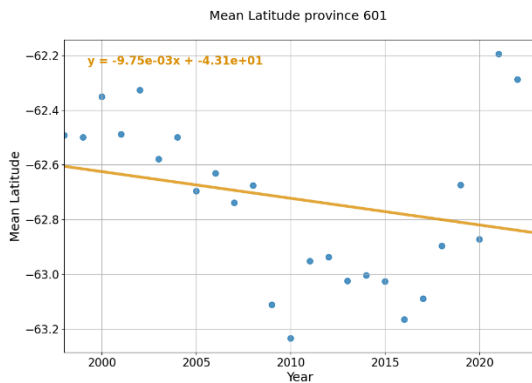
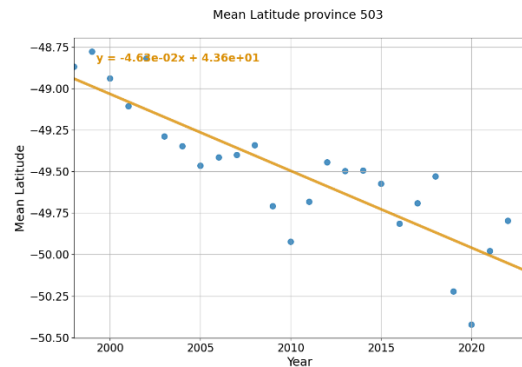
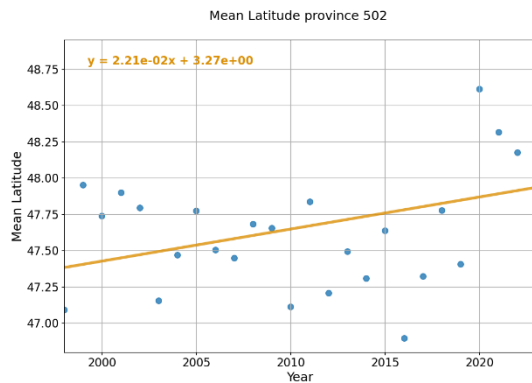
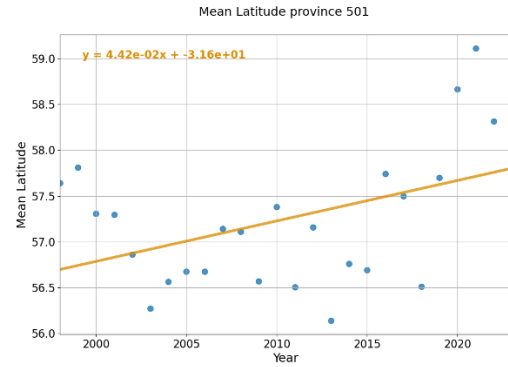
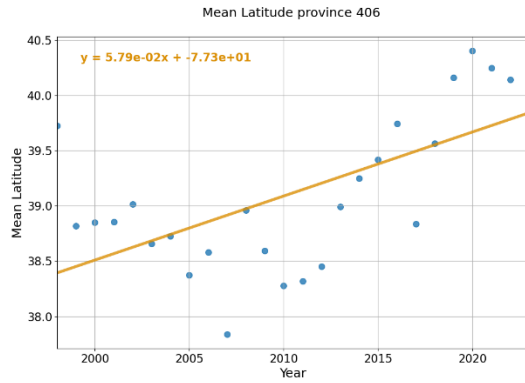


Table S2: Trend in the linear regression model computed from provinces' average latitude evolution, in degree poleward/year. This is computed from an annual time series of provinces' average latitude. From the linear regression, the variation of the provinces' average latitude between 1998 and 2023 is computed (in degree

51 poleward), based on the difference between the first and last point of the regression (respectively matching 1998
52 and 2023). The last column shows the coefficients of determination (R^2) of the linear regression models.

Biome	Province	Trend in the provinces' average latitude evolution (degree poleward/year)	Variation of the provinces' average latitude between 1998 and 2023 (degree poleward)	R^2
1	101	-	-	-
	102	-	-	-
	103	-	-	-
2	201	-0,053	-1,330	0,417
	202	-0,040	-0,992	0,325
	203	-0,083	-2,067	0,412
	204	0,039	0,985	0,515
	205	-0,013	-0,328	0,073
3	301	0,066	1,660	0,118
	302	0,168	4,210	0,298
	303	-0,027	-0,670	0,006
	304	0,211	5,265	0,312
	305	0,073	1,816	0,160
	306	0,143	3,587	0,167
	307	-0,273	-6,830	0,469
4	401	0,076	1,898	0,294
	402	0,073	1,828	0,242
	403	0,019	0,479	0,261
	404	0,063	1,573	0,121
	405	0,275	6,882	0,508
	406	0,058	1,447	0,386
5	501	0,044	1,105	0,197
	502	0,022	0,552	0,133
	503	0,046	1,158	0,735
6	601	0,010	0,244	0,063
	602	0,011	0,272	0,019
	603	-0,002	-0,059	0,078

53