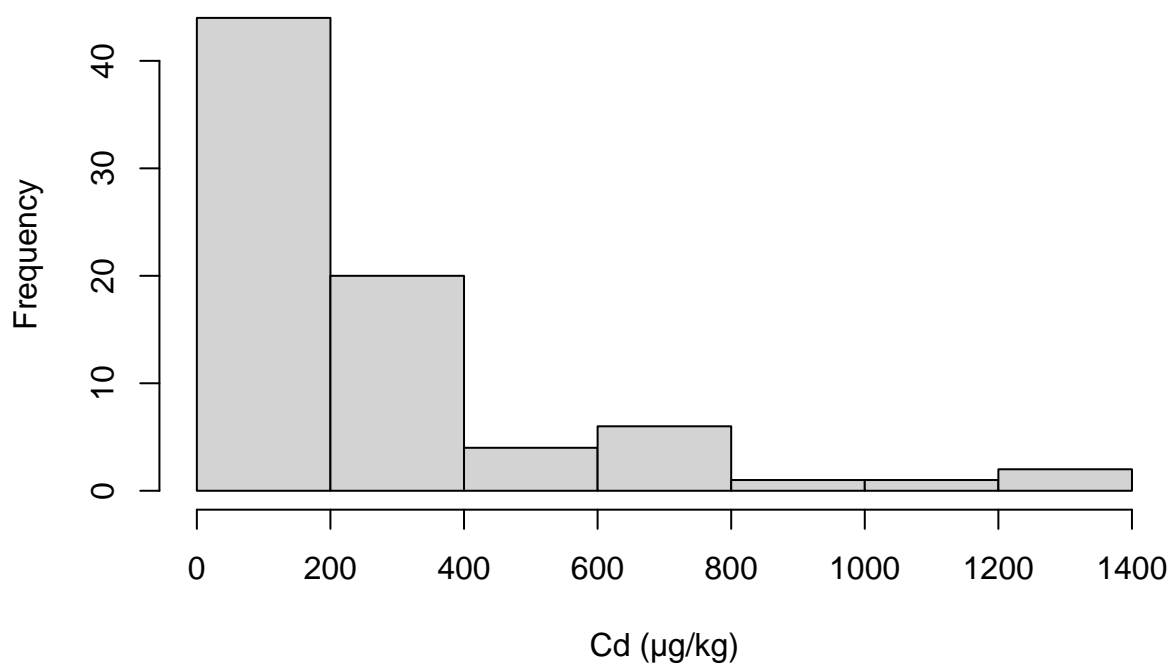
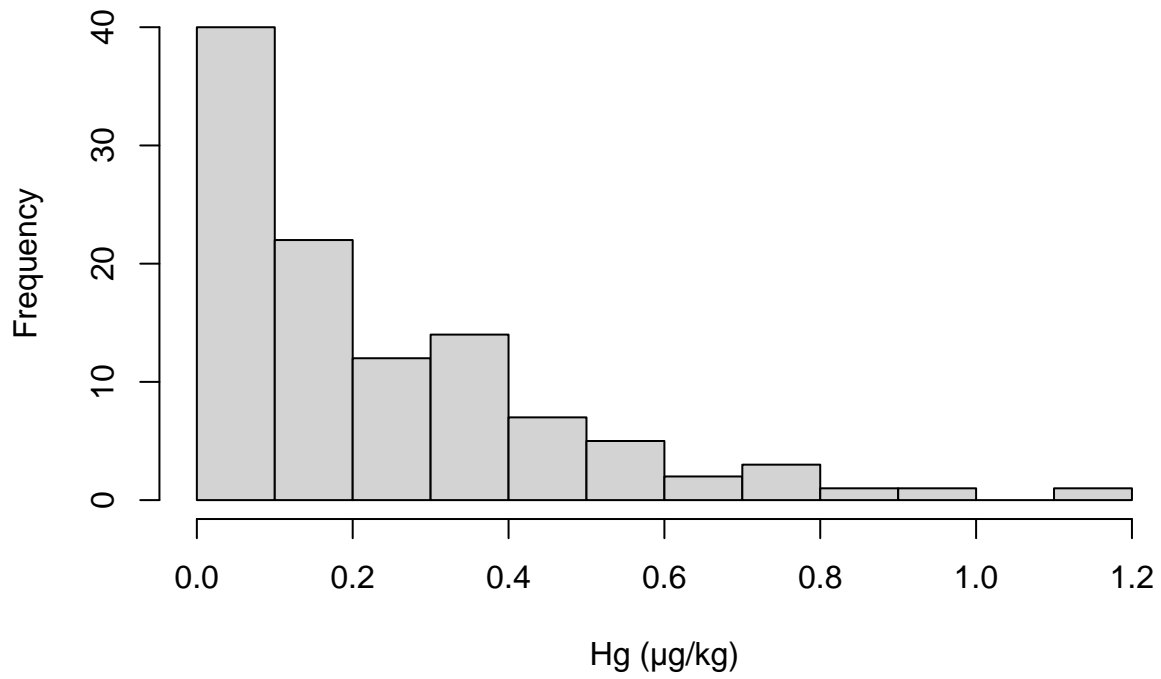
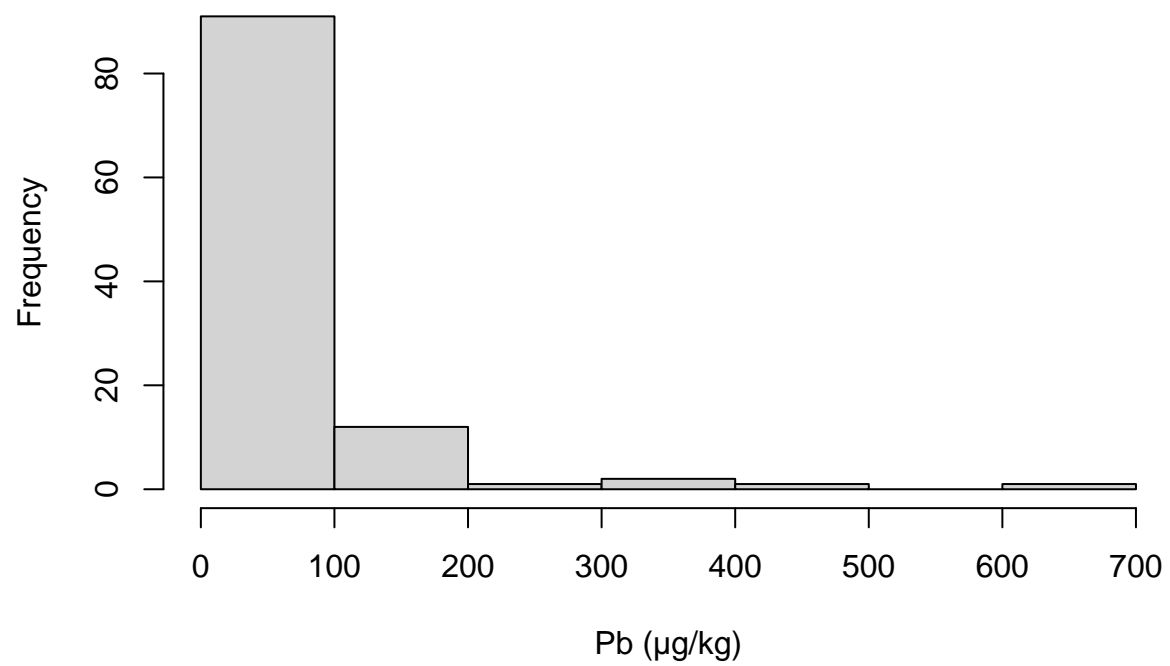


conger

Initial data inspection





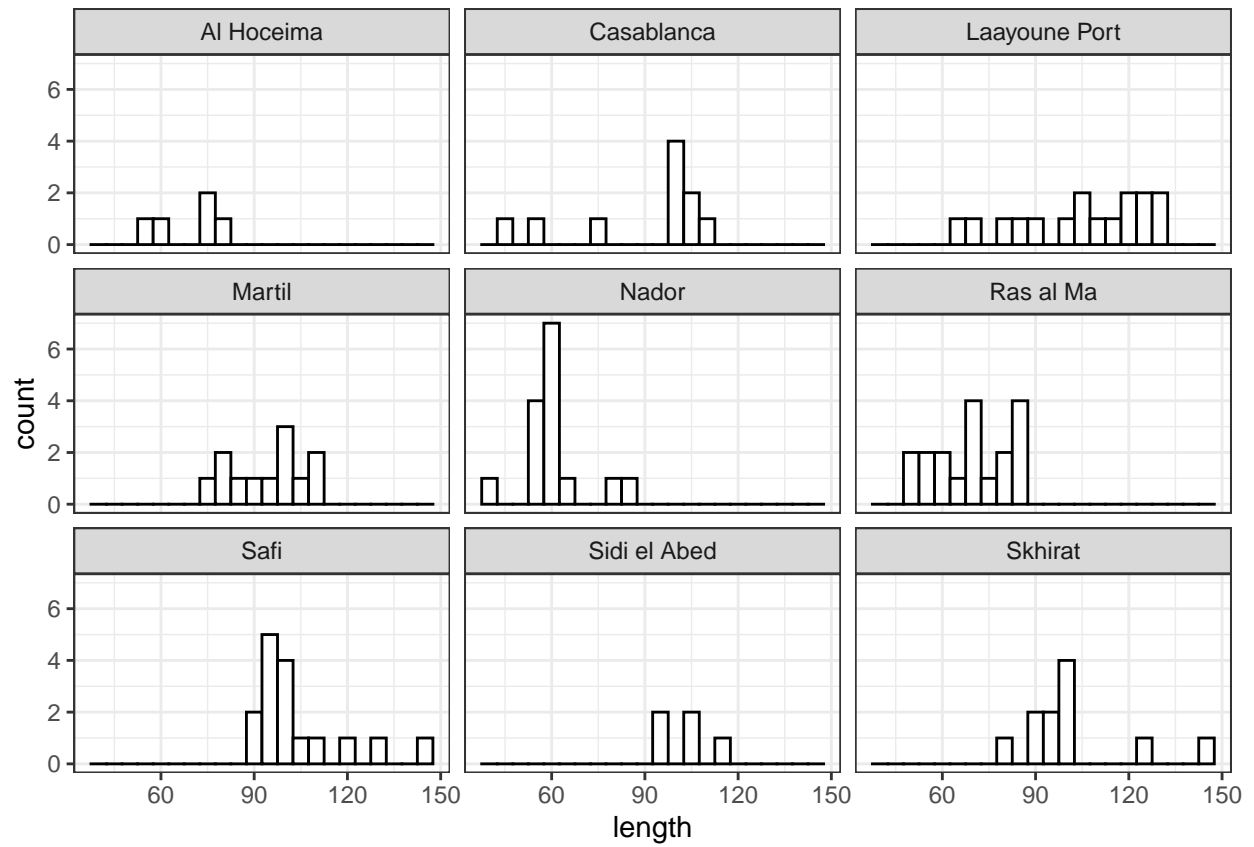
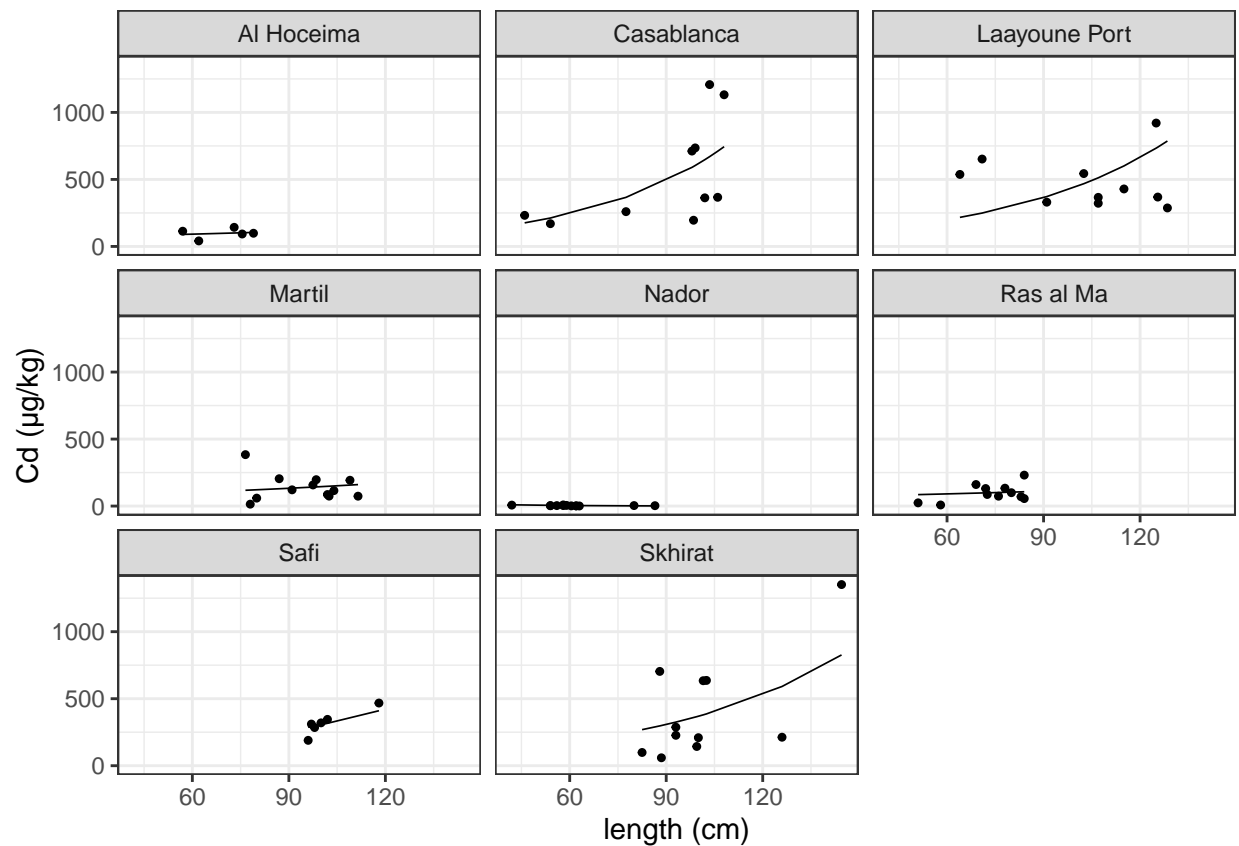
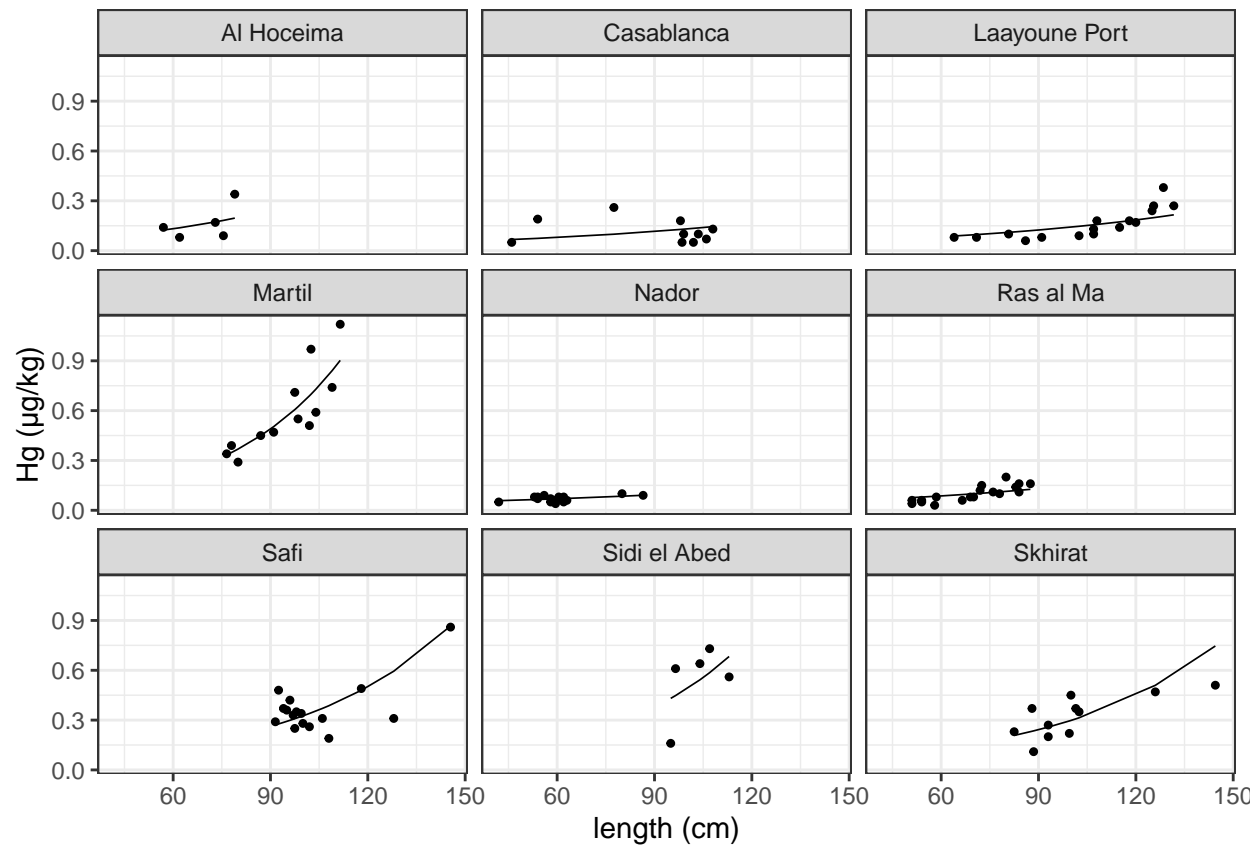


Fig 1 Overview of data distribution

Plotting the model results



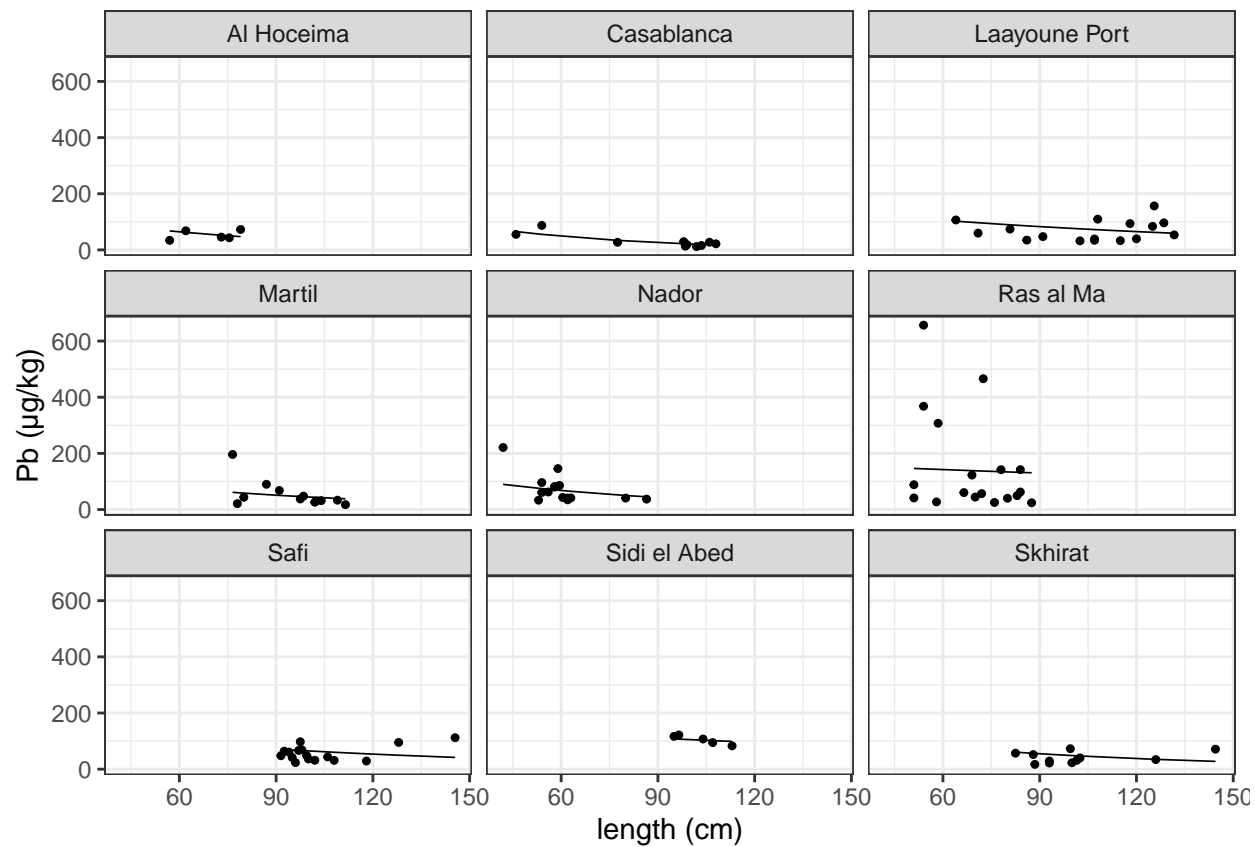
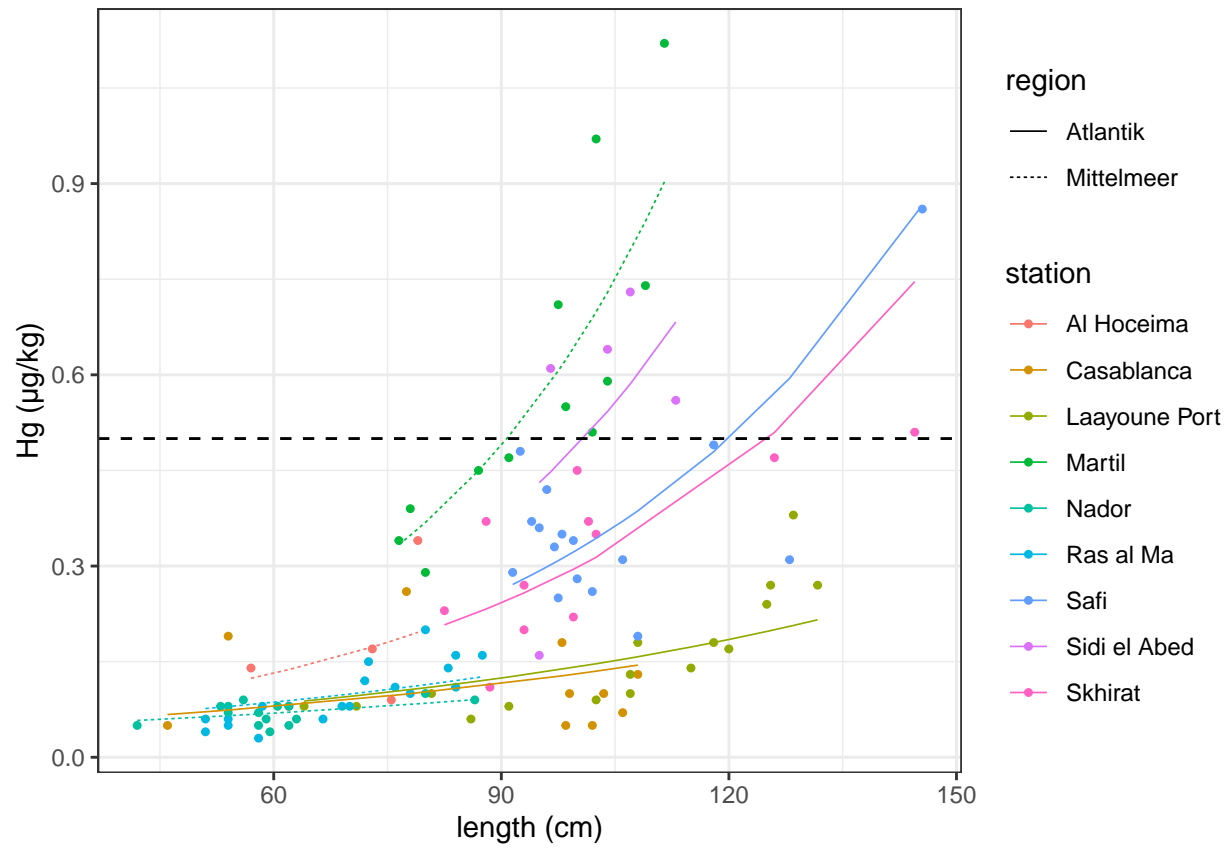
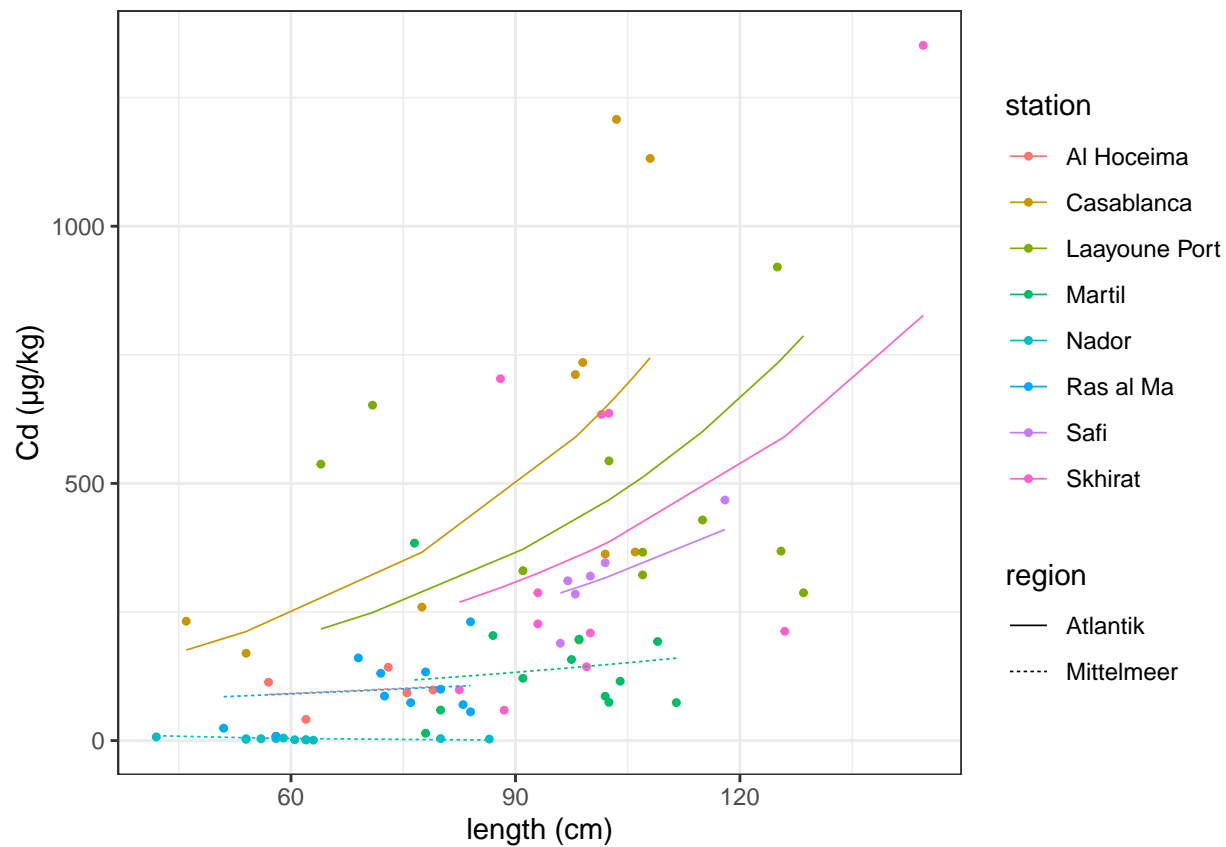


Fig 2a Raw data and GLM predictions of contaminat levels in Conger per Station as panel





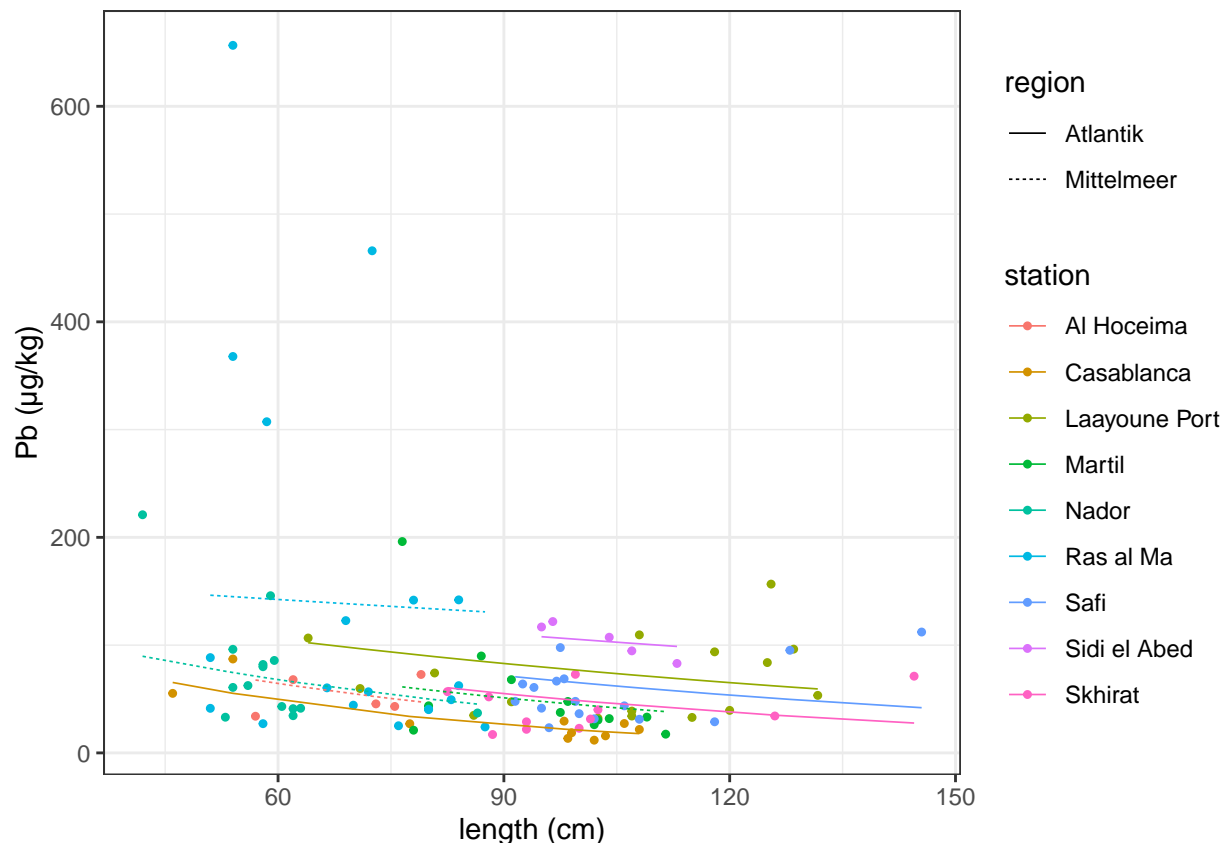


Fig 2b Raw data and GLM predictions of contaminat levels in COnger in single graph

Tab 1 Model statistics, all values are provided on the log scale. Estimate for “station” provides the y-Intercept (i.e. contaminant load for a given station when length is 0) per station; significance indicates different from 0. Estimates of “station:length” provide the effect of length for this station (i.e. the change in contaminant load for an increase of one unit in length); significance indicates whether the effect is different from 0 at this station (i.e. the slope of contamination load over length at this station is significantly different from 0).

Hg_Coefficient	Estimate	std_error	t_value	p_value
(Intercept)	-3.273	0.235	-13.942	0.000
stationAl Hoceima:length	0.021	0.004	4.936	0.000
stationCasablanca:length	0.012	0.003	4.355	0.000
stationLaayoune Port:length	0.013	0.002	5.621	0.000
stationMartil:length	0.028	0.003	10.434	0.000
stationNador:length	0.010	0.004	2.435	0.017
stationRas al Ma:length	0.014	0.004	3.875	0.000
stationSafi:length	0.022	0.002	8.934	0.000
stationSidi el Abed:length	0.026	0.003	8.957	0.000
stationSkhirat:length	0.021	0.003	8.149	0.000

Cd_Coefficient	Estimate	std_error	t_value	p_value
(Intercept)	4.101	0.459	8.943	0.000
length:stationAl Hoceima	0.007	0.008	0.890	0.376
length:stationCasablanca	0.023	0.005	4.320	0.000
length:stationLaayoune Port	0.020	0.005	4.255	0.000
length:stationMartil	0.009	0.005	1.690	0.096
length:stationNador	-0.044	0.008	-5.610	0.000
length:stationRas al Ma	0.007	0.007	1.014	0.314
length:stationSafi	0.016	0.005	3.112	0.003
length:stationSkhirat	0.018	0.005	3.774	0.000

Pb_Coefficient	Estimate	std_error	t_value	p_value
(Intercept)	5.141	0.437	11.756	0.000
length:stationAl Hoceima	-0.016	0.008	-2.071	0.041
length:stationCasablanca	-0.021	0.005	-3.939	0.000
length:stationLaayoune Port	-0.008	0.004	-1.834	0.070
length:stationMartil	-0.013	0.005	-2.641	0.010
length:stationNador	-0.015	0.008	-1.995	0.049
length:stationRas al Ma	-0.003	0.007	-0.461	0.646
length:stationSafi	-0.010	0.004	-2.153	0.034
length:stationSidi el Abed	-0.005	0.005	-0.911	0.365
length:stationSkhirat	-0.013	0.005	-2.671	0.009

Tab 2 Pairwise comparisons between stations; significance indicates whether the effect of length differs between the two stations. Theoretically, when effect of length is stronger in one station compared to another then also the contaminant level should will be higher given that the “base” contamination load is equal between stations (i.e. all conger have the same contamination at length 0, the y-intercept). However, models perform better when “base” contamination is calculated separately per station (e.g. for Hg the calculated intercept ranges from 0.014 - 0.22 and differences are significant). Considering this value is far outside the observed range of data (starting around 60cm) they have little biological meaning; yet, especially when expressed per kg, differences in the “base” contamination are theoretically possible (particularly when expressed per kg) and thus we did not force the model thorgh the same y-Intercept to achieve the best fit to the empiric data. This does, however, require a more differentiated interpretation, since contamination is not solely explained by accumulation (i.e. as a function of length) at a given station, but also by differences in the “base” contamination.

NOTE: Results may be misleading due to involvement in interactions

NOTE: Results may be misleading due to involvement in interactions

contrast.Hg	estimate	SE	df	t.ratio	p.value
Al Hoceima - Casablanca	0.740	0.268	98	2.760	0.141
Al Hoceima - Laayoune Port	0.669	0.263	98	2.546	0.223
Al Hoceima - Martil	-0.673	0.263	98	-2.559	0.218
Al Hoceima - Nador	0.947	0.274	98	3.456	0.022
Al Hoceima - Ras al Ma	0.621	0.256	98	2.428	0.281
Al Hoceima - Safi	-0.062	0.261	98	-0.237	1.000
Al Hoceima - Sidi el Abed	-0.422	0.289	98	-1.458	0.872
Al Hoceima - Skhirat	0.016	0.267	98	0.059	1.000
Casablanca - Laayoune Port	-0.071	0.150	98	-0.470	1.000
Casablanca - Martil	-1.413	0.162	98	-8.705	0.000
Casablanca - Nador	0.206	0.223	98	0.925	0.991
Casablanca - Ras al Ma	-0.119	0.184	98	-0.646	0.999
Casablanca - Safi	-0.802	0.150	98	-5.341	0.000
Casablanca - Sidi el Abed	-1.162	0.197	98	-5.905	0.000
Casablanca - Skhirat	-0.724	0.161	98	-4.488	0.001
Laayoune Port - Martil	-1.342	0.138	98	-9.759	0.000
Laayoune Port - Nador	0.277	0.222	98	1.248	0.943
Laayoune Port - Ras al Ma	-0.048	0.175	98	-0.275	1.000
Laayoune Port - Safi	-0.732	0.118	98	-6.199	0.000
Laayoune Port - Sidi el Abed	-1.091	0.174	98	-6.260	0.000
Laayoune Port - Skhirat	-0.654	0.133	98	-4.930	0.000
Martil - Nador	1.619	0.218	98	7.439	0.000
Martil - Ras al Ma	1.294	0.176	98	7.347	0.000
Martil - Safi	0.611	0.138	98	4.439	0.001
Martil - Sidi el Abed	0.251	0.187	98	1.338	0.917
Martil - Skhirat	0.688	0.150	98	4.596	0.000
Nador - Ras al Ma	-0.325	0.195	98	-1.668	0.764
Nador - Safi	-1.009	0.219	98	-4.596	0.000
Nador - Sidi el Abed	-1.368	0.251	98	-5.443	0.000
Nador - Skhirat	-0.931	0.226	98	-4.121	0.002
Ras al Ma - Safi	-0.683	0.173	98	-3.941	0.005
Ras al Ma - Sidi el Abed	-1.043	0.213	98	-4.888	0.000
Ras al Ma - Skhirat	-0.605	0.182	98	-3.325	0.033
Safi - Sidi el Abed	-0.360	0.175	98	-2.059	0.507
Safi - Skhirat	0.078	0.133	98	0.584	1.000

contrast.Hg	estimate	SE	df	t.ratio	p.value
Sidi el Abed - Skhirat	0.438	0.185	98	2.368	0.313

contrast.Cd	estimate	SE	df	t.ratio	p.value
Al Hoceima - Casablanca	-1.410	0.445	69	-3.167	0.045
Al Hoceima - Laayoune Port	-1.127	0.454	69	-2.479	0.222
Al Hoceima - Martil	-0.156	0.438	69	-0.356	1.000
Al Hoceima - Nador	4.415	0.457	69	9.660	0.000
Al Hoceima - Ras al Ma	0.013	0.441	69	0.030	1.000
Al Hoceima - Safi	-0.803	0.472	69	-1.703	0.686
Al Hoceima - Skhirat	-0.965	0.448	69	-2.154	0.392
Casablanca - Laayoune Port	0.283	0.270	69	1.051	0.964
Casablanca - Martil	1.254	0.266	69	4.720	0.000
Casablanca - Nador	5.825	0.388	69	15.032	0.000
Casablanca - Ras al Ma	1.423	0.328	69	4.344	0.001
Casablanca - Safi	0.607	0.308	69	1.972	0.508
Casablanca - Skhirat	0.445	0.265	69	1.680	0.700
Laayoune Port - Martil	0.971	0.250	69	3.877	0.006
Laayoune Port - Nador	5.542	0.407	69	13.629	0.000
Laayoune Port - Ras al Ma	1.140	0.335	69	3.406	0.023
Laayoune Port - Safi	0.323	0.290	69	1.115	0.951
Laayoune Port - Skhirat	0.162	0.242	69	0.667	0.998
Martil - Nador	4.571	0.380	69	12.025	0.000
Martil - Ras al Ma	0.169	0.316	69	0.535	0.999
Martil - Safi	-0.647	0.291	69	-2.222	0.352
Martil - Skhirat	-0.809	0.246	69	-3.291	0.032
Nador - Ras al Ma	-4.402	0.364	69	-12.105	0.000
Nador - Safi	-5.218	0.423	69	-12.339	0.000
Nador - Skhirat	-5.380	0.398	69	-13.532	0.000
Ras al Ma - Safi	-0.817	0.360	69	-2.269	0.325
Ras al Ma - Skhirat	-0.978	0.327	69	-2.990	0.071
Safi - Skhirat	-0.161	0.287	69	-0.563	0.999

contrast.Pb	estimate	SE	df	t.ratio	p.value
Al Hoceima - Casablanca	0.538	0.411	99	1.308	0.927
Al Hoceima - Laayoune Port	-0.261	0.384	99	-0.678	0.999
Al Hoceima - Martil	-0.017	0.399	99	-0.043	1.000
Al Hoceima - Nador	-0.335	0.387	99	-0.866	0.994
Al Hoceima - Ras al Ma	-1.055	0.379	99	-2.782	0.134
Al Hoceima - Safi	-0.063	0.384	99	-0.163	1.000
Al Hoceima - Sidi el Abed	-0.687	0.475	99	-1.449	0.876
Al Hoceima - Skhirat	0.254	0.405	99	0.629	0.999
Casablanca - Laayoune Port	-0.798	0.302	99	-2.639	0.184
Casablanca - Martil	-0.555	0.321	99	-1.727	0.729
Casablanca - Nador	-0.873	0.306	99	-2.850	0.114
Casablanca - Ras al Ma	-1.593	0.296	99	-5.382	0.000
Casablanca - Safi	-0.600	0.302	99	-1.985	0.557
Casablanca - Sidi el Abed	-1.225	0.411	99	-2.981	0.083
Casablanca - Skhirat	-0.283	0.328	99	-0.864	0.994
Laayoune Port - Martil	0.243	0.287	99	0.849	0.995
Laayoune Port - Nador	-0.075	0.270	99	-0.278	1.000
Laayoune Port - Ras al Ma	-0.795	0.258	99	-3.082	0.064
Laayoune Port - Safi	0.198	0.265	99	0.746	0.998
Laayoune Port - Sidi el Abed	-0.427	0.384	99	-1.110	0.971
Laayoune Port - Skhirat	0.515	0.294	99	1.752	0.713
Martil - Nador	-0.318	0.291	99	-1.095	0.974
Martil - Ras al Ma	-1.038	0.280	99	-3.712	0.010
Martil - Safi	-0.046	0.287	99	-0.159	1.000
Martil - Sidi el Abed	-0.670	0.399	99	-1.678	0.758
Martil - Skhirat	0.272	0.313	99	0.867	0.994
Nador - Ras al Ma	-0.720	0.262	99	-2.744	0.146
Nador - Safi	0.273	0.270	99	1.011	0.984
Nador - Sidi el Abed	-0.352	0.387	99	-0.909	0.992
Nador - Skhirat	0.590	0.298	99	1.980	0.560
Ras al Ma - Safi	0.992	0.258	99	3.849	0.006
Ras al Ma - Sidi el Abed	0.368	0.379	99	0.970	0.988
Ras al Ma - Skhirat	1.310	0.287	99	4.561	0.000
Safi - Sidi el Abed	-0.625	0.384	99	-1.625	0.789
Safi - Skhirat	0.317	0.294	99	1.080	0.976