Ecography

E6309
Hof, C., Rahbek, C. and Araújo, M. B. 2010. Phylogenetic signals in the climatic niches of the world's amphibians. – Ecography 33: 242–250.

Supplementary material

Table S1. Numbers of species included in the analyses for the three amphibian orders within the seven biogeographical regions and for the world.

Region	Anura	Caudata	Gymnophiona
AFR	672		26
AUS	526		
IND	813	26	42
MAD	219		
NEA	145	186	
NEO	2428	224	76
PAL	331	97	
World	4875	508	144

Note that for Anura and Caudata, the values for the world slightly differ from the bare sum of the species occurring in the different regions because a few species occur in two of the regions for these orders. Empty fields indicate the absence of the entire order from the respective region. AFR, Afrotropics; AUS, Australasia; IND, Indo-Malay; MAD, Madagascar; NEA, Nearctic; NEO, Neotropics; PAL, Palaearctic.

Table S2. Cumulative explained inertia of the first and second OMI ordination axes, given as proportions of the total inertia, separately for the three amphibian orders and biogeographical regions. Note that missing values reflect an absence of the entire order in the region.

Region	Axis	Anura	Caudata	Gymnophiona
AFR	1	0.70		0.91
	2	0.89		0.95
AUS	1	0.74		
	2	0.94		
IND	1	0.67	0.77	0.54
	2	0.89	0.92	0.82
MAD	1	0.76		
	2	0.96		
NEA	1	0.74	0.84	
	2	0.94	0.95	
NEO	1	0.69	0.71	0.78
	2	0.83	0.90	0.91
PAL	1	0.60	0.69	
	2	0.83	0.88	

AFR, Afrotropics; AUS, Australasia; IND, Indo-Malay; MAD, Madagascar; NEA, Nearctic; NEO, Neotropics; PAL, Palaearctic.

Table S3. Climatic niche distances for amphibians on the family and genus levels, considering only those species for which climatic influence was significant*.

Families	Mean niche distance				ANOSIM	
	Within	SD	Between	SD	r_{ANOSIM}	p
Anura						
AFR	2.05	1.30	2.52	1.48	0.18	**<0.001**
AUS	2.01	1.83	3.23	2.10	0.34	**<0.001**
IND	2.62	1.66	2.77	1.68	0.053	**<0.001**
MAD	1.08	0.82	1.40	1.11	0.13	0.062
NEA	2.42	1.43	2.43	1.41	0.003	0.41
NEO	2.31	1.55	3.04	1.93	0.23	**<0.001**
PAL	2.41	1.50	2.77	1.61	0.13	**<0.001**
Caudata						
IND	1.22	0.92	1.12	0.98	–0.03	0.541
NEA	2.41	1.89	2.40	1.62	0.0319	0.205
NEO	1.86	1.68	4.99	1.67	0.77	**0.012**
PAL	2.80	1.77	3.65	1.97	0.26	<0.001
Gymnophiona						
AFR	–	–	–	–	–	–
IND	–	–	–	–	–	–
NEO	2.14	1.26	2.24	1.50	0.3001	0.368

Genera	Mean niche distance				ANOSIM	
	Within	SD	Between	SD	r_{ANOSIM}	p
Anura						
AFR	2.00	1.20	2.48	1.47	0.18	**<0.001**
AUS	2.78	2.02	2.98	2.12	0.057	**0.043**
IND	2.14	1.62	2.77	1.67	0.22	**<0.001**
MAD	1.02	0.78	1.23	0.98	0.096	0.098
NEA	2.44	1.47	2.42	1.41	–0.0035	0.522
NEO	2.09	1.53	2.97	1.90	0.29	<0.001
PAL	2.18	1.54	2.73	1.60	0.21	**<0.001**
Caudata						
IND	1.11	0.87	1.20	0.95	0.1488	0.27
NEA	1.44	1.29	2.53	1.78	0.36	**<0.001**
NEO	1.73	1.49	2.63	2.18	0.19	**0.039**
PAL	2.19	1.52	3.40	1.93	0.38	**<0.001**
Gymnophiona						
AFR	0.69	1.82	2.40	1.46	0.55	**0.047**
IND	–	–	–	–	–	–
NEO	1.85	1.18	2.34	1.44	0.195	**0.032**

*Note that the analyses could not be conducted at the family level for Afrotropical and Indo-Malayan Gymnophiona because all species occurring there belong to the same family. Accordingly, the analyses could not be conducted for Indo-Malayan genera of Gymnophiona. For further details, see text and Table 2. AFR, Afrotropics; AUS, Australasia; IND, Indo-Malay; MAD, Madagascar; NEA, Nearctic; NEO, Neotropics; PAL, Palaearctic.

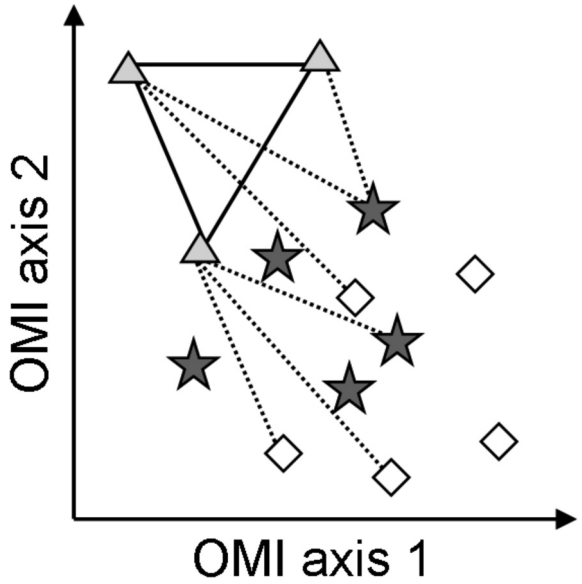

Figure S1. Illustration of the calculation of within- and between-group niche distances. We show the hypothetical example of three groups (e.g. three different genera, indicated by the different symbols – triangles, stars, and diamonds). Each point represents the niche position of one species within a two-dimensional climatic space (given by the first and second OMI axis). Lines represent the Euclidean distances between niche positions (= niche distances) among species. Straight lines indicate niche distances between species belonging to the same group. All distances between species within this group are averaged, with the result giving the mean within-distance for this group. Dotted lines indicate niche distances among the species of one group and the species of all the other groups (note that only a small selection of all possible dotted lines is shown). The average of all these values gives the mean between-distance for this group. This procedure is repeated for every group. Finally, the mean within-group distance for the whole species set is calculated by averaging all the mean within-group distances from all the groups. Accordingly, the mean between-group distance for the whole dataset is calculated. These mean values for within- and between-group niche distances are given in Table 2. The ANOSIM statistic tests if the differences between within-group and between-group distances are significantly different from zero, using a rank-similarity algorithm, based on a given number of permutations (see text for further details).

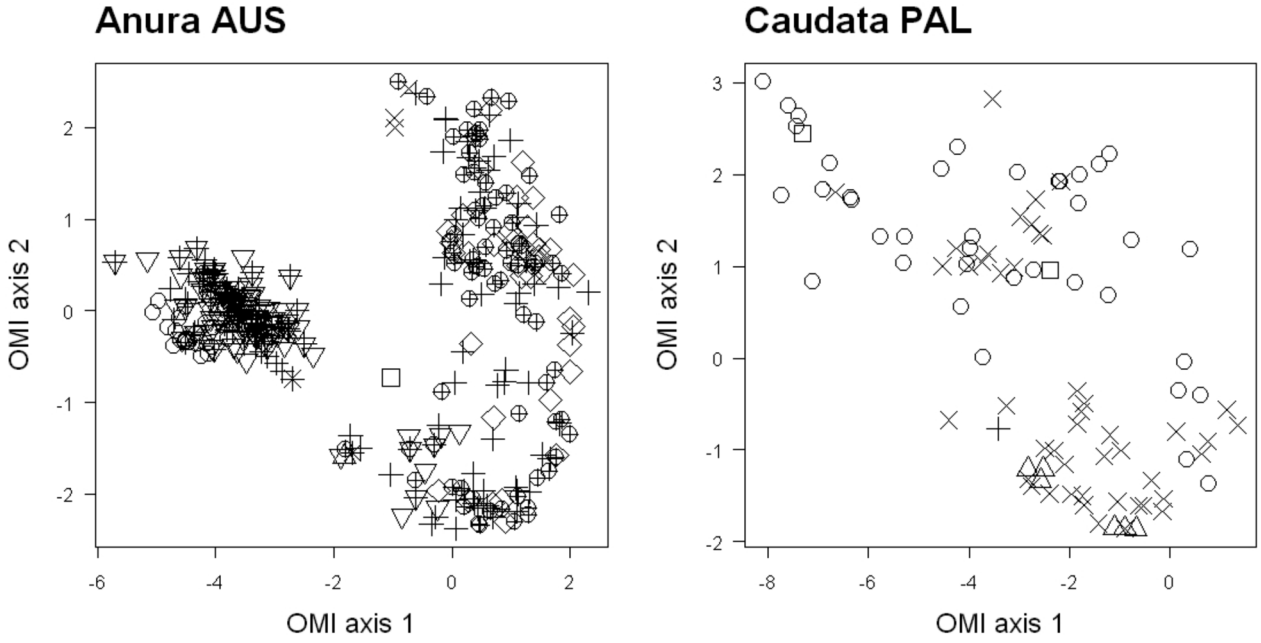

Figure S2. Examples for OMI plots according to the setup of Fig. S1. Each point represents the niche position of one species within a two-dimensional climatic space (given by the first and second OMI axis). Different symbols indicate different families. AUS, Australasia; PAL, Palaearctic.

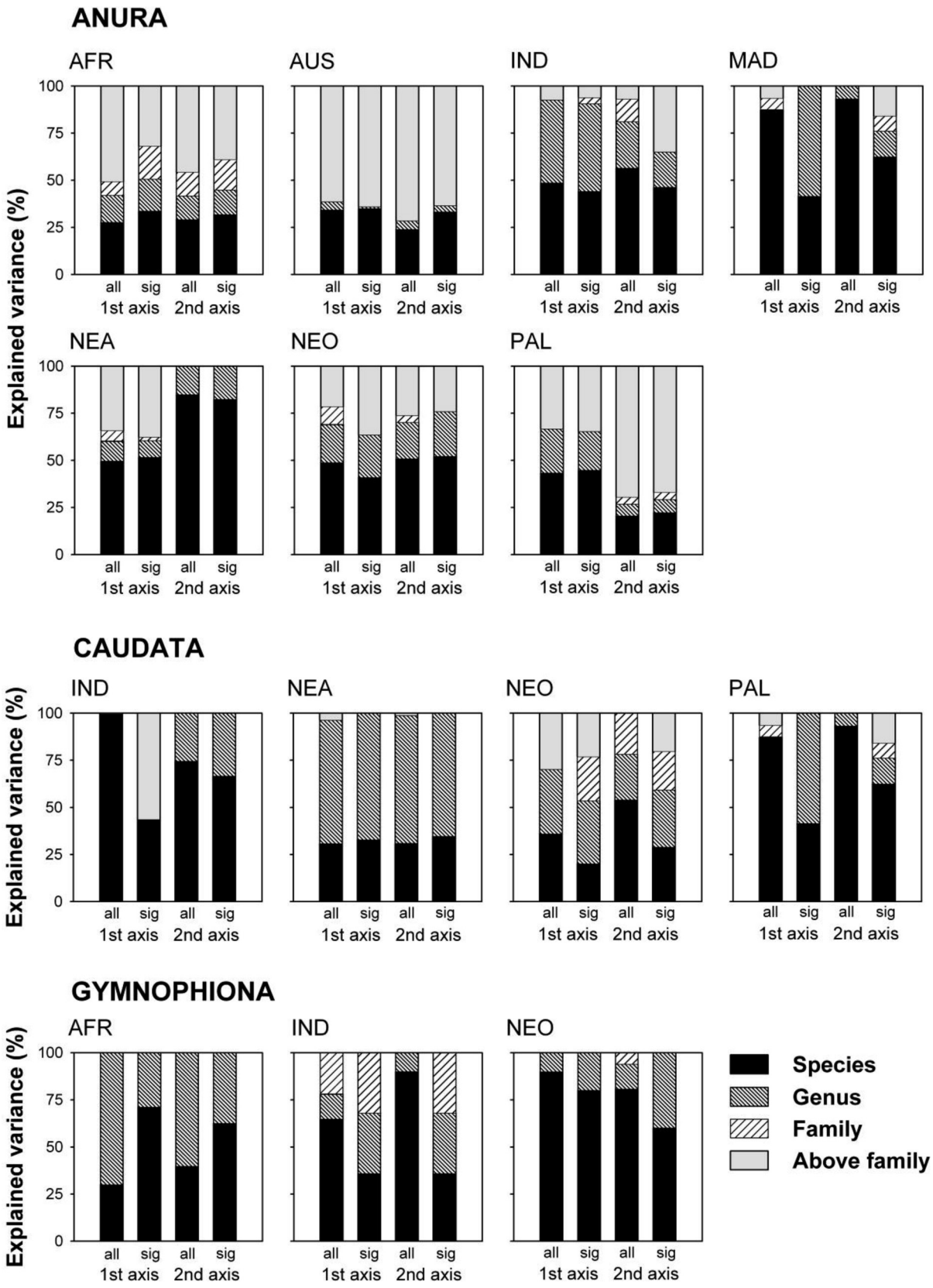

Figure S3. Comparison of the variance component analyses (VCA) for all species (indicated by "all") and for those species for which climatic influence was significant (indicated by "sig"). For further details, see text and Fig. 1. AFR, Afrotropics; AUS, Australasia; IND, Indo-Malay; MAD, Madagascar; NEA, Nearctic; NEO, Neotropics; PAL, Palaearctic.