

Phonology of East Caucasian languages

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part of the online [course on East Caucasian languages](#)

last version of the presentation is available here: tinyurl.com/y2foe0gg



Outline of the talk

Introduction

Data

Methods

Inventory size

About phonology of East Caucasian languages

- phonology
 - [Kibrik and Kodzasov 1990]
 - The indigenous languages of the Caucasus: [Job and Smeets 1994], [Smeets 1994]
 - Yaziki mira: [Alekseev et al. 2001] and predecessor projects
 - [Grawunder 2017]
 - The Oxford Handbook of Languages of the Caucasus: [Beguš 2021], [Boris 2021a], [Boris 2021b]
 - Handbook of Caucasian Languages: [Koryakov and Maisak 202]
 - and phonological part in more general descriptions of East Caucasian languages
- historical-comparative phonetics
 - S. M. Gasanova, G. Kh. Ibragimov, P. T. Magomedova, U. A. Meylanova, B. B. Talibov, S. M. Khaydakov, A. E. Alekseev, Ju. D. Desheriev, B. K. Gigineishvili, D. S. Imnaishvili, J. Nichols, S. L. Nikolayev, S. A. Starostin, A. S. Kasyan, N. A. Ardoteli, O. A. Mudrak

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Languages

- Nakh
 - Chechen
 - Ingush
 - Tsova-Tush
(Bats, Batsbi)
- Tsezic (Didoic)
 - Tsez
 - Hinuq
 - Bezhta
 - Hunzib
 - Khwarshi-Inkhoqwari
- Avar–Andic
 - Avar
 - Andi
 - Botlikh
 - Godoberi
 - Chamalal
 - Tindi
 - Bagvalal
 - Akhvakh
- Dargwa
- Lak
- Lezgian
 - Archi
 - Tabasaran
 - Aghul
 - Lezgian
 - Udi
 - Budukh
 - Kryz
 - Rutul
 - Tsakhur
- Khinalug

Languages not present in [Kibrik and Kodzasov 1990]

- Nakh
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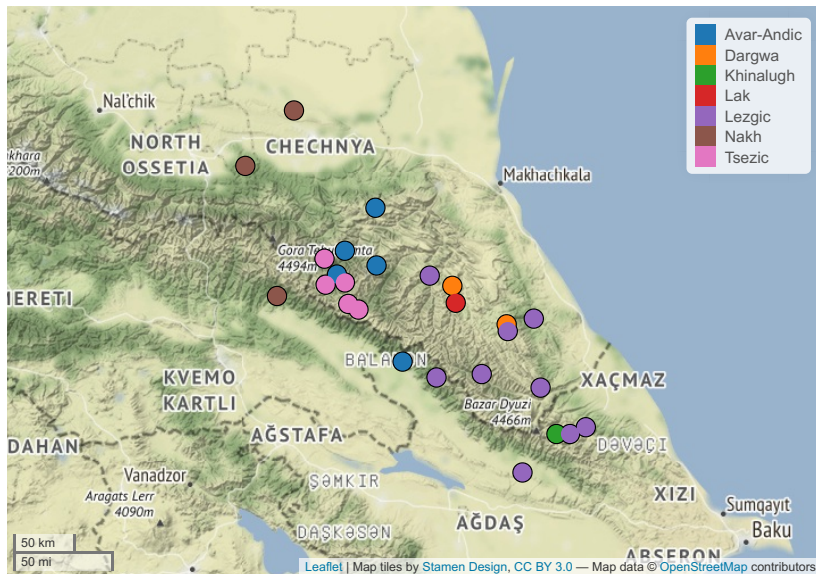
Languages not present in [Kibrik and Kodzasov 1990]

- Nakh, Chechen
- Nakh, Ingush
- Nakh, Tsova-Tush [[Holisky and Gagua 1994](#)]
- Dargwa, Mehweb [[Moroz 2019](#)]
- Andic, Botlikh
- Andic, Godoberi
- Andic, Bagvalal

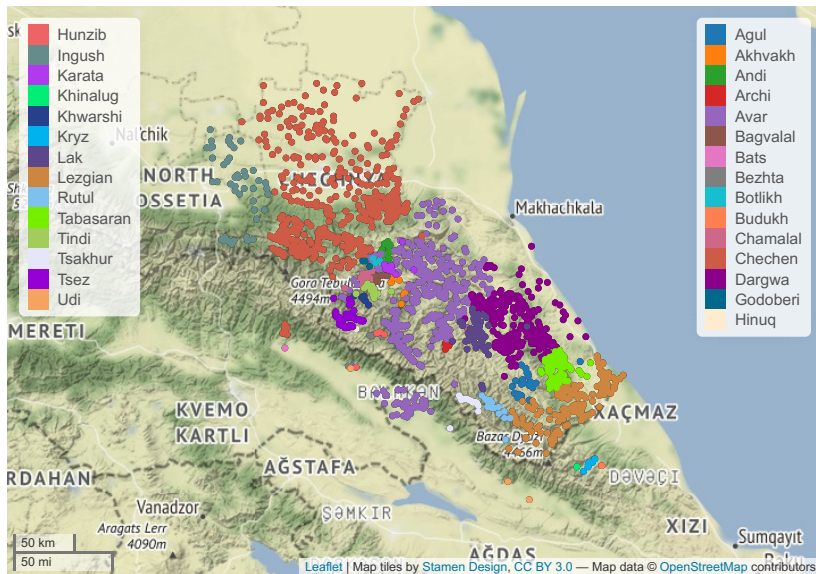
1656 × 9 **table** with the following columns:

- id
- branch
- language
- segments_IPA
- segments_source
- sound_type
- source
- comments
- glottocode

Data (language view)



Data (village view)



Outline of the talk

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Phonology of East Caucasian languages can be presented like this...

	Stops				Fricatives				Affricates				Son.
	Voiced		Voiceless		Voiced	Voiceless			Voiced	Voiceless			
			Gem.	Ej.			Gem.				Gem.	Ej.	
Lab.	b б	p п											w в m м
Den.	d д	t т	t: тт	t' тІ	z з	s с	s: сс		c ц	c: цц	c' цІ		n н
Alv.					ž ж	š ш	š: шц	ž дж	č ч	č: чч	č' чІ		r р
Lat.						l лъ	l: лълъ			λ лІ	λ' кь		l л
Pal.													j й
Vel.	g г	k к	k: кк	k' кІ			x хъ						
Uv.		q хъ		q' кь	в гъ	χ х	χ: хх						
Ph.					ʕ гІ	ħ хІ							

Phonology of East Caucasian languages can be presented like this...

	Stops			Fricatives			Affricates				Son.
			plosives			fricatives		affricates			sonorant
			asp	ej	vcd	asp	vcd	asp	ej	vcd	
Lab.	labial		p		b						w, m
Den.	dental	-gem	t	t'	d	s	z	c	c'		n
		+gem				s:		c:	c':		
Alv.	alveolar	-gem				š	ž	č	č'	ẓ̌	r
		+gem				š:		č:	č':		
Lat.	lateral					ɬ (ɬ:)		ɬ̣	ɬ'		l
Pal.	palatal					ç, çʷ					j
Vel.	velar	-gem	k, kʷ	k', k'ʷ	g, gʷ						
Uv.		+gem	k:, k:ʷ	k':, k':ʷ							
Ph.	uvular	-gem		q', q'ʷ		χ, χʷ	ʁ, ʁʷ	qχ, qχʷ			
		+gem				χ:					

Phonology of East Caucasian languages can be presented like this...

	Stops			Fricatives			Affricates			Son.	
		plosives			fricatives		affricates			sonorant	
		asp	ej	vcd	asp	vcd	asp	ej	vcd		
Lab.	labi	labial dental alveolar palatal			velar		uvular		pharyngeal		epig
Den.	den				-lab	+lab	-lab	+lab	-lab	+lab	-lab
Alv.	plosive	+v	b	d		g	g ^w				(ʔ)
	alve	-v	p	t		k	k ^w	q	q ^w		
		ej	p'	t'		k'	k' ^w	q'	q' ^w		
Lat.	fricative	+v		z	ž	(ɣ)		ʁ	ʁ ^w		
	late	-v		s	š	x	x ^w	χ	χ ^w	ħ	ħ ^w (h)
Pal.	pal	+v		(ʒ)	(ž)						
Vel.	affricate	-v		c	č						
		ej		c'	č'						
	vel										
	sonorant	m, w		n, l, r		j					
Uv.											
Ph.	uvular	-gem		q', q' ^w		χ, χ ^w	ʁ, ʁ ^w	qχ, qχ ^w			
		+gem				χː					



This way is...

- boring,



This way is...

- boring,
- mechanical,

This way is...

- boring,
- mechanical,
- it is hard to make generalisations (at least, on the fly)

Phonology of East Caucasian languages can be presented like this...

Nakh-Daghestanian: Essential background, what's distinctive... (Johanna Nichols)

The N-D phonological signature

Complex consonant inventories. Typically:

3 or more manners. t t' d tt /t/ usually [tʰ]
Uvular, sometimes lateral, sometimes pharyngeal series

Vowel systems vary in size:

3 or 4 vowel qualities:	Lak, several Dargwa
5	Avar, most Andic
6-8	most Tsezic, most Lezgian; Nakh
9-10	Kryz, Budukh, Khinalug

} ± length

Pharyngealization

Epiglottalization vs. true pharyngealization

Segment? syllabic feature? consonant feature? vowel feature?

Syllable structure fairly simple: mostly CVRC

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Those ways are...

- To list all inventories
 - boring,
 - mechanical,
 - hard to make generalisations (at least, on the fly)
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 - restricted to peculiarities,

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- May be those conclusion could be data driven?

Those ways are...

- To list all inventories
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 - mechanical,
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- To present generalisations
 - restricted to peculiarities,
 - you need to be a specialist
- May be those conclusion could be data driven?
 - some of them can be visualised with a map
 - some of them can be gathered via Market basket analysis
 - some of them can be gathered via syllable structure analysis

Outline of the talk

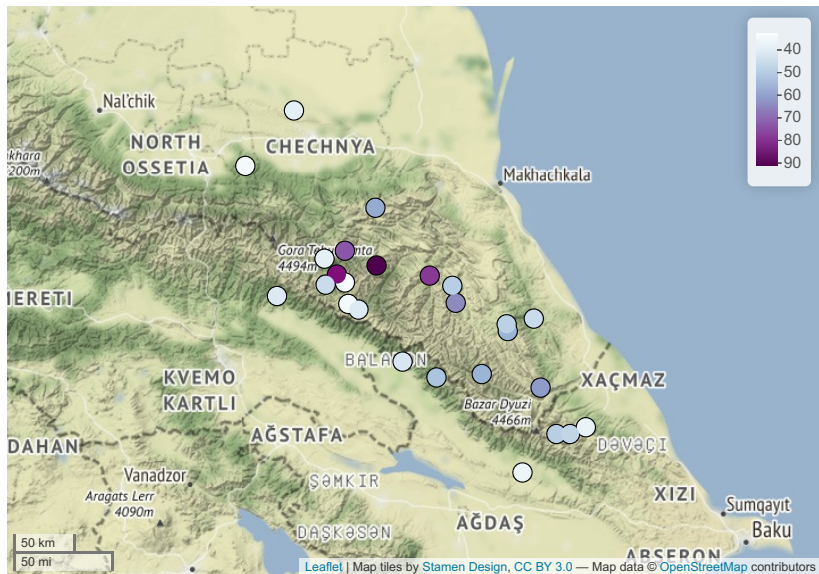
Introduction

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Consonants



Consonants



- Akhwakh (Andic) – 91
- Tindi (Andic) – 84
- Chamalal (Andic) – 73
- Archi (Lezgic) – 78
- ...
- Ingush (Nakh) – 34
- Bezhta (Tsezic) – 34
- Inkhoqwari (Tsezic) – 33

Consonants: Akwakh

b	d			dʒ				g					
	d ^w			dʒ ^w				g ^w					
p ^h	t ^h	ts	ts:	tʃ	tʃ:	tɬ	tɬ:	k	k:	q	q:		ʔ
	t ^{hw}	ts ^w	ts: ^w	tʃ ^w	tʃ: ^w	tɬ ^w	tɬ: ^w	k ^w	k: ^w	q ^w	q: ^w		ʔ ^w
p'	t'	ts'	ts:'	tʃ'	tʃ':	tɬ'	tɬ':	k'	k':	q'	q':		
	t' ^w	ts' ^w	ts: ' ^w	tʃ' ^w	tʃ': ^w	tɬ' ^w	tɬ': ^w	k' ^w	k': ^w	q' ^w	q': ^w		
		z		ʒ						ɸ		ɸ	
		z ^w		ʒ ^w						ɸ ^w			
		s	s:	ʃ	ʃ:	ɬ	ɬ:	x	x:	χ	χ:	h	h
		s ^w	s: ^w	ʃ ^w	ʃ: ^w	ɬ ^w	ɬ: ^w	x ^w	x: ^w	χ ^w	χ: ^w		h ^w
m	n												
w	r					l		j					

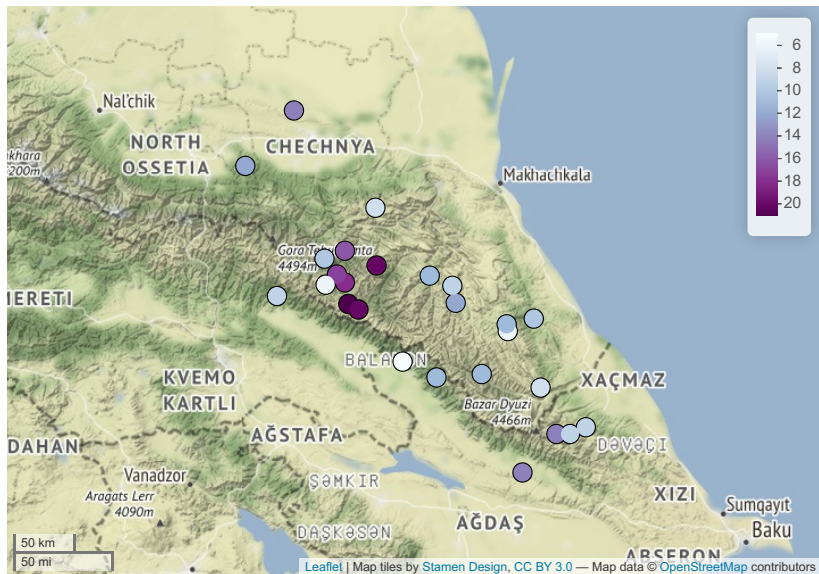
- gemination
- labialisation

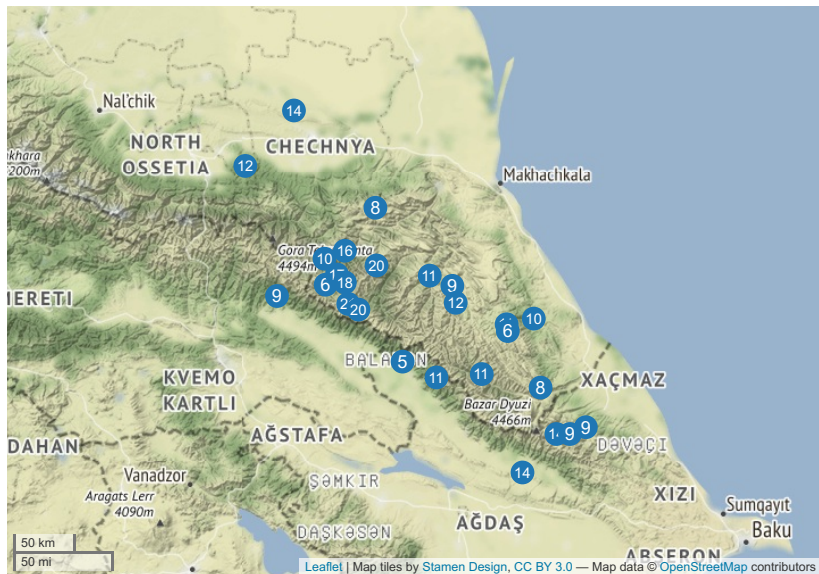
Consonants: geminate ejectives

Consonants: Inkhoqware

b	d		dʒ		g			
p ^h	t ^h	ts	tʃ	tɬ	k	q		ʔ
p'	t'	ts'	tʃ'	tɬ'	k'	q'		
		z	ʒ			ɣ	ʃ	
		s	ʃ	ɬ		χ	ɦ	h
m	n							
w	r			l	j			

Vowels





- Bezhta (Tsezic) – 21
- Akhvakh (Andic) – 20
- Hunzib (Tsezic) – 20
- ...
- Aghul (Lezgif) – 6
- Tsez (Tsezic) – 6
- Avar – 5

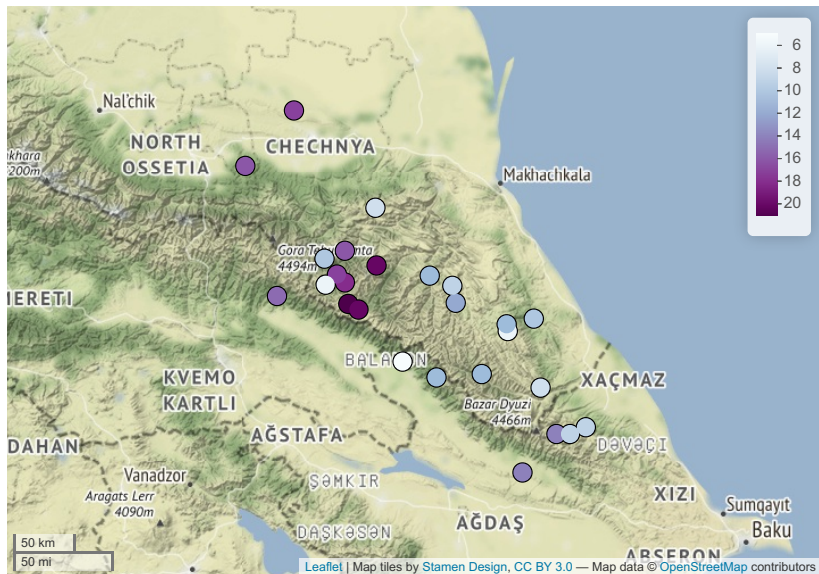
- Bezhta

i	i:	i ⁿ	y	y ⁿ				u	u:	u ⁿ
e		e ⁿ	ø					o	o:	o ⁿ
æ	æ:	æ ⁿ								
					a	a:	a ⁿ			

- Avar

i		u
e		o
	a	

Vowels + diphthongs



Vowels + diphthongs



Thanks

- to reasercher teams who collected all data
- to Viola Ivanova for helping with digitalisation of [[Kibrik and Kodzasov 1990](#)]
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- and [YOU](#) for your attention

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-
- if you like presented maps, see [lingtypology](#) [Moroz 2017]
 - this presentation made with `rmarkdown` [Xie et al. 2018]; source code and data for this presentation are available online:
<https://tinyurl.com/y2oh9sg8>

- Alekseev, M. E., Starostin, S. A., Klimov, G. A., and Testelet, Y. G. (2001). *Yazyki mira. Kavkazskiye yazyki*. Academia.
- Beguš, G. (2021). Segmental phonetics and phonology. In Polinsky, M., editor, *The Oxford Handbook of Languages of the Caucasus*, pages 1–40. Language Science Press.
- Boris, L. (2021a). Tone and intonation in languages of the caucasus. In Polinsky, M., editor, *The Oxford Handbook of Languages of the Caucasus*, pages 1–30. Oxford University Press.
- Boris, L. (2021b). Word stress in the languages of the caucasus. In Polinsky, M., editor, *The Oxford Handbook of Languages of the Caucasus*, pages 1–30. Language Science Press.

References

- Grawunder, S. (2017). The caucasus. In Hickey, R., editor, *The Oxford Handbook of Languages of the Caucasus*, pages 356–395. Cambridge University Press.
- Holisky, D. A. and Gagua, R. (1994). Tsova-Tush (Batsbi). *The indigenous languages of the Caucasus*, 4(part 2):147–212.
- Job, D. M. and Smeets, R., editors (1994). *The indigenous languages of the Caucasus*, volume 3. Caravan Books.
- Kibrik, A. E. and Kodzasov, S. V. (1990). *Sopostavitelnoye izucheniye dagestanskix yazykov: Imya. Fonetika*, volume 2. Moskovskij Gosudarstvennyj Universitet.
- Koryakov, Y. and Maisak, T., editors (202_). *Handbook of Caucasian Languages*, volume 2. De Gruyter Mouton, Berlin/New York.
- Moroz, G. (2017). *lingtypology: easy mapping for Linguistic Typology*.

- Moroz, G. (2019). Phonology of mehweb. In Daniel, M., Dobrushina, N., and Ganenkov, D., editors, *The Mehweb language: Essays on phonology, morphology and syntax*, pages 17–39. Language Science Press.
- Smeets, R., editor (1994). *The indigenous languages of the Caucasus*, volume 4. Caravan Books.
- Xie, Y., Allaire, J., and Grolemond, G. (2018). *R Markdown: The Definitive Guide*. Chapman and Hall/CRC, Boca Raton, Florida. ISBN 9781138359338.