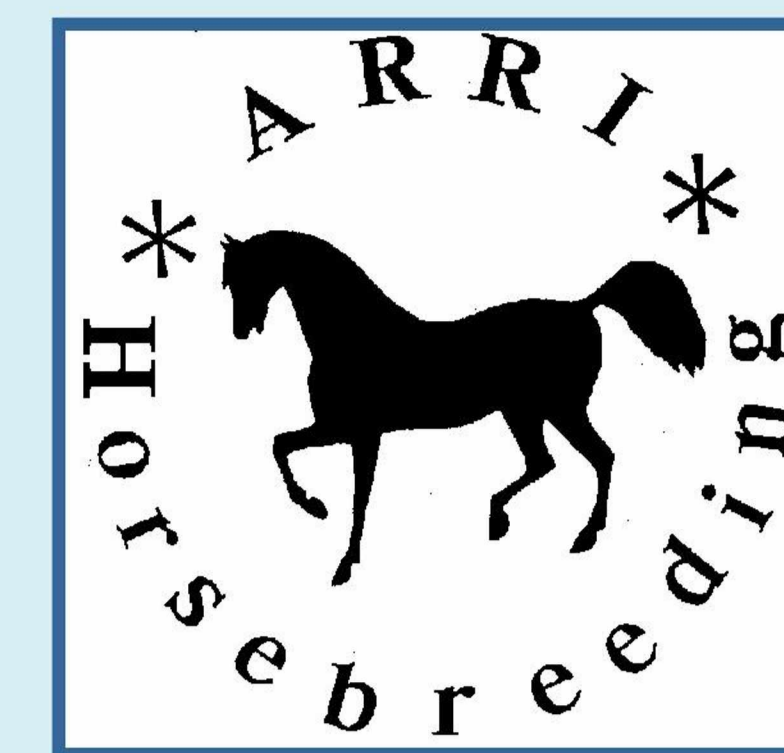# POLYMORPHISM EVALUATION OF MICROSATELLITE MARKERS IN NATIVE RUSSIAN HORSE BREEDS
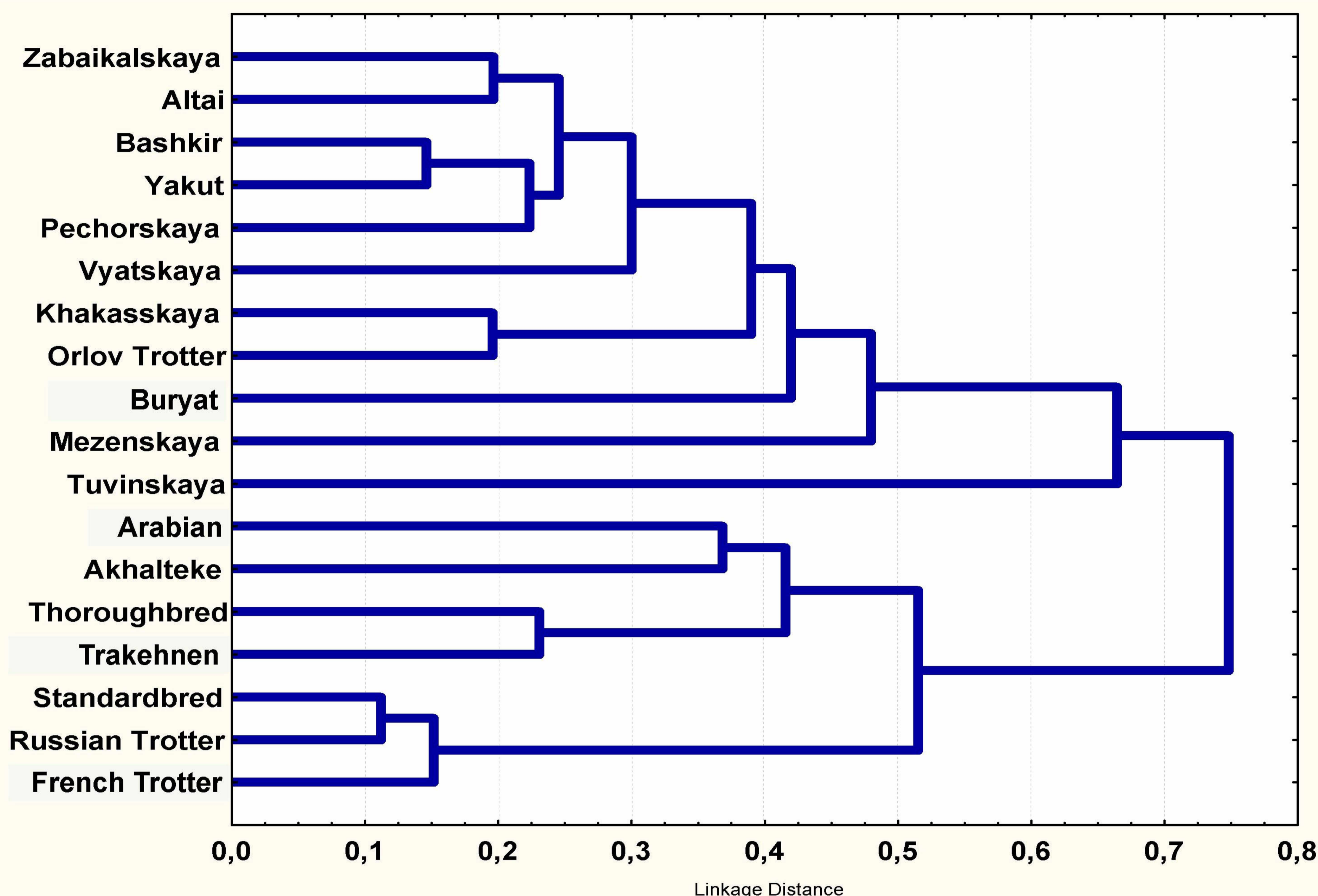
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Figure 1. Dendrogram of genetic distances of Russian horse breeds

Introduction

The State Registry of selection achievements of Russia includes 44 horse breeds; half of them are unique native populations. The task of our research was to study the molecular-genetic features and phylogenetic relationships of the local horse breeds in Russia.

Material and Methods

It was carried out the population genetic analyses on 17 panel microsatellite loci for 316 horses of 10 native breeds, including Altai, Bashkir, Buryat, Khakasskaya, Mezenskaya, Pechorskaya, Tuvinskaya, Vyatka, Yakut and Zabaykalskaya. Genetic diversity within the populations was evaluated by the total number of allele variants (Na), effective number of allele (Ae), number of allele per loci (NV), observed (Ho) and expected heterozygosity (He), Fis and Fst coefficients calculated using GENEPOP 1.3.

Results:

The compared mean values of microsatellite variation were insignificantly higher for the inspected native breeds than for the most cultural breeds (Table 1). Population diversity varied in inspected breeds by Ae from 3.61 to 4.47, by Ho from 0.605 to 0.776, Fst from 0,007 to 0,090, Fit from 0,003 to 0,161. The highest values of Na (141) and Ho (0,755) including private alleles ASAB17D, CA425E, HMS2D and HMS2G were found in Bashkir horse. The studied populations differed in their genetic structure and degree of differentiation (Fig. 1).The analysis showed that the native horse breeds from Eastern Europe and Asia form overall cluster to which the branch of Tuvinskaya breed isolated throughout a long time can be carried.

Conclusions

DNA typing revealed high levels of genetic variability of Russian native horse populations in comparison with European cultural breeds. Native horse breeds from Eastern Europe and North-East Asia form the total subcluster that confirms their common origin. Many native breeds have a unique genetic structure that confirms the existence of private alleles and parameters of Nei`s genetic distances (0,152- 0,663).

Table 1. Genetic characteristics of Russian native horse breeds

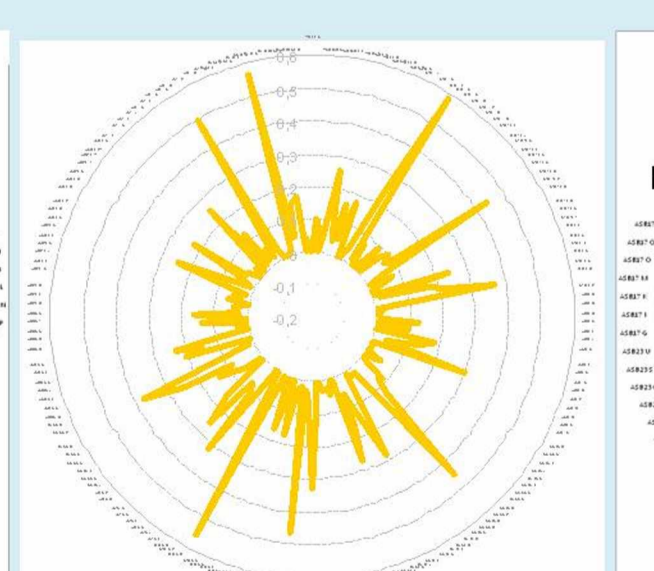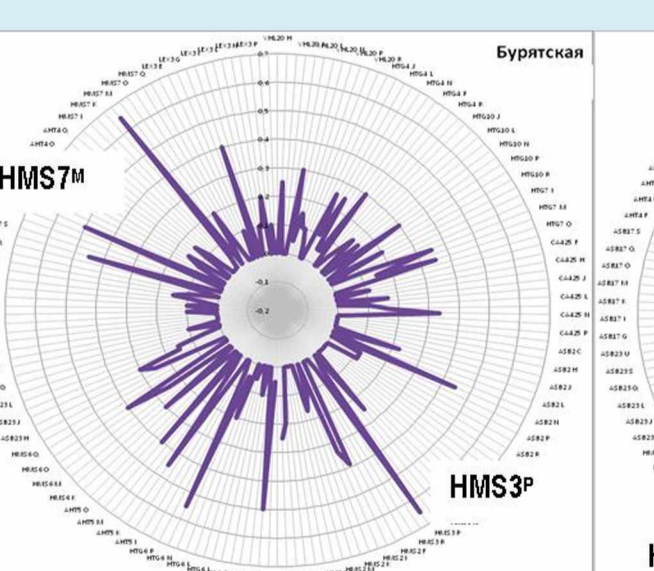| Breed	n	Ae	He	Ho	Fis	Fit	Fst	NV
Altai	39	4,466	0,744	0,723	-0,07	-0,0032	-0,0323	7,471
Buryat	13	3,213	0,656	0,61	0,061	0,1536	0,08977	7,47
Vyatka	16	3,721	0,691	0,68	0,018	0,05647	0,04121	5,294
Zabaykalskaya	31	4,013	0,729	0,765	0,019	-0,0615	-0,0115	5,82
Mezenskaya	18	3,908	0,693	0,605	-0,11	0,16054	0,03844	5,529
Tuvinskaya	30	4,204	0,748	0,776	0,013	-0,0767	-0,0379	5,882
Khakasskaya	15	4,045	0,726	0,723	-0,02	-0,0032	-0,0074	5,647
Pechorskaya	12	4,253	0,738	0,718	-0,069	0,00375	-0,024	5,813
Bashkir	100	4,44	0,75	0,755	-0,006	-0,0476	-0,0407	8,29
Yakut	42	4,27	0,732	0,734	-0,003	-0,0185	-0,0157	7,00

Khakasskaya | Buryat | Yakut | Vyatka | Mezenskaya
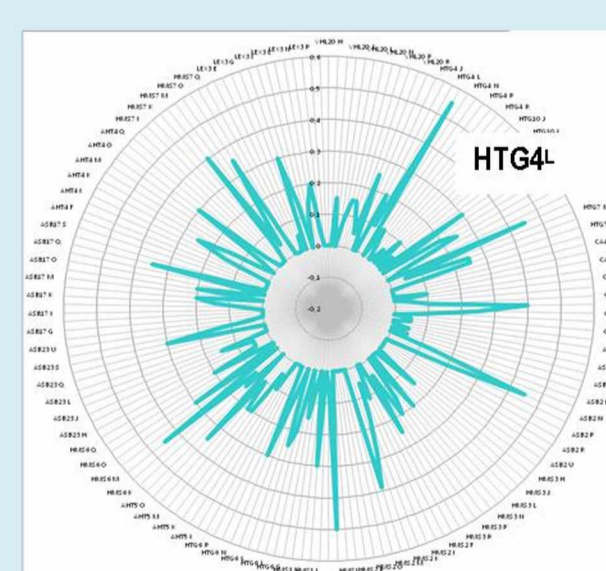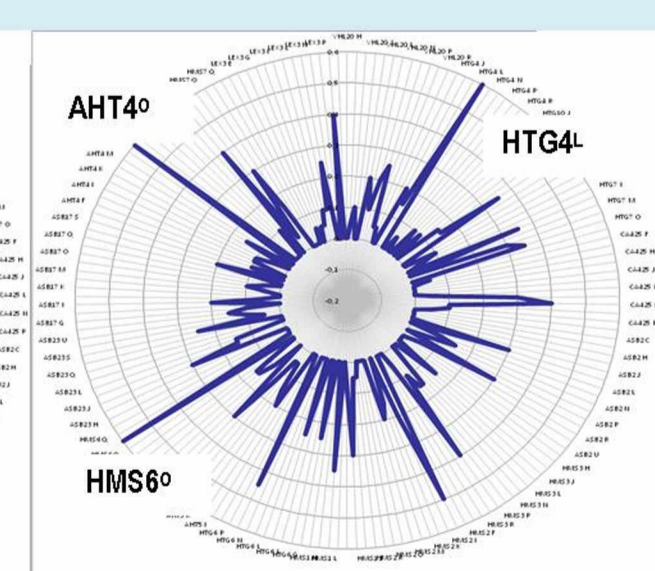
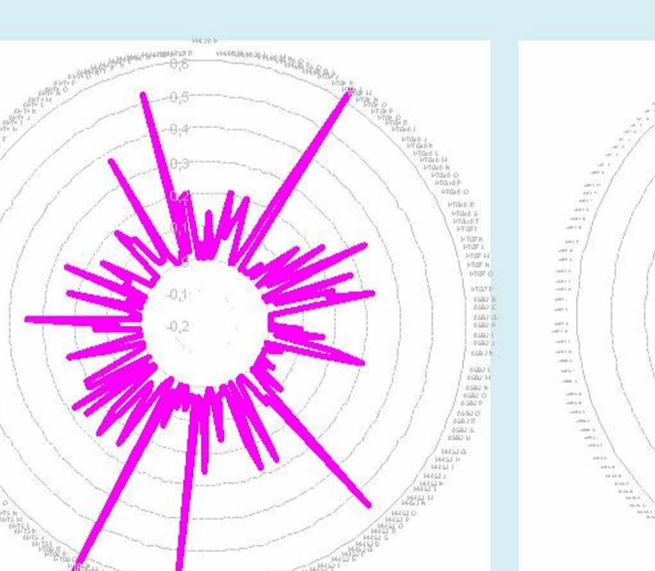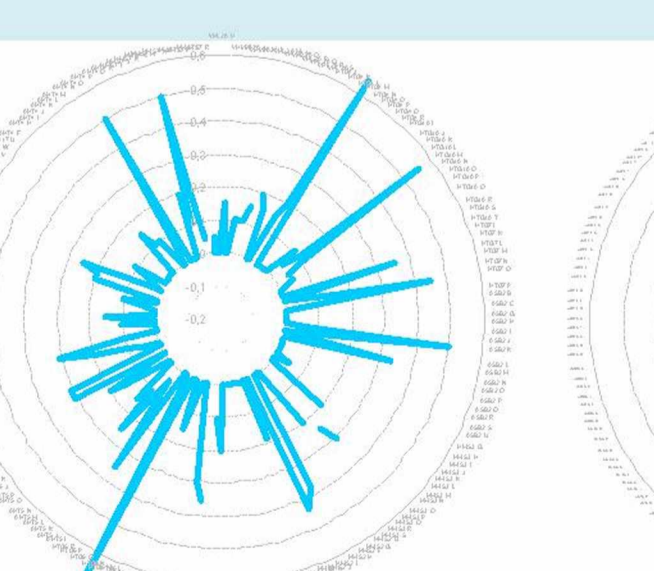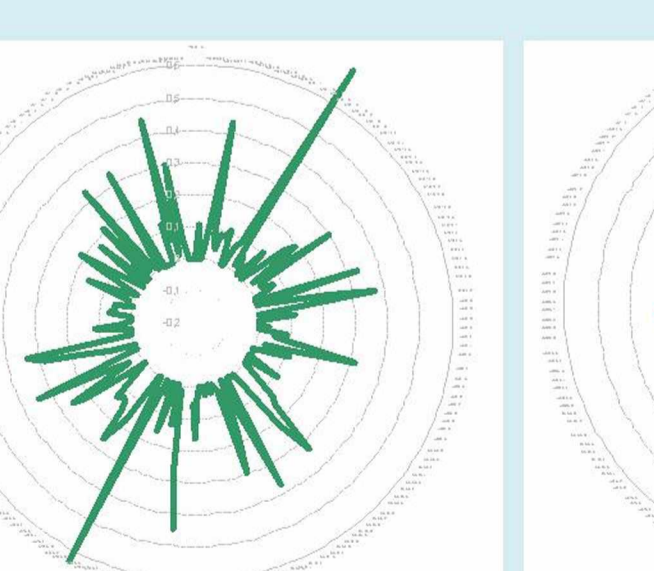Tuvinskaya | Bashkir | Zabaykalskaya | Pechorskaya | Altai