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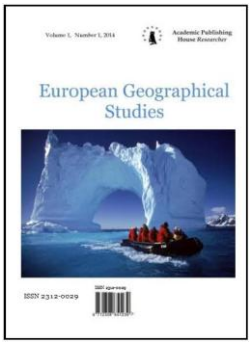

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Ways of Mitigating the Results of Expected Disastrous Drought

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Abstract

The reaction of arid regions on global warming and anticipated process of desertification in Eastern Georgia is investigated. The statistical qualities of the Alazani river are presented for the vegetation period (April - September) along with runoff norms for hydrological section serving main irrigation systems. By using their dynamics through years the trands and tendencies of the changes have been identified. The figures are of scientific value and can by used indesigning and economic organizations for calculating water resources.

By applying multifactorial model forecasting equations have been worked out for the Alazani water flow for the whole vegetation period as well as for individual quarters. The long-term prognosis allow rational and through planning of water resources utilization. Due to the warming trend, water evaporation will increase and the river flow will decrease, which will ultimately lead to the lack of water supply in irrigation period in summer. For the aim of mitigation of negative consequences of drought, a set of measures is recommended.

Keywords: desertification, irrigation channels, water deficit, multifactorial model of forecasting.

Introduction

The Earth as a whole or its individual regions climate change is a problem of modernity – one of the most important problem and deserves proper attention. Global warming in light of the fact certain regions of the Earth is experiencing a warming climate, but freezing.

In the last decades frequent and prolonged droughts against the background of hight temperature and negative anthropogenic processes resulted in a series of aggravated ecological, social and economic problems. On the background of this warming the intensity and frequency of drought will raise in the regions of Eastern Georgia.

In recent years, natural disasters have become especially drastic in east Georgia with wide valleys and fertile soils for agricultural crop production. In the vegetation period (IV–IX), number of droughty months is 2-5 months. Kakheti region is specific in this regard and most vulnerable in terms of drought. Due to lack of atmospheric precipitations, high summer temperatures and high speed winds, droughts frequently occur here. This contributes to land erosion and desertification process; and that water-demand phases of plants don't coincide with the precipitation intervals, also creates a problem. As a result, 200 thousand hectares of the territory is severely damaged

already. In these conditions, if relevant measures are not timely provided, slowing down of the desertification process in future will be more complicated and expensive.

Materials and Methods

Kakheti vast fertile valleys are irrigated from river Alazani water with the biggest irrigation system constructed on it (in Georgia) and composed of two – upper and lower Alazani magistral channels. The upper magistral canal takes start from the upper part of the river, near hydrological post in village Birkiani, where natural river runoff used to be measured earlier. 76 thousand hectares of land are attached to it for irrigation. The lower magistral canal begins at presently operating post near village Shaqriani and it irrigates 262 thousand hectares of arable [1]. There bas been ascertained the vegetation period of river according to individual months, quarters, maximum and minimal water discharge, extremes, alteration and other statistical qualities – Table 1.

In order to evaluate the impact of climate warming and man-made factors, dynamics of multi-year fluctuation of maximal and minimal runoff, also different intervals of annual and vegetation period of river Alazani water have been studied. Relevant trends have been developed and equations made reflecting their rectilinear approximation, parameters of which are provided in table 2.

Table 1: Features of under discharges (Qm^3/s) of the Alazani river

Estimated Period	Months								
	IV-IX	IV	V	VI	VII	VIII	IX	IV-VI	VII-IX
r. Alazani _ Birkiani F = 282 km^2, H = 2200 m, Q_o = 13.9 m^3/s									
Average	20.4	16.7	26.8	27.7	22.3	15.4	12.7	23.7	16.8
Part, % Q_o	73.0	10.1	16.4	16.4	13.6	9.0	7.58	43.1	30.2
Greatest	32.0	27.6	42.7	57.2	51.1	31.0	26.2	39.4	27.1
Least	13.4	8.16	17.8	13.5	12.4	7.98	5.98	15.7	9.48
Amplitude	18.6	19.4	24.9	43.7	38.7	23.0	20.2	23.7	17.6
Average bend	4.50	4.1	6.37	8.51	9.08	5.45	4.82	5.35	4.97
Variation Cv	0.22	0.24	0.23	0.31	0.40	0.36	0.38	0.22	0.30
Asimmetry Cs	0.94	0.42	0.50	1.24	1.34	1.05	0.71	0.86	0.57
r. Alazani _ Shaqriani F = 2190 km^2, H = 1260 m, Q_o = 45.7 m^3/s									
Average	62.0	70.3	94.0	80.2	52.4	37.0	37.6	81.5	42.3
Part, % Q_o	69.4	12.9	17.3	15.1	9.9	6.9	7.0	45.4	24.0
Greatest	128	120	246	223	112	109	117	176	91.3
Least	36.5	25.0	32.4	31.3	15.8	5.72	9.25	40.4	14.4
Amplitude	91.5	95.0	214	192	96.2	103	108	136	76.9
Average bend	18.5	23.1	37.9	31.1	24.1	20.2	21.3	26.3	16.3
Variation Cv	0.30	0.33	0.41	0.38	0.46	0.54	0.57	0.32	0.38
Asimmetry Cs	1.54	0.29	1.74	1.86	0.77	1.25	1.44	1.46	0.60

Their analysis show that tendencies of the change in river Alazani water runoff vary at different periods. This can be explained by diversity of watery tributaries (flowing into the river before these cross-sections) and their regimes, conditioned by natural conditions in these basins.

Table 2: Parameters (a and b) of trends' equations ($T_Q = aN + b$) of river Alazani water discharge periods

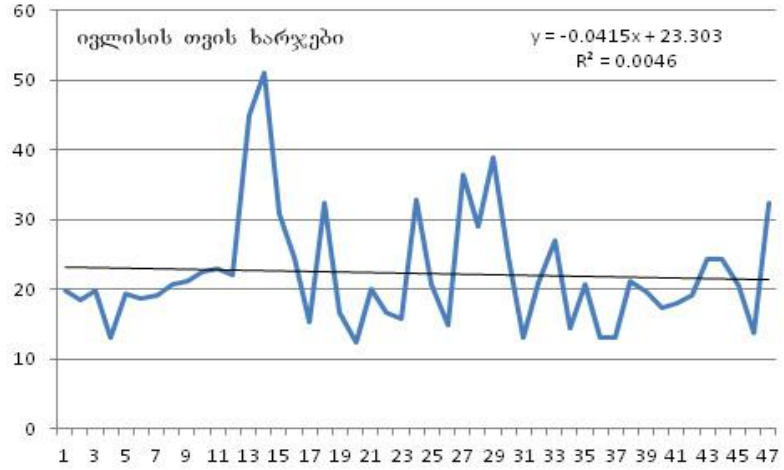
Periods of the water discharges	Months	vil. Birkiani 1950 – 1996		vil. Shaqriani 1933 – 2010	
		a	b	a	b
Annual	I-XII	– 0.002	13.98	0.050	43.79
Maximum	max	– 1.079	98.42	– 1.184	347.8
Minimum	min	0.019	3.731	– 0.126	20.44
Vegetation	IV-IX	– 0.008	20.642	0.031	60.80
April	IV	0.004	16.64	0.337	57.29
May	V	– 0.058	28.23	0.060	90.44
June	VI	– 0.009	27.90	– 0.015	80.79
July	VII	– 0.041	23.30	– 0.014	53.00
August	VIII	0.094	13.13	– 0.005	37.20
September	IX	0.005	12.60	– 0.036	39.01

Trend equation of descending (drop) tendency of natural runoff (Q m^3/wm) of river Alazani vegetation period is presented as follows:

$$T_Q = - 0{,}0084\ N + 20{,}642, \quad (1)$$

Maximal and summer months' water discharges (table 3) drop here with higher intensity ($a > 1$). Multi-year dynamics of water discharges in July (Q_{VII}, m^3/s) of river Alazani with relevant trends is given on figure 1.

Q_{VII}, m^3/s A



Q_{VII}, m^3/s B

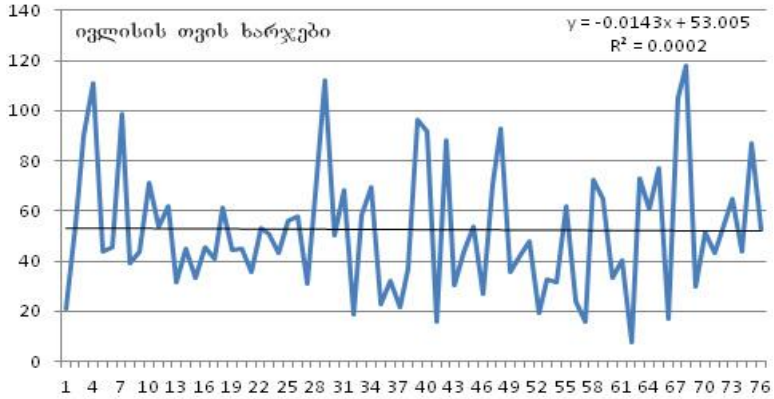


Figure 1. Dynamics of water discharges (Q_{VII}, m^3/s) in July on r. Alazani (A – Birkiani, B – Shaqriani)

Discussion

Irrigation is considered the most effective measure taken against drought in Georgia from the beginning of the II millenium A.D. About 50 thousand ha. of fruitful lands were irrigate with canals in the Eastern Georgia. This area badly needs irrigation nowadays to.

Existing irrigation systems on river Alazani are operating on drift, surface irrigation, accompanied by huge losses. Over the past years, they have been actually non-operating and out of order. Though, presently, these systems are being restored and in general, revival Kakheti agriculture is planned in the near future. This will require regular irrigation of agricultural arable and precise definition of river Alazani water-supply regime.

In order to assess river Alazani water supply for irrigation, as a criteria, Table 2 gives comparison of the water volume required for the target area irrigation and the river runoff in the vegetation period for different supply gradations. It turns out that water deficit is 116 mln/m^3 during the irrigation water and 50 % supply of precipitations. Big part – 80 mln m^3 is observed in August; in the conditions of 75 % water supply, 87 % of 396 mln m^3 water deficit - 346 mln m^3 fall at active irrigation period of plants – in June, July and August; in case of 95 % water supply, water deficit is the biggest – 729 mln m^3, 91% of which - 662 mln m^3 is observed from May till August [2].

Table 3: River Alazani irrigation potential (mln m^3 water) for 50, 75 and 95 % supply with irrigation water and precipitations

Water supply %	Annual runoff	Total water demand	Actual water consumption	Water deficit	Remained runoff
50	1804	731,5	615,8	115,7	1188,2
75	1535	1189,3	793,7	395,6	740,3
95	1209	1434,8	705,3	729,4	503,8

Along with such water deficit in the vegetation period, river Alazani runoff in fall-winter and spring flooding periods is left unused, as water consumption is minimal in this period. This remained water volume (table 3, last column) is big enough and its accumulation in specific water reservoirs makes it possible to avoid deficit of irrigation water in the vegetation period.

In order to economically and rationally manage utilization of the existing water resources of river Alazani in the vegetation period, their forecast is required for different time intervals.

River runoff is a complex dynamic process conditioned by multiple factors. But, for forecasting purpose can be used only those that are subject to standard observations and provide operative information. Accuracy of hydrological forecasts depends on the number of existing observation points on hydrometeorological elements, their location, observation rows and quality. In this regard, information on the runoff forming factors is quite limited in Georgia. That's why, it is impossible to reveal those conformities that enable development of modern mathematical forecasting models. Majority of the elements cannot be measured in our conditions.

In our case, existing information on atmospheric precipitations (R mm), air temperature (θ, ^oC) and water-consistency of snow (W mm) have been used for forecasting of river water runoff (Q m^3/sec) in river Alazani basin and an enlarged forecast model has been developed, in which separate previous period factors are broken down into different period indicators, thus, impact of their dynamics is envisaged for future runoff. For example, precipitations at fall, winter and spring have diverse impact on the vegetation period runoff. So, it is not expedient to imagine their total sum in this forecast model [3, 4].

Based on the available data and correlation analysis, we revealed the most effectively operating previous period factors and developed a multi-factor forecast model by using them. But, many variables in the forecast model reduce sustainability of the equation, that's why, by specific mathematical criteria and multi-pitched screening method, we corrected the model based on the principle: maximal accuracy with minimal factors [5]. Thus, we developed optimal forecast models by taking into account up to 3-4 factors.

In the process of determination of numerical quality of forecast dependencies, two equation systems are discussed by gradual adding of separate factors, when direct and reversed break down of multi-factor equation is done [6]. This way, possibility of reduction of factors, boosting accuracy and prolonging the forecast period (timeliness) is sinchronously explored. As a result, we receive various forecast equations with different information, accuracy and timeliness. While development of operative forecasts, this enables us to select a forecast model based on the existing information, needed timeliness and accuracy. Besides that, interval of possible fluctuation of water runoff is determined, while inter-control of the received results - done [2, 3].

In order to plan the rational use of existing water resources for the irrigated agriculture, water discharge forecasts of the whole vegetation period (IV–IX) as well as of its separate quarters (IV–VI and VII–IX) is required (table 4).

Table 4: Forecast equations of river Alazani water average discharge (Q, m^3/sec) of the vegetation period (April-September) and its separate quarter; their assessment criteria

Forecast Equations	Assessment criteria			
	s / σ	P %	r	Э %
r. Alazani _ Birkiani F = 282 km^2, H = 2200 m, Q_o = 20.4 m^3/s				
$Q_{IV-IX} = 0.04\ R_I + 0.60\ Q_{III} - 0.75\ \theta_{IV} + 10{,}52$	0.72	61	0.72	61
$Q_{IV-VI} = 0.03\ R_I + 1.1\ Q_{III} + 0.10\ R_{II} + 11{,}1$	0.65	73	76	68
$Q_{VII-IX} = 0.21\ Q_{VI} - 1.05\ \theta_{VI} + 25.3$	0.79	60	0.63	65
r. Alazani _ Shaqriani F = 2190 km^2, H = 1260 m, Q_o = 62.0 m^3/s				
$Q_{IV-IX} = 0.48\ Q_{1I} + 0.27\ R_{II} - 0.53\ Q_{III} + 0{,}09\ R_{IV} + 44.5$	0.84	68	0.63	67
$Q_{IV-VI} = 0.34\ R_{III} - 3.36\ \theta_{III} + 0.12\ W_{III} - 58{,}4$	0.73	71	0.74	63
$Q_{VII-IX} = 0.13\ Q_V + 0.12\ \theta_{VI} - 0.34\ Q_{VI} + 0.19\ R_{VII} + 22.4$	0.73	75	0.71	69

Comment: s / σ – correlation between the forecasts' error and average square deviation of the runoff; P % – forecast prediction reliability; r – correlation between the actual and forecast meanings; Э % – economic effectiveness of forecasts. Forecasts are permissible, when: (s / σ) < 0.80; P > 60; r > 0.60.

Forecasts of II quarter (IV - VI) are exceptional by their accuracy, which is very important as this is the quarter when biggest spring floods occur in this river and often create danger to the environment and the population. That's why, these forecasts have two-fold designation. The economic effect received using the developed forecasts exceeds by 10-35% the effect received using the forecast discharge norm. Now, we may say that their application in practice with the purpose to serve irrigation systems and channels, gives possibility to rationally use and appropriately plan the existing water resources of river Alazani – this will increase productiveness of agricultural crop.

Conclusion

Based on the forecast calculations, by the end of the 21st century, due to significant temperature growth (up to 5 °C) as well as increased evaporation from the surface of river Alazani basin, river runoff will decrease by 8,5% compared to the second half of the 20th century [7]. Similar conditions are favorable to frequent drought processes in Kakheti region and the desertification process. For mitigation of negative results of the expected droughts, it is required to use river Alazani runoff in an optimal regime without losses. This requires specific measures:

• Rehabilitation and expansion of water systems, cleaning, restoration and reconstruction of irrigation channels;

• Putting the pumping stations in operation for additional supply of channels with water;

• Development and introduction of optimal water distribution/utilization time-tables for water consumers [8];

• Accumulation of unused water (of fall-winter and spring floods) in small reservoirs for further utilization during the irrigation water deficit in summer;

• Creation of a drip irrigation network; this will increase yield and use less water compared to surface irrigation [9];

• Introduction of a pivot irrigation with those equipment that can be used in huge inclinations and complex relief [10];

• Restoration of windbreak lines in agricultural fields and introduction of drought-resistant varieties;

• Planting of trees on slopes of river ravines;

• Introduction of an active impact on clouds, during which, atmospheric precipitations increase and plants get protected from hail [11];

• Raising awareness of population and farmers to moderately and economically use water resources;

• Annual longterm forecast of river Alazani water discharge for separate intervals of vegetation period (quarters, months and decades). As a result of the planned water consumption regime (and taking into account the water prognosis), the right time for river water irrigation will be determined, as well as timeline for putting the pumping stations in operation, using pivot irrigation systems or increasing precipitations by impact on the clouds.

Implementation of the mentioned measures will slow down and suspend desertification process, fight against drought, increase crop productivity and improve economic condition of the population.

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Пути смягчения результатов ожидаемых катастрофических засух

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Аннотация. Исследована реакция климата засушливых районов Восточной Грузии на глобальное потепление. Даны статистические характеристики стока воды реки Алазани за период вегетации (апрель-сентябрь). На основе многолетней динамики установлены тенденции их изменения и определены соответствующие тренды. Эти данные имеют практическое назначение для водохозяйственных расчётов.

С использованием многофакторной статистической модели получены уравнения для прогнозирования стока р. Алазани за период вегетации и отдельных кварталов. Такими долгосрочными прогнозами возможно основательное планирование рационального использования водных ресурсов реки.

В результате текущего потепления климата увеличится испарение, уменьшится сток воды, и река уже не сможет обеспечить водопотребность оросительных систем в период активного орошения растений. В целях смягчения негативных результатов от ожидаемых засух рекомендованы комплекс разных мероприятий.

Ключевые слова: опустынивание, оросительные каналы, дефицит воды, многофакторная модель прогнозирования.

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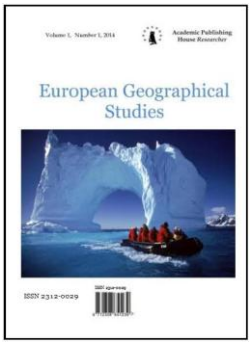

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The Peculiarities of Climate Changes in a Coastal Zone of the Black Sea in Adjara

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Abstract

On the background of global warming, climate changes have mostly affected the contact zone of the hydrosphere and lithosphere, the coasts of oceans and seas. The sea level fluctuations and the activity of storm flow and thermal mode have had a significant influence on the complex morphodynamic processes in the coastal zone.

The coasts of oceans and seas are distinguished by their anthropogenic significance and occupy 72% (except cryogenic coasts) of the world ocean coastal zone. The sustainability of sea coastal zone is directly connected with eustatic, epirogenetic and wave processes. In the modern period the wash-off area of the world ocean coasts and the increasing of intensity are directly caused by the above mentioned factors.

Keywords: coastal zone, hydrological mode, climatic variations.

Введение

Аджария расположена в юго-западной части Грузии на побережье Черного моря и занимает территорию площадью 2.9 тыс. кв. км., что составляет всего 4.2 % площади территории Грузии. Природа Аджарии исключительно разнообразна и за последние десятилетия испытывает заметную трансформацию, причиной которой являются как природные процессы, так и антропогенное воздействие. Среди этих процессов особое место занимает глобальное потепление – процесс постепенного увеличения среднегодовой температуры атмосферы Земли и Мирового океана в XX и XXI веках вследствие естественных причин и человеческой деятельности.

Территория Аджарии по особенностям природных условий делится на две части — приморскую и нагорную [2]. Исследования изменения климата Грузии, проводимые в Институте гидрометеорологии Грузинского технического университета под руководством одного из авторов данной статьи, выявили различный характер реакции этих двух регионов на глобальное потепление [7-9]. В прибрежной зоне отмечается умеренное потепление и несущественное изменение осадков, в то время как в нагорной зоне Аджарии отмечается значительное похолодание со скоростью до 0.1° и увеличение годовых сумм осадков со скоростью 3–5 % за 10 лет.

Прибрежная зона Черноморского побережья Аджарии полностью является рекреационной зоной. Здесь наиболее благоприятны условия для развития туризма и курортного хозяйства, поэтому строятся бульвары, фешенебельные гостиницы, развлекательные объекты, яхт-клубы, гавани и пристани, а также портовые акватории различного назначения [3, 4]. Кроме того зона имеет сельскохозяйственное назначение, в особенности для развития субтропического хозяйства [6].

Исходя из вышесказанного, очевидно, насколько актуальным и необходимым является знание гидрометеорологического режима Черного моря, его мониторинг, оценка и прогнозирование, что поможет обеспечить устойчивое развитие прибрежной зоны. Целью данной статьи было выявление основных тенденций изменения гидрометеорологического режима Черноморского побережья Аджарии в условиях глобального потепления.

Материалы и методы исследования

Для выполнения работы в качестве исходных данных были использованы материалы ежедневных наблюдений действующей в акватории Батумского порта морской гидрологической станции за период 1963–2014 годы. Были рассмотрены следующие гидрометеорологические характеристики: колебание уровня моря, штормовые потоки, температура воздуха и воды в поверхностном слое моря, как наиболее важные индикаторы изменения гидрометеорологического режима. Использованы статистические и графические методы исследования.

Обсуждение результатов

Эвстазия. Анализ ежедневных режимных данных наблюдений над изменениями колебания уровня Черного моря на территории морской гидрологической станции, находящейся в акватории Батумского порта, за период 1963–2014 годы, показал, что многолетний режим колебания уровня моря имеет сложный характер (рис. 1).

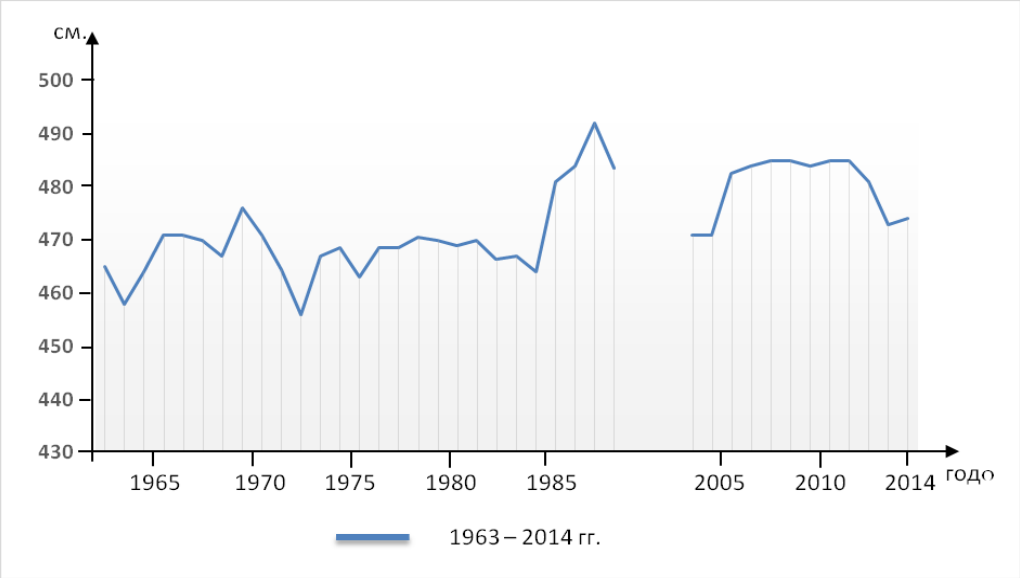

Рис. 1. Многолетнее колебание средних годовых значений уровня моря

Наблюдения над уровнем моря за период 1989–2002 годы не проводились, поэтому соответствующие данные на рис. 1 отсутствуют. Из рис. 1 следует, что за полувековой период средний годовой уровень моря колебался существенно. Минимальные отметки уровня отмечались в 1963, а также в 1972 годы (менее 460 *см*), а максимальные – в 1987–1988 годы (более 490 *см*). Средняя величина уровня Черного моря, которая, по сравнению с уровнем Балтийского моря, составляла 470 *см*., на сегодняшний день увеличилась до 490 *см*. Одновременно повысились экстремальные значения уровня: максимальное – от 490 *см* до 510 *см*, а минимальное – от 440 *см* до 460 *см* [3, 4].

Из анализа ежедневных данных наблюдений следует, что максимальное значение уровня моря равное 500 *см* (пик) на протяжении многих лет до 1985 года отмечалось фрагментально (1964 год – ноябрь, 1970 год – январь – июль и 1971 год – август), а с 1986 года это значение приняло постоянный характер.

О тенденции изменения уровня моря более подробно можно судить из рис. 2, где представлен ход 10-летних скользящих средних уровней моря по морской гидрологической станции Батуми.

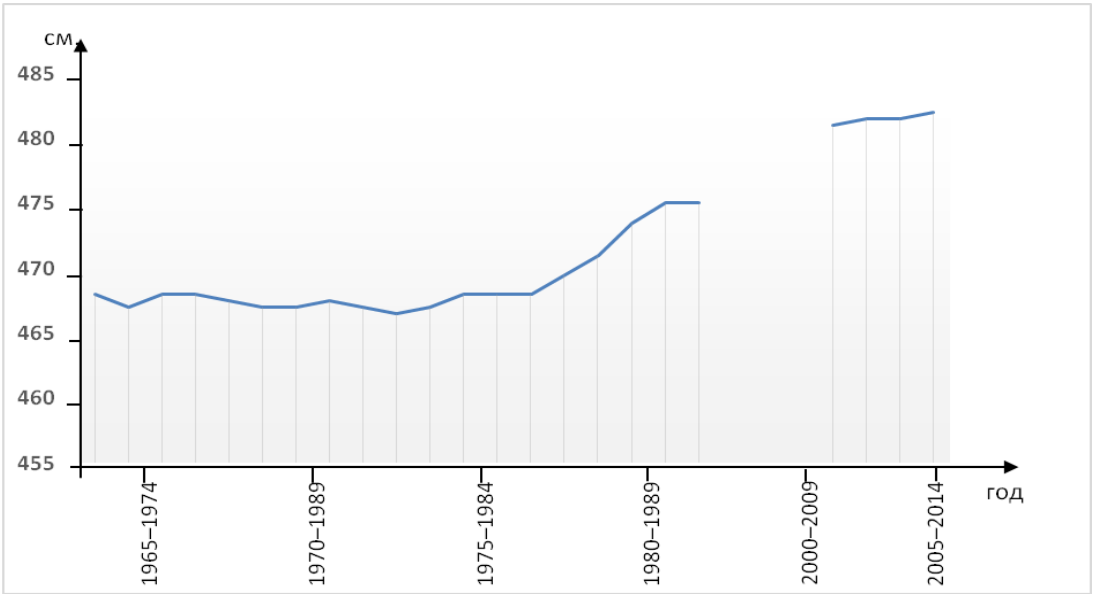

Рис. 2. Ход 10-летних скользящих средних уровней моря

На рис. 2 хорошо видно, что средний уровень Черного моря на побережье Аджарии за последние 20 лет по отношению с предыдущим периодом увеличилась в среднем на 20 *см*.

Одновременно изменился годовой режим колебания уровня моря: до 1989 года в годовом ходе уровня минимум наблюдался осенью или зимой, а максимум весной или летом. В 2004–2006 годах не отмечалось ярко выраженного годового колебания уровня моря, а с 2006 года минимальный уровень отмечается летом или осенью, а максимальный – зимой или весной.

По мнению некоторых ученых, за последнее столетие уровень Мирового океана увеличился в среднем на 20 *см* и средняя скорость колебания уровня составила 2 *мм* в год, а из наших расчетов вытекает, что для Черного моря этот показатель составляет в среднем 3 *мм* в год [4].

Штормовые потоки. За последние годы глобальные климатические процессы изменили как режим действия циклонов, так и зависимое от него характер штормового воздействия, т.е. трансформации подвергся и режим волнения моря, который выразился в изменениях частоты, направления и параметров волн.

Динамика числа дней с различной интенсивностью волнения моря в прибрежной зоне Черного моря Аджарии хорошо видна из таблицы 1, где сопоставлены данные о числе дней со штормом различной интенсивности, наблюдающихся за различные десятилетия.

Таблица 1: Число дней со штормом различной интенсивности за различные десятилетия

Период, годы	Интенсивность штормов			
	4 балла	5 баллов	6 баллов	7 баллов
1963–1972	326	76	6	_
1978–1987	643	95	2	_
2005–2014	272	128	16	3

Из таблицы очевиден резкий рост количественных показателей штормов: с 1970-х годов до сегодняшнего дня количество 5-ти балльных штормовых дней возросло почти в два раза, 6 балльных – в 3 раза, 7 балльных штормов до 2003 года не было зафиксировано, а за последнее десятилетие составило 3 суток, в то же время число дней с 4 балльным волнением моря за последнее десятилетие по сравнению с предыдущими десятилетиями немного уменьшилось.

Термический режим.

Температура морской воды. Анализ материалов термического режима поверхностного слоя воды в прибрежной зоне Черного моря Аджарии за 10 лет (2000–2010 гг.) показал, что в многолетнем режиме годовой ход температуры воды характеризуется минимумом в феврале-марте (+7°С), а максимумом – в июле-августе (+28, +29°С). Однако в отдельные годы может отмечаться существенное отклонение от названных норм. Это хорошо видно из рис. 3, где представлен годовой ход средних суточных температур поверхности морской воды за различные годы.

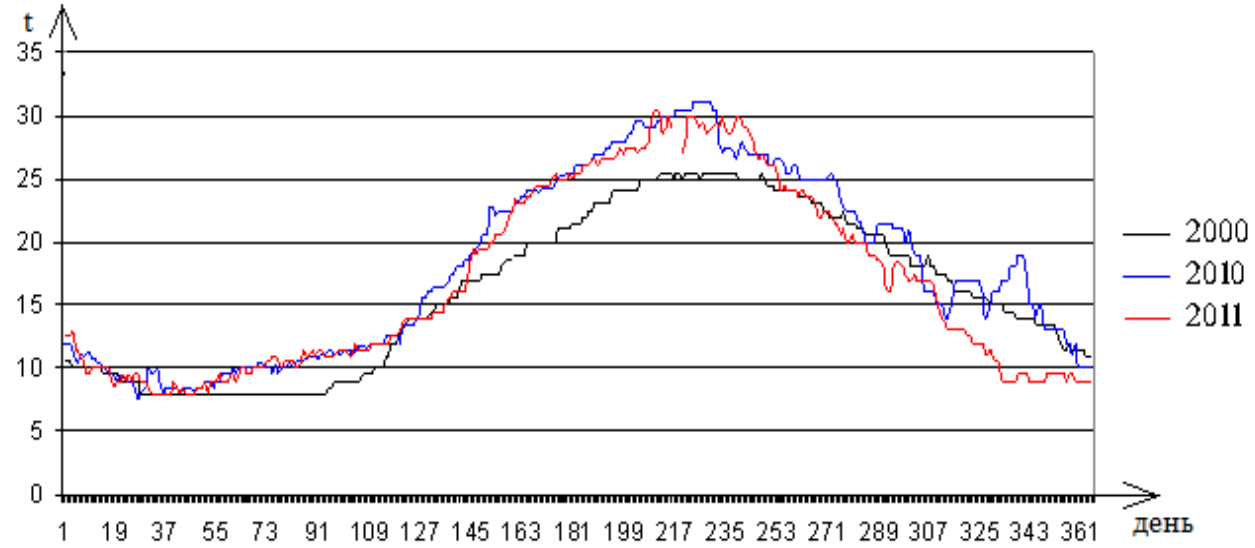

Рис. 3. Годовой ход средних суточных температур поверхности морской воды (за 365 суток)

Существенное отклонение от нормы годовых изменений температуры поверхности морской воды зафиксировано в 2010 г. и достигло своего пика (+ 33°С). Это было вызвано засухой, которая длилась почти три месяца, и была обусловлена Средиземноморским антициклоном. Подобное повышение температуры было зафиксировано и в 2011 году. Температура поверхности морской воды достигла максимума – 30°С и, в отличии от предыдущего года, довольно долго сохраняла экстремальное состояние.

На рис. 4 представлена динамика термического режима поверхности морской воды по среднегодовым данным за период 2000–2014 годы.

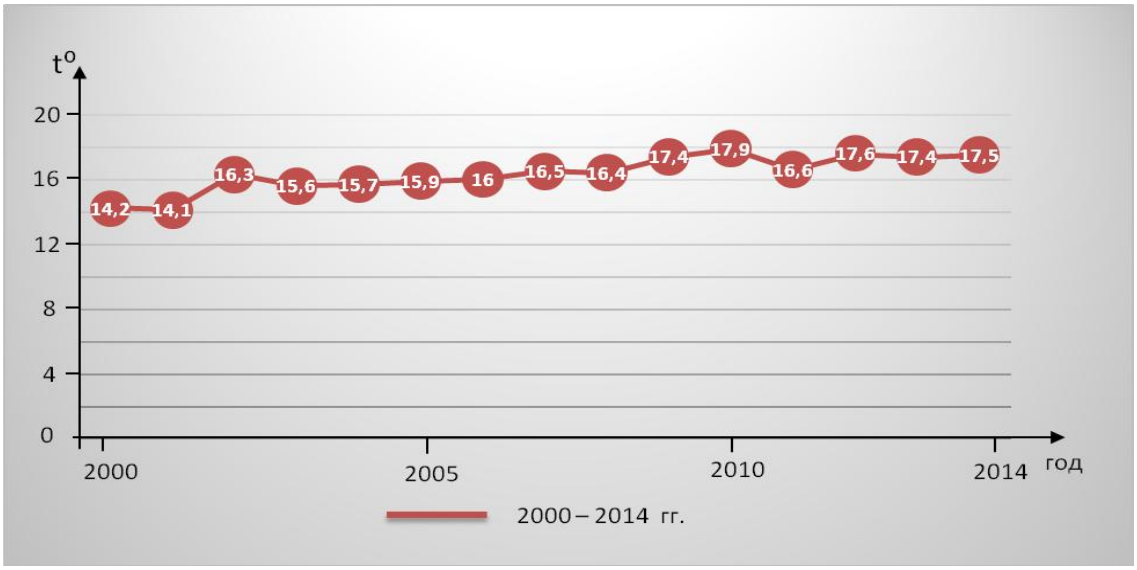

Рис. 4. Динамика средней годовой температуры поверхности морской воды

Из рис. 4 следует, что в многолетнем ходе температура поверхности воды существенные колебания не испытывала, и изменялась в пределах 14–18°, хотя после 2010 года отмечается некоторое ее повышение.

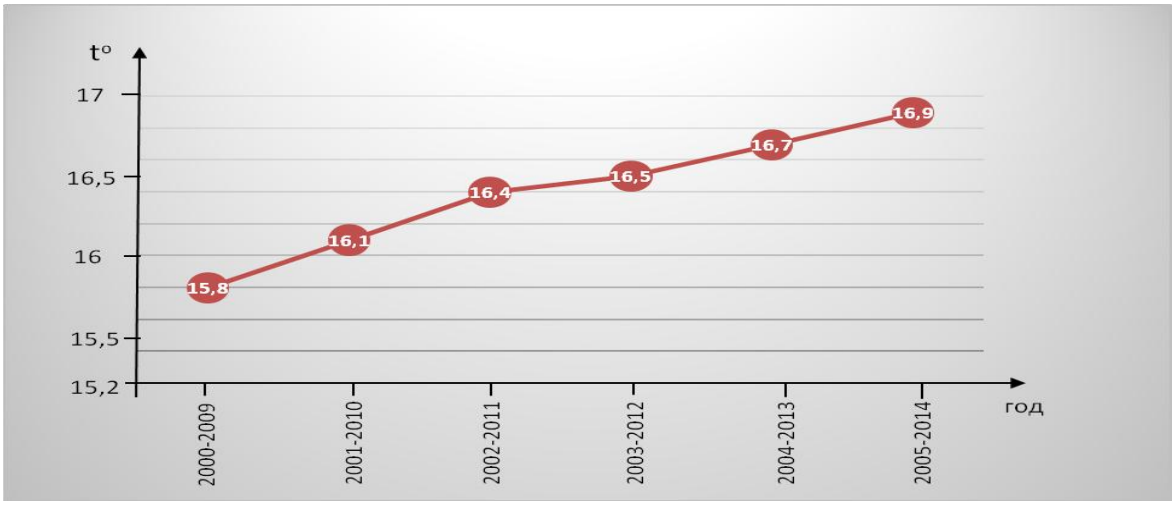

Рис. 5. Ход 10-летних скользящих средних температур поверхности морской воды

На рис. 5, где представлен ход 10-летних скользящих средних температур поверхности морской воды, явно прослеживается тенденция роста температуры, в частности из рис. 5 следует, что за 14 лет средняя температура поверхности воды увеличилась более чем на 1°.

Температура воздуха. Указанная выше трехмесячная засуха 2010 года, а также жаркие летние периоды без осадков, которые были зафиксированы и в последующие годы, обусловили также повышение температуры воздуха начиная с 2010 года (рис. 6 и рис. 7).

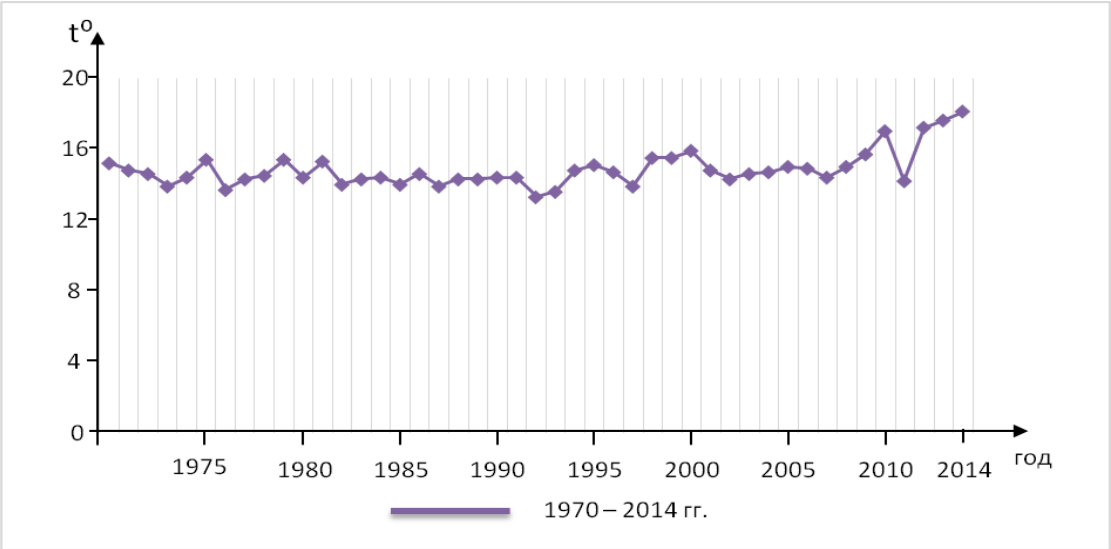

Рис. 6. Многолетнее изменение средней годовой температуры воздуха

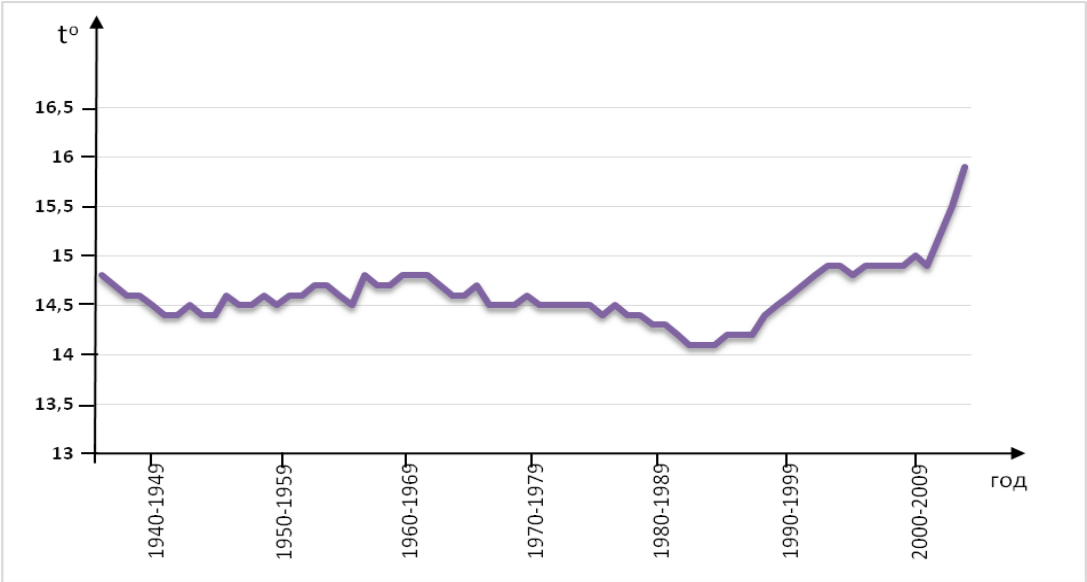

Рис. 7. Ход 10-летних скользящих средних температур воздуха

Из рис. 7 видно, что до конца прошлого столетия температура воздуха на Черноморском побережье уменьшалась, что было зафиксировано еще в первом национальном сообщении к конвенции ООН об изменения климата Грузии [1], а с начала нынешнего столетия температура стала возрастать, что подтверждается также исследованиями, выполненными в рамках проекта Национального научного фонда Ш. Руставели [5]. По нашим оценкам за период 1975–2010 годы температура воздуха в Батуми возрастала со скоростью 0.13°, в то время, как по ранним оценкам за период 1936–2008 года температура уменьшалась со скоростью 0.02° за 10 лет [5]. Скорость потепления особенно возросла за последнее десятилетие и составило около 2°.

Выявленные изменения могут еще более обострить сложные морфодинамичекие процессы, протекающие в прибрежной зоне Черного моря Аджарии, а также поглотить и устойчивые районы, и, в случае бездействия, большая часть побережья Черного моря Аджарии окажется в экологически кризисном состоянии [3, 4]. Поэтому при проведении работ по укреплению берегов необходимо учитывать следующее: в случае искусственного наращивания берега необходимо увеличить объем вносимого материала, а во время проведения работ по укреплению берега с помощью гидротехнических сооружений, в

соответствующих конструкционных расчетах следует учитывать представленные выше новые параметры.

Заключение

В результате проведенного исследования удалось количественно оценить основные тенденции изменения гидрометеорологических характеристик Черноморского побережья Аджарии в условиях глобального потепления:

- после 2000 года темп повышения уровня Черного моря составил в среднем 3 *мм* за год, что превышает среднюю скорость увеличения уровня Мирового океана;
- с 1970-х годов до сегодняшнего дня количество 5-ти балльных штормовых дней возросло почти в два раза, 6 балльных – в 3 раза, 7 балльных штормов до 2003 года не было зафиксировано, а за последнее десятилетие составило 3 суток;
- максимальная температура поверхности морской воды зафиксирована в 2010 году (+ 33^{o}C), что было вызвано засухой, которая длилась почти три месяца, и была обусловлена Средиземноморским антициклоном;
- до конца прошлого столетия температура воздуха на Черноморском побережье уменьшалась, а с 2010 года как температура воздуха, так и температура морской воды стала расти;
- за период после 2000 года средняя температура поверхности воды увеличилась более, чем на 1^{o}.

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Аннотация. На фоне глобального потепления климатические изменения особенно коснулись зоне контакта гидросферы с литосферой, океаническим и морским побережьям. Колебание уровня моря, активность штормовых потоков и термический режим существенно влияют на сложные морфодинамические процессы, происходящие в прибрежной зоне.

Побережья океанов и морей отличаются сильной антропогенной нагрузкой. Устойчивость прибрежной зоны находится в прямой зависимости от эвстетических, эпирогенетических и волновых процессов. В современных условиях увеличение ареалов и интенсивности промыва морских берегов обусловлено именно вышеназванными процессами, которые в статье исследованы для Черноморского побережья Аджарии.

Ключевые слова: Прибрежная зона, гидрологический режим, климатические колебания.

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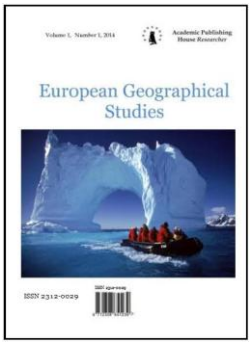

UDC 551

Determınatıon of the Amount of Heavy Metal on Peaches Grown ın Umurbey, West Anatolıa

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Abstract

This study is conducted to determine the amount of heavy metal in peaches which are grown in Umurbey lowland, Çanakkale. Samples, taken from the peaches which grow in different regions of Umurbey, are analysed in the Laboratory of Provincial Directorate of Food, Agriculture and Livestock of Çanakkale (Çanakkale İl Gıda Tarım ve Hayvancılık Genel Müdürlüğü Labaratuvarı) with method of wet decomposition by using Unicam 929 Atomic Absorption Spectrometer. As a result of the analyse, amount of six heavy metal, cadmium, aluminium, lead, zinc, copper, iron, manganese, and nickel in the peaches are determined. Depending on the findings, recommendations were made in sugestions.

Keywords: Peach, Canakkale Umurbey Plain, Heavy metal, Human health

Introduction

Heavy metal is an element required for an organism to grow healthily and its weight is less than % 0,01 of the organism. Another definition is that elements whose specific gravity is greater than 5 g/cm^3 and whose atomic number is from 22 to 92 are described as heavy metals (Çınar, 2008). Metals, which have numerous area of usage, are biologically split into tree groups (Clark, 1992). Effects of heavy metals; limits, all kinds of metal shows toxic effect on human health (Sonsuz, 2011). The effects usually cause nervous system communication disorders, trouble in blood synthesis, brain damage, respiratory tract diseases, kidney damage and skin disorders (Sonsuz, 2011). Heavy metals are also effective on the humans and animals through mixing industrial wastewaters with drinking water or through pollination of particles contaminated with heavy metals (Kahvecioğlu and all. 2003). Effects of heavy metals on human and environment; have an important role in human health. Along with the elements constituting the main structures of the living; plant, animal and us-humans, there are also 20 other elements in the structure of the living which have a great effect on the organism despite their little amounts (Duran, 2006). Heavy metals are usually found in the waters on the surface of the ocean and rising, they are moved to atmosphere. High levels of heavy metals take place on the surface of river waters and by the seaside. On the areas close to down-town, pollution is combined with sewer system (Wickfors and Ukeles, 1982; Rebhun and Amotz, 1984) but their level rise up around industrial areas (Cotté-Krief and Assocs. 2000; Bu-Olayan and Assocs. 2001; Eser and Volpe, 2002). Heavy metals, having toxic effects in every respect, have been diffused around from several sources and create one of the important reasons of environmental pollution (Goyer, 1991). In some systems, mechanism of

actions of heavy metals changes depending upon the concentration. In this type of organisms, concentration of the metals should be taken into consideration (Bakar and oths, 2009). For example, cadmium could have severe toxic effects for aquatic organisms when it is found in the water in excessive amounts even on low concentrations (Kruger, 2002). Lead, in acute intoxication, could cause stomach-ache, brain damage in children. It could cause trembling, loss of weight and appetite (Şahin, 2006). Allowed copper level for the food by WHO and FAO is 4 mg/kg (www.inchem.org). In case of exceeding the limit, long term exposure to copper powder could irritate nose, eyes and mouth and could cause headache, dizziness and nausea (Çetin, 2006). It has been concluded that 2-3 mg of daily manganese intake daily will be sufficient (www.inchem.org). More than that causes respiration and neurotic disorders and infertility in humans (Tuncay, 2007). However, when elemental aluminium is taken excessively, symptoms such as hypo kinesis, disorder in muscle functions (weakening), having difficulty in writing are monitored (Haghiri, 1973).

Table 1: Amount of trace elements approximately taken into human body with foodstuff on a daily basis

Copper	2100
Manga	3300
Nickel	460
Lead	138
Zinc	16900

Human is in need of minerals, vitamins and proteins to be able to sustain a healthy life. Vegetables have a place in human nutrition in terms of minerals such as vitamin, calcium, iron and other contents (Thompson and Kelly, 1990). With the increasing growth in agribusiness, initially in irrigation water, it is recently discussed that heavy metals are encountered in plants (Anonymous, 1998). Heavy metals, with their toxic effects and accumulation features, constitute a considerable extent of pollution for the environment (Omgbu and Kokogbo, 1993).

Some heavy metals such as chromium, iron, aluminium, copper, manganese and zinc are essential micro-nutrients for plants and animals (Somers, 1984). However, these are easily digested and accumulated. Heavy metals being constantly taken, even if at the low levels, with the foodstuff by the people and animals causes several harmful effects due to the difficulty of being eliminated from the body. Also, heavy metals demonstrate the characteristic of accumulation in the body. Plants obtain the heavy metals from the soil and their leaves which are exposed to polluted air (Zurerave and Assocs, 1989). In recent years, interest in pollution with heavy metals relatively increased. On certain concentrations most of the heavy metals indicate detrimental effects to organisms and causes eco-destruction. It is known by all that some substances have become current issues by being stored in various organisms that we use as nutrition and even by causing humans, the last member of the food chain, to be poisoned (Demir, 1998). Considering the lithologic character of Umurbey catchment basin, high density of heavy metal and minerals found as melt in the irrigation water cause agricultural products in the region to contain heavy metals.

Material and method

In this study, experimental procedure, one of the quantitative research methods, is used. Umurbey is established on a place starting from the edge of Çanakkale-Bursa highway to the end of Umurbey Lowland which ranges to south. The place is Samutlar hill which is 6 km away from the Dardanelles. It is 25 km away from Çanakkale and 15 km from Lapseki. Its catchment basin is quite large. Ranging from the north of the city to the coast in east-west direction, whole Umurbey Lowland, 8000 decare, is an entirely irrigable area.

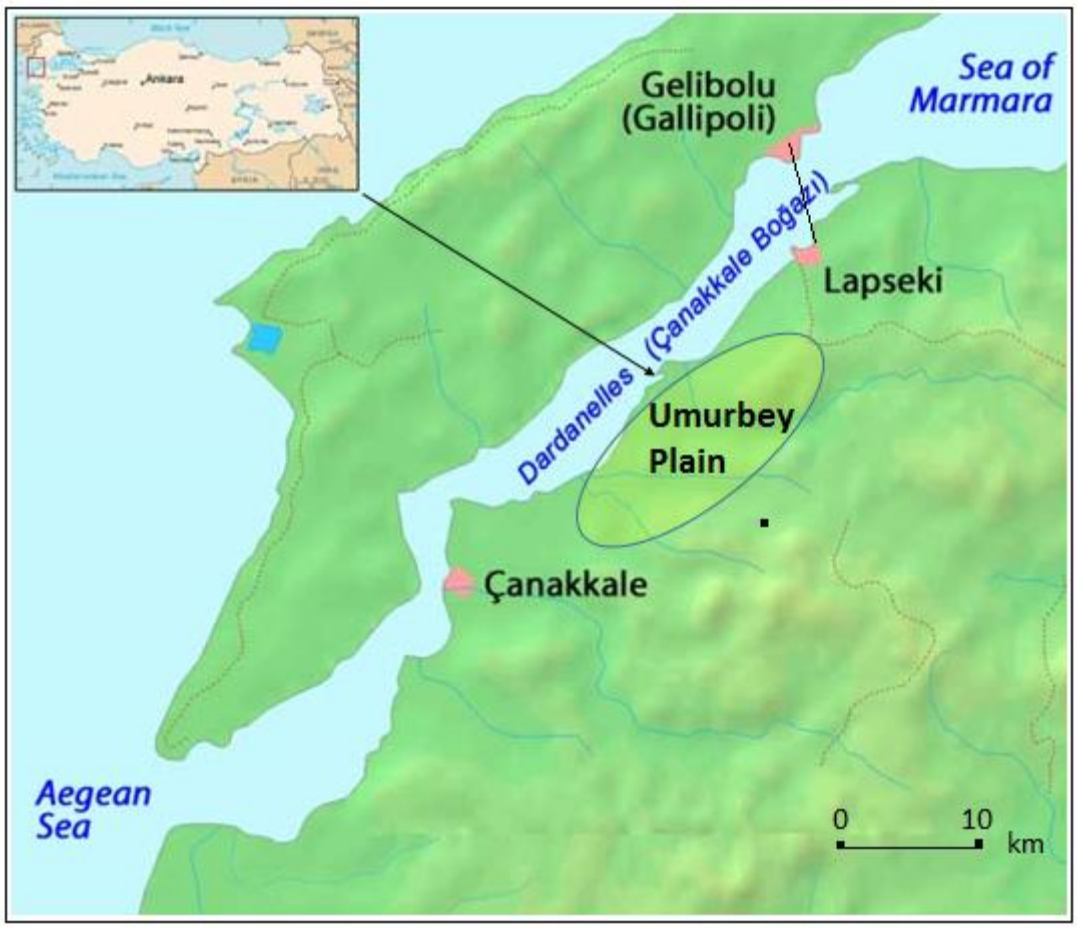

Figure 1. Study area, Umurbey peaches farming area

The study area is limited with the peaches of Umurbey Lowland in Lapseki town of Çanakkale. Peach samples taken from Umurbey city in Lapseki, Çanakkale is given to the Laboratory of Çanakkale Directorate of Provincial Food, Agriculture and Livestock to be analysed; in order to be cleaned of the dust, the dirt and the parasites on them, firstly, they are washed with tap water and then with deionized water. In peaches being analysed, method of wet decomposition is used. 2-4 g or mL (supposed to be arranged according to the amount of the mineral searched for in the sample being analysed) of the homogenised sample is inserted into Kjeldahl tube. Adding on 21 mL of aqua fortis (HNO_3), 3 mL of sulphuric acid (H_2SO_4), 3 mL of perchloric acid ($HClO_4$), it is attached to the burning unit.

Unicam 929 Atomic Absorption Spectrometer is used in the study to determine the metal contents. Hollow cathode lamps used in the study are UNICAM copper, manganese, lead, zinc and CATHODEON nickel lams. Weighing is done via Avery Berkel scale with 0,0001 precision. Polarographic and voltametric studies are fulfilled via Metrohm 757 Computrace Voltametric Analyser. With the polarographic and voltametric analyser, many research, development and analyses are executed. This study is performed using square wave stripping voltammetry. pH measurements are done via Jenway 3040 pH meter. pH measurements are constantly monitored and when the equilibrium position is reached, prepared solutions are used.

Agriculture of Peach in Umurbey

Çanakkale is among one of the most important cities in our country in peach and nectarine production. High quality of the fruits produced provides great advantages in both domestic and foreign markets. In 2009, the most important peach producers in the world are China, Italy, USA, Spain, Greece, Turkey and France. China fulfils 47% of the total world production. Turkey is ranked as the 6th with %3 (FAO, 2009). According to 2009 data, number of peach tree in our country is 16.664.000 while the production is 547.213 tons. Although peach farming is done in many parts of Turkey, some provinces have been gained much more importance (TÜİK, 2010). Çanakkale has an

important position in our country in terms of fruit farming. After Bursa, Mersin and İzmir, the biggest peach farming is fulfilled in Çanakkale. Turkey provides 11% of its total peach production from Çanakkale. Fruits and vegetables produced in the region draws attention with their high quality feature. A great number of peach and nectarine types are raised in Çanakkale and get high credits in domestic and foreign markets (Schorr-Galiondo, 2006; Şeker, 2011).

Table 2: Peach Fields in Çanakkale in 2012 (Çanakkale Directorate of Provincial Food, Agriculture and Livestock)

Provincial	Public orchards			**The number of scattered trees**		**Total number of fruit trees**	The average yield per tree (kg)	Production (tons)
	Footprint (hectare)	Number of trees		Fructiferous **Ages**	Fruitless **Ages**			
		Fructiferous **Ages**	Fruitless **Ages**					
Center	11.632	344.360	146.340	17.300	110	361.660	66	23.869
AYVACIK	106	2.200	2.40	4.480	262	6.680	50	334
BAYRAMİÇ	1.200	40.400	3.600	2.850	300	43.250	50	2.162
BİGA	205	9.900	0	9.250	0	19.150	50	957
B.ADA	0	0	0	350	50	350	34	12
ÇAN	20	0	800	5.500	850	5.500	33	182
ECEABAT	161	4.840	40	550	500	5.390	60	323
EZİNE	145	2.140	1.820	2.670	70	4.810	48	231
GELİBOLU	1.050	32.700	9.300	4.200	700	36.900	46	1.697
G.ADA	40	3.750	0	2.050	200	5.800	50	290
LAPSEKİ	26.630	820.000	246.200	9.600	1.50	829.600	61	50.606
YENİCE	20	600	0	800	0	1.400	65	91
Total Province	41.209	1.260.890	410.140	59.600	4.092	1.320.490	61	80.754

As it is seen in the table above prepared by Çanakkale Directorate of Provincial Food, Agriculture and Livestock, peach production in Çanakkale province is done in a 41.209-decare field. Total amount of peaches obtained from the field is 80.754 tons. In general production of the province, Lapseki Town is placed on the top with 50.606 tons of peach obtained from 26.630-decare-field.

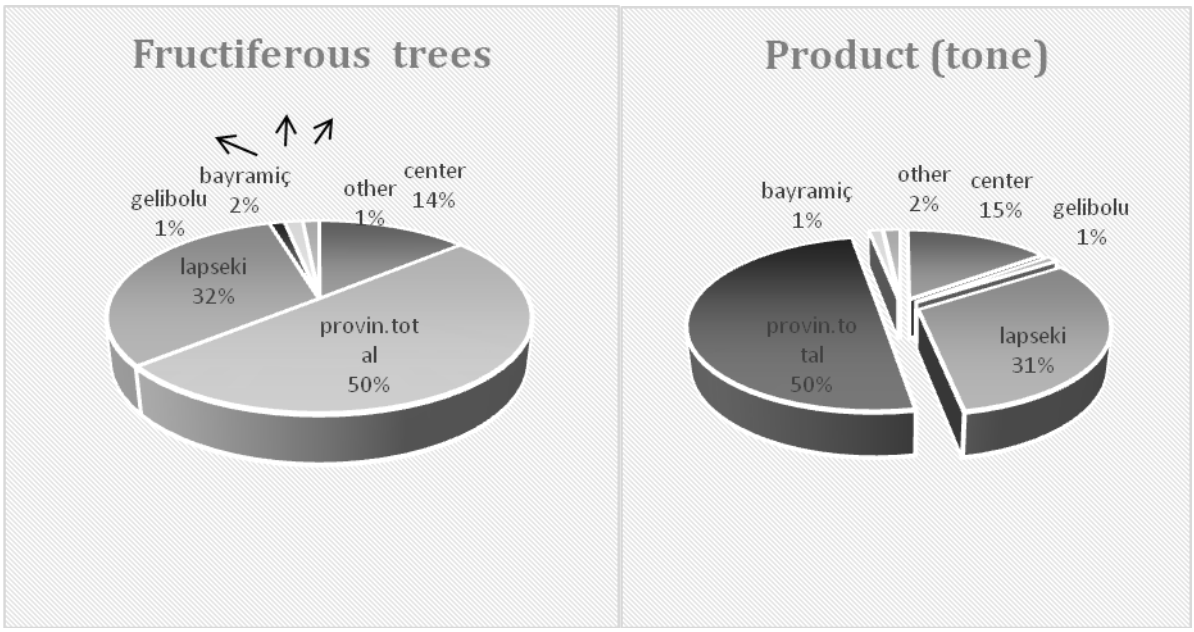

Figure 2: Percentage distribution of the number of peach trees and production rates in Çanakkale according to towns

As in figure 1, of the trees bearing fruit, whole province comprises 50%, Lapseki town (Umurbey) comprises 32%, city centre comprises 14%, Bayramiç comprises %2, Gelibolu comprises %1 and other towns comprise the remaining 1%. On the basis of the tables and diagrams above, when we look at the production rates obtained from the peach trees in Çanakkale, whole province provides 50%, Lapseki town (Umurbey) provides 31%, city centre provides 15%, Bayramiç provides 1%, Gelibolu provides 1% and the other towns provides the remaining 2% of the total production. As a result, while a major part of Çanakkale does peach farming, taking place on the top, Lapseki (Umurbey) has an important part in the farming. As it can be seen in the table above prepared by Çanakkale Directorate of Provincial Food, Agriculture and Livestock according to 2012 data, total nectarine production in Çanakkale has been fulfilled as 21.041 tons in an 11.386-decare field. 13.617 tons of the production belongs to Lapseki Town.

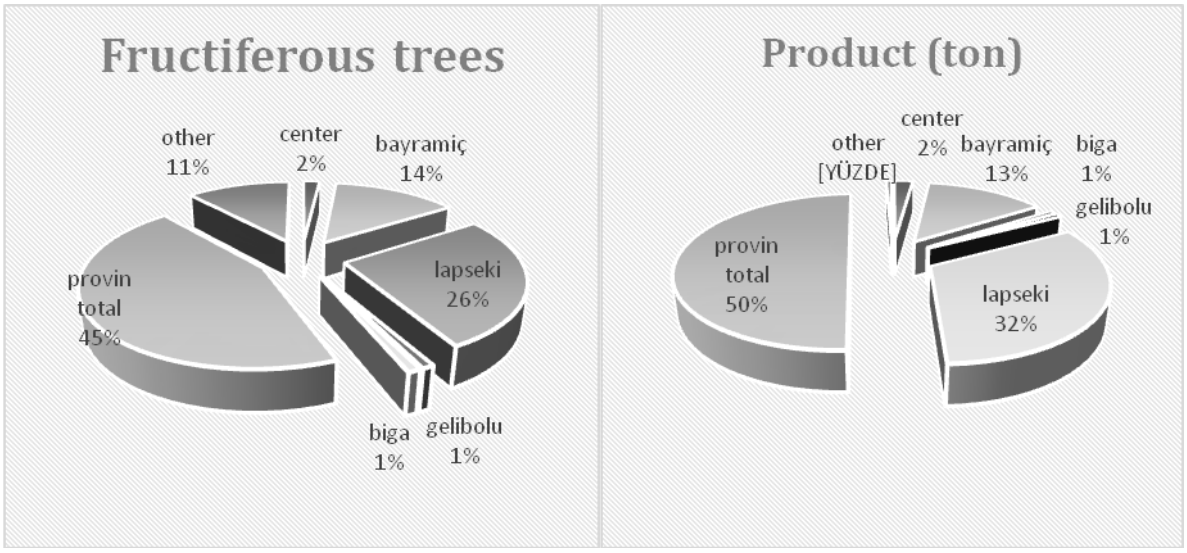

Figure 3: Percentage distribution of the number of nectarine trees and production rates in Çanakkale according to towns

When we look at the nectarine field rates in Çanakkale, as it can be in figure 2, of the trees bearing fruit, whole province comprises 45%, Lapseki town (Umurbey) comprises 26%, city centre comprises 2%, Bayramiç comprises 13%, Gelibolu comprises 1%, Biga comprises 1% and other towns comprise the remaining 1%. On the basis of the tables and diagrams above, when we look at the production rates obtained from the peach trees in Çanakkale, whole province provides 50%, Lapseki town (Umurbey) provides 32%, City Centre provides 15%, Bayramiç provides 1%, Gelibolu provides 1% and the other towns provides the remaining 2% of the total production. Consequently, Lapseki (Umurbey), a town of Çanakkale, is placed on the top and has an important part in nectarine production.

Results

Peach samples which have been taken and analysed under this study is evaluated according to metal limit standard levels acceptable for vegetables and fruits in Table 3.

Table 3: Metal Limit Standard Levels Acceptable for Vegetables and Fruits (Türkdoğan, M.K.)

Element	Standart (ppm)
Pb	6-9
Cu	2-20
Ni	1-10
Mn	10-20
Zn	5-100
Cd	0,1

When examined the results that are obtained after the different peach samples taken from Umurbey analysed in laboratory environment via wet decomposition method; Pb value for the first peach sample is 0,07758 ppm. For Cu, it is 0,8072 ppm. When we examine the value for Ni in the first peach sample, it is 0,08792 ppm. When we examine for Zn, the result is 1,518 ppm. The result for Cd is 0,02904 ppm.

Table 4: Sample of first peaches samples

Heavy metals	Wavelength (analyte)	Average results (ppm)
Cadmium (Cd)	214.440	0.02904
Lead (Pb)	220.353	0.07758
Aluminum (Al)	396.153	1.451
Copper (Cu)	327.393	0.7293
Iron (Fe)	238.204	2.593
Manga (Mn)	257.610	0.1937
Nickel (Ni)	231.604	0.08792
Zinc (Zn)	213.857	1.518

When we compare the result with the values in Table 5, it is seen that results correspond to standard acceptable values.

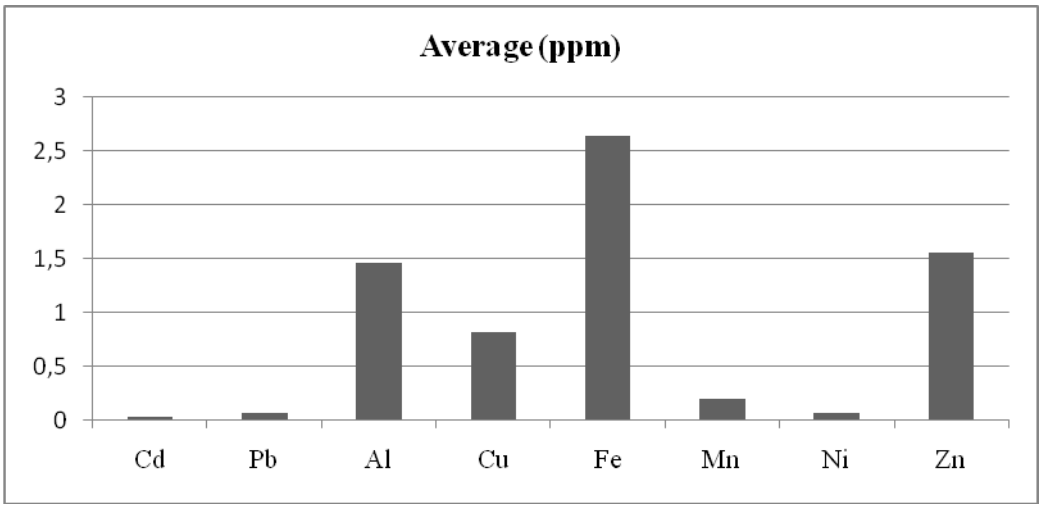

Figure 4: Average results of heavy metals analysed in first peaches samples

When we examine the Pb values in the second peach sample whose heavy metal levels has been analysed, the result acquired is 0,06076 ppm. For Cu in the second sample, the result 0,8072 ppm is obtained. When result for Ni in the second sample is 0,05515 ppm. The result for Zn is 0,05515 ppm; for Cd, it is 0,0286 ppm.

Table 5**:** Sample of second peaches samples

Heavy metals	**Wavelength (analyte)**	**Average results (ppm)**
Cadmium (Cd)	214.440	0,0286
Lead (Pb)	220.353	0,06076
Aluminum (Al)	396.153	1,464
Copper (Cu)	327.393	0,8072
Iron (Fe)	238.204	2,644
Manga (Mn)	231.604	0,1956
Nickel (Ni)	231.604	0,05515
Zinc (Zn)	213.857	1,55

Consequently, when we compare the second peach sample with the acceptable values in Table 8, it can be seen that the second sample is also in accordance with the standard values.

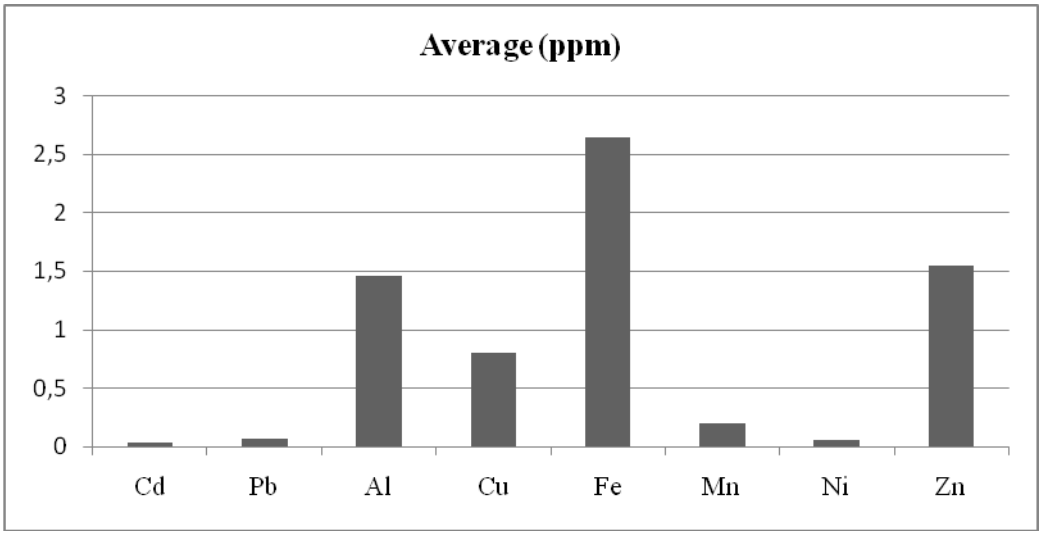

Figure 5: Results of heavy metals analysed in second peach sample

Conclusion

We observe that the highest rate of heavy metals in both samples of peaches taken from Umurbey Lowland in Çanakkale is iron, zinc and aluminium; respectively. When examined the results that are obtained after the different peach samples taken from Umurbey analysed in laboratory environment via wet decomposition method; Pb value in the first peach sample is 0,07758 ppm, 0,06076 ppm in the second one. When compared with the Table 4, we can conclude that in both samples, heavy metals do not exceed the acceptable limit values. For Cu, the value in both samples is 0,8072 ppm, which also suits with the values in Table 5. When we examine the Ni, we obtain the values that it is 0,08792 ppm and 0,05515 ppm respectively in the first and second samples. These results also show pertinence with the standard acceptable values in the Table 5.

As for Zn, the result in the first sample is 1,518 ppm. And in the second one, it is 0,05515 ppm. When these results are compared with the values in Table 5, it can be concluded that the results suits with standard acceptable values. Lastly, for Cd, when we compare both results, 0,02904 ppm in the first sample and 0,0286 ppm in the second. We can indicate that results correspond to standard acceptable values.

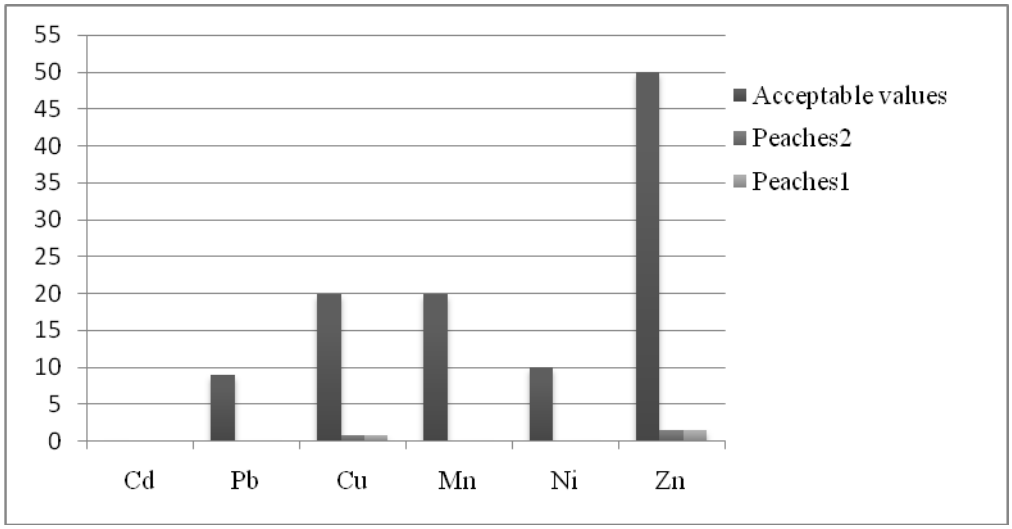

Figure 6: Comparison of metal limit standard levels acceptable for vegetables and fruits and peach samples that were analysed

When the results obtained are compared with standard limit values, it is concluded that the heavy metal contents of peaches having been analysed do not exceed the limit values; therefore, they does not pose a danger on human health. However, in both samples that has been examined, it is determined that cadmium rate is close to standard limit level.

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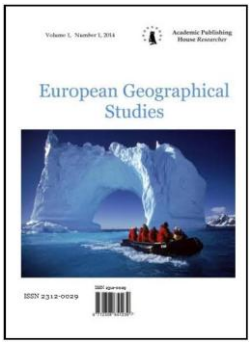

UDC 551

Organization and Activities of Migrants from Serbia and Montenegro in Denmark: a Case Study

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Abstract

This paper discusses some socio-geographical characteristics of contemporary working forces migration from Serbia and Montenegro in Denmark, analyzed from the point of view of migrant organization and activities. At the beginning of the sixties of the last century, slowed down economic development of the country (former Yugoslavia), has caused the determination that the Serbian and Montenegrin workers to go abroad. Denmark was among those countries. Serbian and Montenegrin communities of migrants, although is not very numerous (about 8.000), is interesting for researchers, because in the middle of Denmark of which is dependent economically, maintain their ethnical or social identity. The notion of identity is complex and it is necessary to observe within approach that is more theoretical or framework. Therefore, there are two interpretations: one that are gave respondents, and other researchers. Important place in the identification of the Serbian and Montenegrin migrants findings in the family, relatives, churches, schools, associations and clubs, where they can develop their activities. Thus, they form a social network within the community and towards the wider environment.

Keywords: Migrants from Serbia and Montenegro, Denmark, external migration, organization, activities.

Introduction

After the Second World War, the former Yugoslavia has turned into a huge the construction site. Revolutionarily mood populations have accepted the renovation and construction (1945–1950), i.e. everything is a destroyed in the war. During this period realized "full employment". An external migration was unknown to. Certain period of stagnation in the process employment of working forces started from 1950. To this the impacted: international division of work, interstate political relations and many internal, objective and subjective factors. Economic blockade (1948-1954) and dry years, affected are pace of investment in the construction of which has led to reduce the use of existing industrial capacity and declining employment dynamics workforce. The economic reform in the former Yugoslavia (since 1965) encourage is rationally economic activity. Many the private companies ware begun noticeably reduces the workforce, whereas unprofitable stopped to working, so that their workers are in part or in whole, lost their jobs. The process creation of new jobs is been slow. This has led to population migrations abroad (Rodić, 1971).

Motives for going on a temporary work abroad are multiple. We shall them of consciousness on most important, who are in the opinion of Kalezić (1976), and basic:

a) A foreign environment has provided better working conditions, development, rewarding, housing, and therefore a higher and more stable personal income. Former Yugoslavia, within the limits its economic opportunities, could not provide the necessary funds that could enable permanent employee employment.

b) Involvement of in working foreign markets creates the existential security and realizes certain personal income i.e. funds for existence. In the economy of their country, there is a job uncertainty, which leads of fear in ensure security of the material conditions for the maintenance of their own existence.

c) Involvement of in working foreign market, a worker on that basis, is entitled to health care (themselves and their families), and the conditions for retirement, which makes a significant element of his social security.

d) The general conditions of life which provides the foreign communities provided is far more opportunities for children's education and greater cultural life, full health care and other benefits which is a country immigration offered in relation to the homeland, what is represent a significant motive for the going of workers abroad.

As at 31 March 1971 and according to the data of the Statistical Office of Yugoslavia, Serbia had 8.436.547, while Montenegro had 530.361 populations. This number included is 199.487 workers from Serbia, respectively 7.829 workers from Montenegro temporarily employed abroad. That is, that on the day population census in 1971 on temporarily working abroad was 2.38% of the total population of Serbia, respectively 1.47% of the total population of Montenegro. From 4.064 million active population of Serbia, 4.90% of them are findings temporarily working abroad, respectively 182.000 active population of Montenegro, 4.30% of them are located on the temporarily working abroad. It is even more expressive is situation, if we look at relationship total the number of employees the population. In Serbia, of 1.482.00 employees 13.50% is at temporary work abroad, respectively of 78.000 employees in Montenegro, 10.00 % was located on temporarily working abroad.

Data on the number of Yugoslav migrants in Denmark ware presented in the statistics on strangers in 1991, volume 2 in the editorial office I. Bruun and O. Hamer. Presented statistics records, the total number of Yugoslav workers in Denmark in 1967 were 358, 1974-6.802, 1991-10.039. However, specified statistics does not display of the Yugoslav workers on temporary work in Denmark by Yugoslav republics. About exact the number of migrant workers in Denmark; it is difficult to give precise information. The reasons for not determining the exact number of Serbian and Montenegrin migrants are numerous. We especially emphasize the illegal migrations that have characterized ex-Yugoslav region, and recording of persons with Serbian and Montenegrin space in the receiving country as a Yugoslav and ex-Yugoslavs. Ambassador of Serbia and Montenegro in Copenhagen Vladimir Radulovic is in 2005 he said: "It's hard to say how many our people have the citizenship of Serbia and Montenegro, because is in meantime 40-50 percent of them accepted Danish citizenship, because of which have had to give up their previous citizenship, because Denmark does not allow dual citizenship" (www.blic.evropa.net). According to data, Rajović (2011a) in Denmark has about 6.000 immigrants from Serbia and around 2.000 immigrants from Montenegro.

Former researches of contemporary migrations in Serbia and Montenegro are mostly partial and inadequate, and the requirements for consideration these social occurrence often (Stamenković, 1989). This proves and the absence of accurate statistics on how so many of the workers going on a temporary work abroad. In this regard, we point out clearly formulated attitude D. P. Rodić (1972), which suggests that in addition to statistical data, the best way for research external migrations a survey of on field.

So is author of these lines has exercised its sojourn in Copenhagen and felt the need to recorded something concerning sojourn Serbian and Montenegrin migrants in Denmark. Within the limits of their own knowledge, I was able to spot one major shortcoming, that is, an otherwise a modest migration process in Serbia and Montenegro this problem is not has paid to almost any attention. These were the basic motives and reasons, which I guided the selection of future theme "The organization and activities of the Serbian and Montenegrin migrants in Denmark."

The idea of this research was born out of the emigrants themselves, and the initiative is pointed out the first generation of migrants, which began arriving in mid- sixties year last century into one for them completely new natural and social space, what kind of is Denmark. Community migrants from Serbia and Montenegro, although not much numerous (about 8.000), is interesting for researchers, since in Denmark's centre of which are economically dependent, maintains it ethnic or social identity. How is concept of identity is complex, it is necessary observe in the more theoretical approach or framework. Therefore, there are two interpretations: one given by the respondents, and other researchers. In consideration taken into account all three generations migrants from Serbia and Montenegro and the research related to the period of beginning the sixties, i.e. since the arrival of the first generation of Serbian and Montenegrin migrants to Denmark, to the disintegration of the State Union Serbia and Montenegro in 2006.

Related work

The issue of migration, especially its essential components - emigration abroad deals with: demographers, economists, sociologists, historians, spatial planners, ethnologists, anthropologists and many others, which just shows that deals with this issue and geographer. Recognizes the fact that is geography correlative science i.e. science that successfully connects research fields of natural and social sciences and in many areas research has synthesis significance (Rajović and Bulatović, 2015; Rajović and Bulatović, 2015).

Geographers in their scientific and professional papers special attention research devoting external migration, creating a rich scientific base, necessary for further research. In dealing an analysis of state and movement total natural, social and economic conditions, geographers are this complex socio-economic process migration observed from different aspects, either directly or as part analyzing total socio-economic development (Rajović and Bulatović, 2015).

The geographic basis of external migration research questions are many and extremely complex problems. At the same time in so a complex situation, the responsibility of geographical science to the society is increasing and expected to solving current social and economic problems (Rajović and Bulatović, 2015).

Although the social need for migration research (especially its essential components - emigration) in Serbia and Montenegro unchallenged, we are not on the plan able to meet their own current and other needs. In this regard, the geographical research in Serbia and Montenegro are lagging behind for most European, and even the neighbouring countries. Geographical Research in Serbia and Montenegro dealt with in problems a large extent external migration before World War II, especially those in countries across the ocean, but also so and diasporas problems, status and identity of national minorities in the neighbouring countries.

However, the departure of workers from Serbia and Montenegro the temporary work abroad after World War II, was not often the subject geographical study. Only when is departure workers attained a mass character, this problem the imposed on and instigated to think. Scientifically treatment of the problem the temporary workforce from the former Yugoslavia in abroad above all in Germany, started with the (1967) Geographical Institute of the University of Zagreb, with a small number of associates from ex Yugoslav republics “(Rodić, 1972). Thus are incurred studies Baučić (1970), Rodić (1971) and Rodić (1972).

But even then, and now, how geographic, thus and research in other disciplines were mostly an orientation to the study of foreign migration from Serbia and Montenegro in the United States, Australia, New Zealand, Canada, Germany, Austria, Sweden. Accordingly, we still not have in geographical literature, scientific and technical articles about migrants from Serbia and Montenegro in Denmark.

When it comes the lack of literature we present the fact that the before to twenty years ago, there was not a single article, which has treated complex problems of migration from the territory of Serbia and Montenegro in Denmark. In 1993 appeared for the first informative review of Montenegrin migration in Denmark, Rajović "Montenegrins in Denmark". Informative book provides historical - sociological overview migration from Montenegro to Denmark and makes a modest contribution to the understanding of this problem.

Further, studies emigration from Serbia and Montenegro in Denmark, continued is the author of these of rows and result work incurred are articles Research migration from Serbia and

Montenegro in Denmark, continued the author of this text because of the work was created article "Demographic characteristics of contemporary working forces migration from Montenegro to Denmark" (2011)," *Some socio-geographic characteristics of modern labor migration from Serbia and Montenegro to Denmark: social life and social relations migrants"(2013), "*Geographical contribution of contemporary labour migration from Serbia and Montenegro to Denmark*"(2014),* "Some characteristics of ethnic identity – case study: migrants from Serbia and Montenegro to Denmark"(2014), as well and the monograph publication "Montenegrin immigrants in Denmark" (2011).

The research whole range phenomena and problems, related to the Serbian and Montenegrin migrants in Denmark, are still pending. The results that we announced in this study represent a modest contribution to the study of the phenomenon of Serbian and of Montenegrin migration in Denmark. In this occasion present to readers only one minimal number of research facts and conclusions which we have come fieldwork. Therefore, do not pretend to deplete this issue but on the contrary, we want to encourage the further research of the Serbian and of Montenegrin migration in Denmark. In this situation, it seems that is each research funded paper, including this one, which refers to the organization and activities of Serbian and Montenegrin migrants in Denmark, welcome, therefore, we believe that, in this context the, a modest contribution will not be harm.

Research methodology

Methodological procedure in research involves combined use of different research methods. The basis the methodological procedure used in this study makes surveys. In order to get representative data in the study, surveys planned to include 2% of the respondents, of the total number of Serbian and Montenegrin migrants, which are about 200 subjects. Considering the initial hypothesis that social characteristics of the respondents influence the their grades and attitudes on most questions in the planning the survey sample was applied multistage sample in combination a random and deliberate choice of the respondents in order to provide defined quotas. In the first stage, villages selected that represent migrants in general: Copenhagen, Hillerød, Frederikshavn, Helsingør, Næstved and Silkeborg. The number of respondents in these the strata is determined on basis of the survey migrants list Rajović (1993), Adjusted for numbers of migrants from the last data's Rajović (2011). In the second stage, the author of the respondents chose the in combination a random and intentional choice, to ensure defined quotas. The third phase consisted of questions about the organization and activities of the immigrants. Finally, the last phase related to some determinants and institutions with which are respondents identifying.

Planned number surveyed respondents in the survey realization was exceeded, but the more rigorous control logic at the end of the questionnaire processed a total of 189 questionnaires which represents a very high realization by 96.2 % of the planned sample. How was the survey further flowed, thus are the realized and new possibilities for acquaint larger number of the respondents in associations or clubs, how over family ties, thus and over friendly relations.

Application of statistical methods was necessary to define quantitative-qualitative variables research. Permeated through the entire text of the method and of integrated, thanks to which we were able to identify, define and assess the opinions of respondents. In the scientific explanation of terms, by two methods including: analytic and synthetic. Analytical method consideration are some of the dimensions the object of research. Us are interested in subjective, personal experience of migrants, in this paper, in individual segments research convey and "life stories" of migrants, and the related on organization and activities of the migrants. Since paper has essentially synthetic character were used results related scientific disciplines, published in the international literature. Among them on this occasion, emphasize this: Stahl (1977), Clements (1980), Titon (1980), Robinson (1981), Stark (2005), Rajović and Bulatović (2015), Rajović and Bulatović (2015).

Were studies and written sources, i.e. existing archival records about migrants from Serbia and Montenegro in abroad. In the regard, it is certainly significant it, which was publishing: Pejović (1962), Drljača (1963), Božović (1968), Rodić (1971), Radić (1971), Rodić (1972), Lutovac (1975), Grečić (1975), Majstorović (1979), Oliveira- Roca (1984), Petković (1988), Romelić and Stojanović (1989), Petrović (1990), Davidović (1994), Grečić and Lopušina (1994), Srdić-Đoković (1995), Vuksanović (1996), Grečić, Kutlača, Matejić, Mikić (1996), Gabrić - Molnar (1996), Davidović

(1999), Pavićević (2004), Pavlica (2005), Group by (2006), Vukčević (2006), Dobrijević (2007), Selinić (2008), Marković (2009).

The existing archival material (though still insufficiently processed) points to the large number of migration from Serbia and Montenegro, which, with more or less variations, as it were, exerted continuously. According to mentioned authors the basic motive for immigration of the population of Serbia and Montenegro in abroad, is located underdevelopment in their economies, and consequently and their inability to absorb the "own" population (Kalezić, 1976). In the research is addressed attention was on the press and the Internet.

Analysis of results and their interpretation

1.1. Family and relatives

Life of Serbian and Montenegrin migrants in large part during free time are happens within the family, which besides its members connects cousins and compatriots. Her integral function manifested in socializing with foreigners. According to their composition or size, family of Serbian and Montenegrin migrants mainly makes marital union - husband and wife, nuclear family - a married couple and their children, extended family - parents, children, grandchildren, relatives of the first degree, a kinship community - second instance relatives. The largest number surveyed respondents in Denmark, lives in a nucleus family. Grandparents, actively participate in the education and preservation of their grandchildren.

Figure 1: Far from of homeland - grandmother Stamena actively participates in the education and keeping granddaughter Stamene and Ksenija

How explains one respondent to respondent: "The state Denmark a lot of attention is given children. Habitually is that child who was considering independent beings adults should to listen and engage as early as possible in making decisions that affect them. How in families of immigrants, as well as in the Danish children's institutions and schools care is taken that children getting used to responsibility and learn responsibility in so as far as possible in relation to their age and maturity. Danish laws provide that children have a right to care and safety and towards them should be treated with due respect for their personality. That is why the prohibited and punishable by beat children has or in some other way use force. Parental responsibility is to provide the children's the love and care and to create a stable framework for their growth"[*] (fi-gen.-f.1942).

Documentation of the analysis of the collected, we found that for more than 40 years of living and working in Denmark, among Serbian and Montenegrin migrants, families changed significantly and as an institution, and by how educates and rejuvenating. While we was immediately after moving to the Denmark could be characterized as a strictly hierarchic, in the previous period, of arrival of to the present day, it is increasingly based on the cooperation of all

[*] Symbols used in the text: fi - the first generation migrants, se- the state second generation, th- third generation markets, m-male, f- female; 1940 - birth year.

members, although he observes that in an ethnic sense retains the respect of generational affiliation. Therefore, the members of the second and third generation shall see the respect for the elderly and as for the position of women immigrants on her is still a considerable burden of family responsibilities.

Particular attention is given the state Denmark and to pensioners, i.e. older persons in what we made sure from conversations with the respondents surveyed. "I have a solid pension that allows me to live a solid, flat, full health and social care." (pr.gen.-m.1943). "When health fails, I go to "plejehjem" (nursing home), that I'm not a burden on anyone, and I have all the conditions for life as a full service" (pr.gen.-ž.1938). However, we can state that in everyday situations when health is usually denounce older immigrants crossing the rest of his life with his children, usually male.

Pension goes up to 67, but some members of the first generation of immigrants, leaving the working forces market earlier and is so calling before retirement. We noticed that the Serbian and Montenegrin pensioners who want to have a number of options to deal with their own interests and live active lives. Denmark's policies are towards old ones on the basis the principle of having the highest possible responsibility and influence of their lives. Pensioners have had a chance to participate in making decisions both at the personal level and at the local level. These privileges are used older Serbian and Montenegrin migrants in Denmark.

Our research evidence shows that most of the Serbian and Montenegrin pensioners in Denmark living in his apartment, until health capabilities allow. In addition, requested if can get help for personal care, i.e. maintaining cleanliness and shopping. If a pensioner, has special needs or physical troubles, the local government may require flat for special purposes i.e. protected flat or nursing home. Pensioners were then available, all personnel who takes care of practical things, such as cooking, washing clothes, cleaning, maintaining personal hygiene.

Majority of surveyed Serbian and Montenegrin migrants at home celebrates birthdays, the birth of the child, moving in flat, Woman's Day, New Year's Day. None of festivity cannot be imagined without a bottle of alcohol (Serbian and Montenegrin tradition), flower (Danish custom), and gifts for kids (chocolate, candies) and other valuable gifts.

Farewell to into the Army is a solemn and majestic, followed by speeches, congratulations, the discussion on homeland retelling the history, traditions. We had the opportunity us to be witnesses of one such send-off, where they sang songs and danced. These celebrations are, according to our notes, a great opportunity to bring together families, friends, and even relatives from their homeland. In this place, it is important to emphasize that the respondents surveyed with pride and honour to talk about their responding for military service. Occasion explanation of these occurrences one should take into account the love towards his homeland, continuing traditions of their ancestors, and also certain social prestige or pride and chivalry.

Almost all Serbian and Montenegrin migrants know each other and know who is from where and when it arrived in Denmark. They a have registered and the numbers to each - of other, and are used and the phone book, which each owner gets, frees the phone number in Denmark. Family life and kinship relations among the immigrants are highly developed, i.e. surveyed respondents particularly emphasize the which maintain close ties with their relatives 'relatives' and not only in Denmark but also to those who live in Sweden, Norway, Germany. No forgets not even relatives, who remained in the homeland, and mutually visits are frequently, especially during the holiday season, which many migrants spend in the homeland.

Figure 2: From Denmark to Serbia and Montenegro doing military service - a family visit to Copenhagen soldier in Podgorica (se- gen.-m.1977)

Friends of respondents are mostly migrants from the former Yugoslav republics, although none of respondents did rule, nor in any other, a negative way distanced him from socializing with strangers:

a) "I do not care nationality, if the man is correct" (fi- gen.-f.1944).

b) "Nobody asked us which we are nationalities up to the war in the former Yugoslavia" (se-gen.-m.1964).

An important feature of the Serbian and Montenegrin families, who lives in Denmark, is certainly a high standard of living, professional mobility, financial independence of children after high school. According that which the author of these lines is during family, kinship and friendly visits could notice that almost all immigrants have a very nice comfortable flats equipped with modern furniture and white goods. Individually each family possesses a car. From individual conversations, we found out that most of them have built houses in the homeland or purchased flats and the owners are predominantly business premises in Belgrade, Novi Sad, Nis and Podgorica, and the Montenegrin coast. In addition, a number of respondents possess personal life savings "Old savings", which they were frozen 27.04.1991 and today stand out how are impaired. The foreign exchange savers to assess the latest law from the 2004 on the return of funds by 2017 not mean them anything, because, as emphasize the many of them will not be alive. "Time is not on our side. Indeed, we expect our state to undertake real action and solve this question in the right way "(fi- gen.-f.1942).

One gets the impression that the Serbian and Montenegrin migrants in Denmark all have worthy of conditions of modern man. Monthly incomes are ranging between 10.000 and 13.0000 DKK. As a rule, the nuclear family, are doing a husband and wife. If the three-member or multi-member nuclear family is working just one of the spouses, the material arrive monthly assistance communes (municipalities). Such families do not scarce in food, clothes, and shoes. Such are the Danes, who take care of all the details to smaller details.

Surveyed respondents as they themselves point out, accepted the principle of Danish and financial independence for their children. When entering in marital union, the children they immediately get a flat, which parents usually of equipment from personal resources. Therefore, the family and in such cases maintain the characteristics that has brought from their homeland. The biggest difference to family life in the homeland of is early economic independence.

As for socializing with strangers, especially the first generation of Serbian and Montenegrin migrants certainly has some specific features, which are worth to emphasize. How could we conclude from individual conversations, relationships are not first-generation immigrants are, at least in initially, the moving in the direction closer contact with foreigners, but solely with the

Yugoslavs, which led to making friends, and even of marriage. After the dissolution of Yugoslavia, our research shows that the records in the relations between immigrants from the former Yugoslavia in significantly extent, comes to mutual isolation and hostility, as well as some of rally. The stage adaptation there was a closer relationship between Serbian and Montenegrin migrants with foreigners, primarily through the neighbourhoods, business, and then through the marital relationship. According to data Rajović (2011) rapprochement with strangers only immigrants from Montenegro with members of Danish nationalities, has resulted in by signing of 79 of marriages (41 Montenegrin woman married to a Dane, Dane married 38 Montenegrins).

1.2. Church

In Denmark, did not exist until 1998, no Serbian church, and therefore immigrants went to the Russian church of Saint Alexander Nevsky in Copenhagen. The establishment of the parish of Saint George is certainly the most important event in the history of the existence of the Serbian – Montenegrin community in Denmark. Parish belongs to the Diocese of British - Scandinavian Serbian Orthodox Church and parish activities in addition to Copenhagen are performed and in the cities and Odense and Silkeborg. Officially recognized by the Danish government in August 1998, in 1999 parish has begun a spiritual work on location Blagards Plads 6A in Copenhagen.

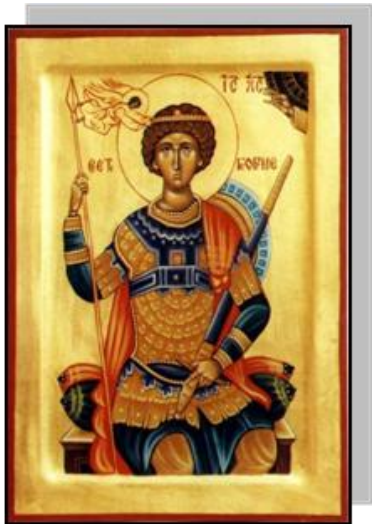

Figure 3: The icon of St. George (www.svetigeorgije.dk)

Running is program - for spiritual renewal parishes - in which they participated, Serbian-Montenegrin migrants, by providing financial support necessary for the spiritual life and the work of the parish. Parish activity in addition to Copenhagen is performing at Odense and Silkeborg. The arrival of archpriest Radmila Stokić rebirth is parish of Saint George. One of the most important levers of is parish Circle of Serbian Sisters. In 2004 newly formed organization celebrated own modest jubilee five years of work, and for his patron and glory of Circle of Serbian Sisters took, is Holy Paraschiva. Worship service was well attending. For this occasion, Circle of Serbian Sisters prepared a rich feast on which they are, as ever, especially highlight wonderful cakes. Presented is a small exhibition of photographs from Chilandar. Five-year jubilee attended is Archimandrite Sosipatros Stefanudis from Stockholm, a former student the Theological Faculty in Belgrade.

Per renewal of liturgical life of the parish of Saint George on 29 April 2007, have been established is church administration and was held annual parish assembly of the Kingdom of Denmark, on who was elected church board. Parish was too small to accommodate all orthodox believers. Easter morning service started in the early evening hours, confessing believers for Holy Communion, to be continue at midnight procession around the church three times. Easter liturgy of Holy Communion, and was continued and consecrate Easter eggs. Archpriest Radmila Stokić is particularly delighted the fact that in the early hours of on the communion and there are many children of immigrants, students supplementary school "Sveti Sava" but and those younger who

still are not up to school, but still stayed awake. With the presence of numerous guests, liturgy, Bishop served Britain and Scandinavia Dositej. Concelebrating was by archpriest Radmilo Stokić, Sergiy Bondarev, priest official Moscow Patriarchate and Deacon Veliša Vasić. After cutting Slavs cake, the ceremony was continuing wonderful singing octet "St. Seraphim of

Sarov" from Zrenjanin. With its singing are particularly present Delights Belgrade Opera tenor Ljubomir Popović, and the songs "Santa Lucia" and "O Sole Mio".

Figure 4: With modest jubilee - five years existence
of the Church St George in Copenhagen, 2004

It is evident that in the early nineties of the last century, occurred religious revival society. There are various motives of going to church, to each are going for reasons of tradition, others is experienced as a community, within the that can be realized their very existence, and the third, they go on occasional of worship, just because there feel relaxed and comfortable. The fact is that more and more of Serbian and Montenegrin migrants in Denmark return to the fold of the church.

On the question of whether you go to church. Followed was response of respondents:

a) "I like to going on Sunday, before the start of the liturgy that set fire candles and pray for health of my closest, and forgiveness of sins. When begins the liturgy, feel a kind of energy that calms unbelievable. At certain moments the tears start. Feelings at the end of the liturgy, cannot describe it. Simply, I do not know which would words used it and which would be adequate to my happiness" (fi- gen.-f.1948)

b) "We recently my society and I have introduced someone ours rule, that whenever we can, on the weekends, we go to church. After each stay in her I feel somehow... it's hard to describe simply wonderfully" (se-gen.-m.1971).

c) "I do not go to church, everything looks theatrically" (th-gen.-f.1989).

Here are impose question, how Serbian and Montenegrin migrants trusting people or are Church holidays only reason for the use of folk custom and tradition. Thinking Živković (2007) is as follows: "Regardless of the fact that is more and more migrants declare themselves believers, there is a taciturn selection of authentic and so-called secularized believers. The first, strive to church life through which speaks out the spirit of communality, as real sociability, personally self-restraint, to repentance, sacrifice, mercy, truth, justice, and above all, love. Second, following secularized patterns of life and remain in the possession superficial, external, ritual, and folklore and even of marketing layer of faith, which brings into question the essence of religion. Because a person's spirituality involves a huge personal feat, a sustained effort which overwhelmed whole person and without whom there is no genuine of salvation".

Sure, is one idea of Parishes of Saint George in Copenhagen going towards organizing family gatherings at the church? The family picnics were intends as a casual friendship of parents and children with pre prepared educational programs, sports and fun. Families come to liturgy, attended a casual luncheon, and then be held a lecture for adults and children, or show an appropriate movie. After that the family is socialize, participate in some sports, walking on the lake... Overall, parishioners spend the one day in prayer, educational, social and sporting

socializing (www.pravoslavlje.org.yu). The idea is certainly a good and helps on the one hand, the spiritual strengthening parishes, on the other hand, as an individual, so and families of migrants.

1.3. Educational institution - school "**Sveti Sava"** in Copenhagen

In addition to family and church are significant and other organizations and associations that have a role in preserving the of identity and gatherings Serbian and Montenegrin migrants. Certainly, pay special attention occupies remedial classes in the Serbian language, i.e. school "Sveti Sava" first in the Diaspora under the auspices Serbian the Orthodox Church in Copenhagen. She started working as a "pilot project" in 2005. Since 2006, it become part of the regular system of supplementary schools among Serbian and Montenegrin migrants in Denmark, using the legal changes that schools may be under the jurisdictions of the Serbian Orthodox Church. Except in Copenhagen, the classes were organizing in other Danish cities: Copenhagen, Hillerød, Frederikshavn, Helsingør, Næstved and Silkeborg. In school is realizing Classes: of Serbian language, history, and geography and music education. Religious education classes Archpriest holds Radmilo Stokić. Competent institutions of the Republic of Serbia have provided supplementary education organization, its funding, curricula, textbooks and teaching staff. Satisfaction are to notice that in supplementary school "Sveti Sava" in Denmark, approximately three hundred schoolchildren (migrants from Serbia and Montenegro), of knowledge acquires within this class.

Figure 5: The opening ceremony for work
of the school "Sveti Sava" 2005 in Copenhagen

Since, Serbian and Montenegrin migrants live in one multicultural environment, such as Denmark, it is certainly applies how in their personal, thus and in business life. Therefore, it is necessary that direct the education of their youth to learning multiple languages in order to be able to fit in a Danish multicultural environment. That would be the most important qualification in the education of children of immigrants. Teaching mother tongue and culture should therefore accept it as form of teaching that is integrating into the elementary school and that makes classes a complete. The importance of the goal of teaching we as well as recommendations to parents whose children attend the school "Sveti Sava" are multiple. We are reducing to the most important ones:

1. What does it mean remedial classes?

a) Children in teaching mother tongue and expand their knowledge of the culture of their language. Through this method of teaching, acquire knowledge from national culture, history, geography, music and folk traditions.

2. Goals and significance are teaching of mother tongue and culture.

a) Good are knowledge of mother tongue. Children fare a good level of knowledge, not only in spoken but also in written expression.

b) Learn a second language /bilingualism. Who knows well own native language; will learn better Danish as a second language.

c) Intercultural are education of students. Native language and culture helps students to successfully them live with two cultures.

d) Contact with their families, relatives and compatriots. Good knowledge of native language helps to realize good contacts in the family, relatives, and the mainstream.

e) The acquisitions are knowledge of students about national culture. Children learn about the culture and lifestyle of their families to understand culture and way of life in his country.

f) A better is integration. The one who well knows its own language and culture; the better it will integrate into the society with more tolerance and understanding for others.

g) Better are success of students in the Danish school. Some teaching unit are teaching in parallel classes in native language and culture in mainstream schools, and the knowledge acquire the about the same in the two languages.

h) Advantages are in working life. Good knowledge of two languages is an advantage to acquire work both in Denmark and in the homeland.

i) Preparing is for a possible return in mainstream. Those students who during have proof return of about attendance of class's native language and culture acquire the many benefits.

3. Recommendations to parents:

a) At home, speak native language.

b) Avoid mixing native language and Danish.

c) Let the children to read books in their native language and in Danish.

d) Periodically inspect your child's schoolwork. Thereby show attention.

e) Send your children's on teaching native language and culture and how check the progress.

f) Maintain contacts with native language teachers, culture, and the Danish teachers.

g) Attend the parent meetings.

h) Be present, if you can, on performances and celebrations in remedial school (www.svetionik.ch).

Convey impressions about the work supplementary teaching Archpriest Radmila Stokić, who is also and the school director: "Many parents they say that their children's, after attended supplementary classes was better in the Danish school. Learn better, to behave better, because so much love we achieve a different discipline than in Danish schools. We have no licentiousness, caps on head, chewing gum in his mouth, the entry and exit for during class, keeping the legs on the table during class... A positive impact of the church because children's are engaged during the service and liturgy, word, we are well on the way" (www.srpskadijaspora.info).

How watch on start of school, a parent whose child attending the school: "Being that in Denmark there are less than eight thousand of our people, mainly old economic immigration from the sixties, mainly from of Timočke Krajine and Montenegro, then it is such success schools under the auspices of the church is even more important. Until a few years ago here was practically no Church or parish. Stokić arrival of father from California, Serbian-Montenegrin Diaspora in Denmark has started to understand what to them mean church. Considering, on problems that we were realized that we must engage children's, because there were no other way to cut off a long-time negative trend. The people should church, and school" (www.srpskadijaspora.info).

1.4. Associations and clubs

In order to newly, arrived foreigners as quickly adapted to living and working in a new environment with the support of "Integration fund for foreigners", was forming in Copenhagen in 1964, company under the name "people for people". Members of the society were foreigners of all nationalities and religions. Participants the society says that the applicant association had a two-fold task. On the once taught Danish language and adopting instructions for independent life and on the second is instigated sports and cultural cooperation among foreigners in Denmark. Participation in the program was free of charge. It was supposed carefully solve problems of different groups of foreigners in the framework of this unique the society, leadership the society provided the possibility of forming independent clubs of foreigners. Thus formed associations: the Turks, Pakistanis, Czechoslovaks, Rumanians, Yugoslavs ...in such a way is the society "people to people" has fulfilled its purpose of existence and cease to work in 1973.

Yugoslav Association in Denmark has formed in 1969. Migrants from all over the former Yugoslavia attended founding Meeting. Elected to the Management Board, the Executive, being adopted Statute of the Association and been formed sections: sports, folklore, youth, translation ... and Local Government awarded the Association premises in Ballerup and provides material

assistance of up to 200.000 DKK (over 25.000 euros today). Social life in the association took a width, that the in mid1980 started formation of clubs within the association, the will occur to renaming the association in the Association of Yugoslav clubs. Gatherings in clubs have become the common practice. As pointed out by one respondent, "we could hardly we wait the morning, that come morning, us to meet again, meet and find" (fi.gen.-m.1931).

The following is a list, of formed clubs: "Džemal Bijedić", "Đerdap", "Branko Ćopić", "Timok", "Edvard Kardelj", "Kadinjača", "Veljko Vlahović", " Serbian club", "Montenegro", "Besa", "Ilirija", "Macedonia", "Ivo Lola Ribar". The number of clubs, clearly shows how are the Yugoslav migrants attributed the importance of social organization and fostering diversity. The number of clubs, clearly shows how are the Yugoslav migrants attributed the importance of social organization and fostering diversity. Awareness of the need socializing, friendship preservation, cultivation of different cultures and the other values, made has is to establish and Danish - Serbian cultural and sports associations and Hillerød and Næstved.

Alliance is as the umbrella organization that brought together clubs according to contents were placing in the sports and cultural association in within which they operate. About his involvement in the Alliance Vlado Rajović (fi-gen.-m.1937) long-time president says: "We worked do their best out of love for the place where did we come, kept customs, traditions, culture, to make we are all conveyed to the younger generation.

In the foreground, the Alliance is coordinated the clubs, found better working conditions and funding, where they to have the support the Danish Local self-government and the Union of Danish trade unions, institutions of culture and sport, and the Danish Integration Fund, responsible for the general policy towards foreigners ("Dansk Indvandrere og Integration "). One of the survey respondents is say: "All we asked for the Danes, that's what we get from material assistance to the premises. Life in Denmark becomes us more vivid, more engaged and better planned, so that the formation of a club, he scored a very good effect in all respects "(fi-gen.-m.1935). Within this activity, a special place tended to take and the issue of integration and education, especially the second and third generation immigrants.

In the years that followed, the Union of Yugoslav clubs, makes contact with the performers of folk and pop songs, organizes performances, evening gusle player, arranges visits to regional and municipal representatives of Yugoslavia in Denmark, in order inform citizens about the homeland in general. One such respondent to survey explains: "Lifestyle is every day more and more has stabilized. More frequently was feeling calmness in solving life's problems. Have been overcome numerous difficulties and dilemmas. Work of peoples is visible in all areas of life: business, family, community "(fi-gen.-m.1940).

How to within the alliance, thus and individually clubs, special importance had is a work of in different sections. One of the respondents explains this like this: "Most in the sections they found place for yourself, where has come to the fore both social and creative work and to connect people based on common interests and preferences"(fi-gen.-m.1946).

How is saw the work in sections, second and first generation migrants, the following examples we will show:

a) "Sports section was the most massive. Our traditional love for the sport and here has come to the fore. A variety of training and matches marked by the life and work of those who sport in the genes" (se-gen.m.1969)

b) "Folklore section included large number of our boys and girls. They are with their work proved in folklore that know how to preserve and nurture own cultural tradition" (se-gen.-f.1967).

c) "Youth is a section offered youth chance to create own life in Denmark, like that how it suits them. They were able to make series of cultural and sports manifestations, where they can gather and have fun "(se.gen.-f.1972).

d) "Translating section was available for all our immigrants, who needed help in the translation" (fi-gen.-m.1941)

Figure 6: Serbian and Montenegrin migrants – in traditional manifestation "Night of Culture"

Connections with the homeland and the local problems have not forgotten by the Union. The Alliance took care of the major issues of life and work, how its members, thus and immigrants. Therefore, if the Alliance or any of the clubs have organized campaign to collect aid, of any individual or homeland, on any question, mainly to included everyone, regardless of religion or nationality. Help was diverse, of individual, during various surgical interventions, family, on the death its members, to support homeland, ambulances during construction, sports fields, an adaptation of school buildings. Top it explains one respondent: "When we arrived in Denmark, we have not let that someone goes back, as we had, we shared. Today when we live well, do not forget one another. If one of us buys a car or some real property are not problems to provide the money. We provide interest-free loan, so when may put it back "(Rajović 1993). Help not missing nor in various drugs and medical devices, hospitals across Serbia and Montenegro, and attachments for the construction of the church, the Temple of Saint Sava in Belgrade. On the other hand, how points out Antonijević (2009) in a complex organization the glamorous celebrations - weddings, baptisms, and going to the army, what is particularly important during difficult economic situation in Serbia and Montenegro nineties of last century. And not only that, but the country of origin and continuously until the present day, profited from the of remittances our immigrants, which is why they can be considered the most successful export product many decades in the former Yugoslavia and Serbia and Montenegro today (Dobrivojević, 2007 and Nikolić, 2009).

The above mentioned rows, illustrating the enthusiasm and atmosphere action Alliance Yugoslav clubs and activities of their members, who have a sense of nostalgia. The interviewee first generation thus describes this: "To it was not easy get, although today, so maybe not appears. For 21 years of existence, the association, The clubs and their members, after all like all of us who came from Yugoslavia in Denmark, we had a lot of success and lows of the adjustments followed by incredulously, exceptional personal and family pleasures, to the disintegration of our country, was not easy road "(fi-gen.-f.1944).

Scenario disintegration of Yugoslavia has continued among the Yugoslav clubs. All attempts by the Alliance Board of Directors to be unique, have failed. So from 1991 Union of Yugoslav clubs, functions as a community of Serbian and Montenegrin clubs, retaining its original name. within Alliance operated by the beginning of 2000, and "Yu-INFO", Yugoslav Business and Information Cultural Centre, formed 31.5 1996 to contribute to better connecting and improving mutual cooperation between undertakings in Yugoslavia and Denmark. In Copenhagen the 27 and 28.09 in 1996, held other traditional of Serbs Council Scandinavia. It was an important cultural and educational, informative and folkloric manifestation Serbs in this part of Europe, which was attending by representatives of the Association of Serbian organizations, clubs and associations from other Scandinavian countries.

Associations and clubs often do not subsist long because of the short-term interest, enthusiasm and mutual disputes. Currently, for example, has not actively no association of Montenegrin migrants in Denmark. One of the respondents say: "The future of the association of Montenegrin migrants in Denmark, is the only in the return youth. If there is none, then club could not function. We can to gather every evening to play cards, dominoes or billiards, but this is not it. The purpose of these clubs is that our children speak our language, foster our culture through folklore, and do sports. If we lose, we lost young people and the sense of association "(se-gen.-m.1963).

1.5. The organization and activities of the institutions of Serbian and Montenegrin migrants

In this part will specified some guidelines and the institutions with were identified the respondents. It is certainly in the first place is the family. As a basic form of existence, from the moment family is migration to Denmark was a pillar of life. It is not possible to in this place go analyze the importance of family. "Contemporary science has neglected the role of the family, because of which is the totality of all human activities cannot be explained, and some of them get the template - An abstract form" (Bonnefous, 1968).

In Denmark, as we noted forward, there is just one Serbian church parish of St. Gregory the Great and the Russian Orthodox Alexander Nevsky temple, where religious services is perform. In addition, There are also numerous restaurants, clubs for sports and fun in which migrants regular gather and socialize with strangers. Fascinating strong impression given by "Tivoli" in Copenhagen with combining and organizing rides, concerts, ballet and theatre performances outdoor, with accompanying service high class restaurants, and fast food kiosks, modern annexes shape unusual fountains and gardens. During the winter months, Tivoli is transform into no less dynamic Christmas fair, with Tivoli icy lake. Within of the park, operates 32 restaurants. Certainly, it is necessary to extract and restaurant "Herzegovina", owned by immigrant from the former Yugoslavia, more specifically in Bosnia and Herzegovina. He was the first foreigner, who was able to open a restaurant in the most popular Danish amusement park. In the Danish libraries, as pointed out surveyed respondents persuaded that author of this text, you can find all works of world science, technology and art. It sounds incredible; almost all Danish local governments are children, students and library for adults, as well as each school. Visits the library is free of charge, in addition to rent books, libraries organize: exhibitions, film shows, theatre for children and lectures. It also provides access to the Internet and reading daily newspapers, and provides assistance in finding specific information or material. Fascinating to note that most libraries are has one librarian. Librarian is exclusively responsible for helping strangers in the search for books and magazines. If the library does not own requested material, it can be order in the library for migrants ("Folkebibliotekernes Indvandrerbibliotek"), which has more than 140,000 titles, about 100 international languages.

From the answers of surveyed respondents can be conclude that: family, going to church, sports and entertainment socializing, just different ways of spending leisure time, within which are actually associated with compatriots and thus in constant contact with the homeland. Also accentuates the specific characteristics of free time can been found in associations: sports, residential, and artistic character. Namely, the clubs and cultural centres to gather and play cards, discuss, deal with some special a hobby, or listen to various lectures. Special attention giving to sports activities. Many people, particularly children and young people dealing with different sports in their free time. Some do it in the clubs playing sports football, handball, volleyball, tennis, and a swim or involved in gymnastics. Some prefer to running and other sports branches, which is free and can exercise at will. In almost all local governments, there are sports facilities and sports organizations, which operate on a minimum membership fee, and rest of the secretariats covering local sports.

Figure 7: Darko Rajović (second generation of migrants from the Serbia and Montenegro in Denmark) with his son Dragoje (third generation migrants)

The man is identified mostly the environment in which live in, so move out of the community in which he spent much of his life is, among others, the great emotional change. Therefore, leaning family, church, and a variety of sports and entertainment societies, facilitates the new situation in two ways: serves as the point of origin where the identification is easier to build a new place as a place of traditions, and strengthens social cohesion (Haider - Labudović, 2007).

According Davy and Waldrauch (2001), most important functions of an organization that migrants have are self-help and support, the construction of cultural identity and multicultural mediation and political organizations. Self-help and support is especially important in the first time migration, when they clear expression social barriers, caused, among other, because of lack of language skills. The construction of cultural identity and multicultural mediation are that cultural, religious and linguistic traditions serve in the construction of ethnic identity. Political organization, which is mainly relate to a political party from the homeland and representation of interests that are aim at improving the legal and socio-economic situation of migrants. The dynamics migrant organizations are of paramount importance joint work countries of origin and countries of migration, because in this way a real bridge between them. Significant criterion migrant organizations also, are their membership, the foundation initiative, direction and activities, legal status and place of registration. From the name of may reliably find out which group migrants and the type of a certain organization belongs (Davy and Waldrauch, 2001).

The survey was not direct on nationality, which is understandable, taking into account the new political situation and dissolution of the Union Serbia and Montenegro. Be sure to notice that the disintegration of the Socialist Federal Republic of Yugoslavia, Federal Republic of Yugoslavia and the Union of Serbia and Montenegro, disrupted relations between migrants who have lived together for years. This will cause and "disappearance of many clubs where were migrants gathered and lead to their division by ethnicity, which reduced the cultural and political primacy has given, often other extreme content" (Haider-Labudović, 2007).

Conclusion

In the second half of twentieth century, there was a mass exodus workforce from Serbia and Montenegro in the different countries of the world. Yugoslavia, has failed to create a reliable economic and social system, and provide safe opportunities for work and a dignified life. Like many times before, the workforce from Serbia and Montenegro has gone in the direction of expansion of global capital (the U.S., Australia, New Zealand, Germany, France, England, Sweden, Denmark ....). Some they could not in the system without rules, find their economic position and went, in search of bread, in the wealthier areas. Second, they had the knowledge and security that they could succeed in the strongest environments, so they went in order to secure a life, what a on the world

market workforce and merit, avoiding unsafe and completely uncertain advancement in the country of origin (Vukčević, 2006).

The Serbian and Montenegrin migrants in the middle the sixties of the last century, they began to work temporarily in Denmark. Scarcely may imagine greater extremes: from a height of several hundred or even thousands of feet, went to Denmark plains. They left own agricultural lands in the homeland, and turn the in the Danish industrial factories. In addition, all other circumstances, ranging from climate and soil composition, over housing to different psychological elements of life, they are so different, hence the large and numerous temptations.

New residents of Denmark are face, especially in the beginning, and many other difficulties. Feel them already on the front steps by travelling to Denmark and four each - five days, with small children in their arms or leading them in hand, and carrying in their bags, only some food for the trip or personal wardrobe. No less were no problems getting used to the new way of employment, housing, nutrition, and lack of knowledge of the Danish language, the uncertainty in the work, nostalgia and loneliness.

Forty years has elapsed since the arrival of the first generation Serbian and Montenegrin migrants in Denmark to date. That these people and their families showed and proved that with all the problems they had, and certainly were not small, they managed their work, to survive on the soil and cause numerous Danish sympathies to the Danes themselves, and all others. In one word - They succeeded!

Today the Serbian and Montenegrin migrants in this Scandinavian country achieved great success in every way, from personal, familial to the social. They live in comfortable multi-room apartments, equipped with modern furniture and white goods, and almost all have personal cars. Most of them have built houses in their homeland, and own real estate and "old savings".

Important place in the identification of the Serbian and Montenegrin migrants in Denmark are in the family, relatives, churches, associations and clubs, where they can develop their activities and connections within the community. In the domain of ethnic labels (language, church, customs), surveyed respondents are trying to more faithfully abide by the tradition that binds them to the homeland and origin. The views they have on cultural heritage, is no different of what in their homes and clubs practice. About homeland, members of the first generation happy talk, and beaming, and other members, or a third, even though you might feel the same, so do not show your nostalgia. Integration into Danish society is moving towards establishment of harmonious relations between the Serbian and Montenegrin migrants and the Danish population, while "cultural pluralism" implies both the existence and coexistence of multiple cultures in this Scandinavian country.

Main driving force throughout the way was undoubtedly Danish society. Unfortunately, in this study, the variety of support could have been mentioning only briefly and incidentally, only enough to indicate its presence. Hence the author, who has a lot of sympathy for this country and her people, which is understandable, because he had lived in Denmark and is still to him the living narrow part of the family and the wider family.

Our research evidence pointed out in the foreground, a few obvious observations when it comes to Serbian and Montenegrin migrants in Denmark:

• First, that the first generation of Serbian and Montenegrin migrants (mostly men), characterized the planned temporary stay, which in the most cases extended to this way what is brought and wife, and then the and whole family in which are children's continued their education in the country migration;

• Second, the situation with members of the second generation is much different. They are confronted with two cultures, are increasingly adopting the language and value system of the country where they live, what them in the final analysis facilitates and enables social advancement;

• Third, in Denmark to form a third generation, significantly different from the first, is more integrating into Danish society of the second generation? So that the phenomenon birthplace, will probably not be decisive for the future, at least not in large numbers, while through only recent organized remedial classes offers opportunities to learn their mother tongue - Serbian language, geography, history and music education;

The path from idea to realization in this study was clear enough, but burdened many aggravating circumstances. Hope and faith, those results of this survey represent the contribution to the development of research of Serbian and Montenegrin migration; they gave us strength to

endure to the final goal. On this occasion, we were tolling only a minimal number of facts and conclusions of research to which arrived fieldwork. We hope that the above-mentioned results encourage further, still deeper research this complex and important issues and that this research, achieve its own purpose and be of benefit to all those who wish to familiar with theme the Serbian and Montenegrin migration in Denmark.

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