

Physical Geography's Role and Impact Stage on Determining of Political Units Boundary

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Abstract:

Both countries and international organizations for example EU and NATO have a boundary. How and which criteria determines these boundaries. This study includes physical geography features which forms some of these criteria. These criteria are geomorphologic and hydrological features such as mount, river, sea, lake, etc. These criteria's definitions and features will be explained according to physical geography science. These factors will be supported with samples about determining of boundaries. Besides do these criteria always effect on determining of boundaries? With another word are there different using criteria other these. What are these? They will briefly explain. As a consequence the aim of our study is presenting Physical Geography's importance about determining of border line.

Key words: Boundary, Mount, River, lake, Sea.

What is Physical geography?

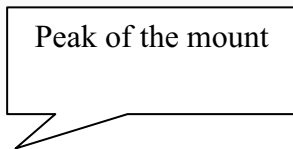
Physical geography is the study of our home planet, Earth (Strahler and Strahler, 2006). This science covers the topics relating to the surface of the earth, the landforms, rivers, climate, oceans, hazards, and more. Physical Geography is also a sub-discipline of two much larger fields of study - Geography and Earth Sciences. The main purpose of Physical Geography is to explain the spatial characteristics of the various natural phenomena associated with the Earth's hydrosphere, biosphere, atmosphere, and lithosphere.

Generally using geomorphology and hydrogeography, branches of physical geography determine political units' boundaries. We will explain these two features following paragraph.

Geomorphology's Function and Effects on Boundaries

Geomorphology is the science of Earth surface processes and landforms (Strahler and Strahler, 2006). It is the science concerned with understanding the surface of the Earth and the processes by which it is shaped, both at the present as well as in the past (Erinç, 2001). Geomorphology seeks to understand landform history and dynamics, and predict future changes through a combination of field observation, physical experiment, and numerical modeling (Hoşgören, 2007).

Mounts and high plateaus which are mainly landforms are primarily criteria on determining of boundaries. These are mostly accepted as natural borders for ancient times. These landforms are conservative areas against to enemies. Particularly peaks of the mount, ridges and watershed divides (Figure 1) compose border with countries.



Peak of the mount

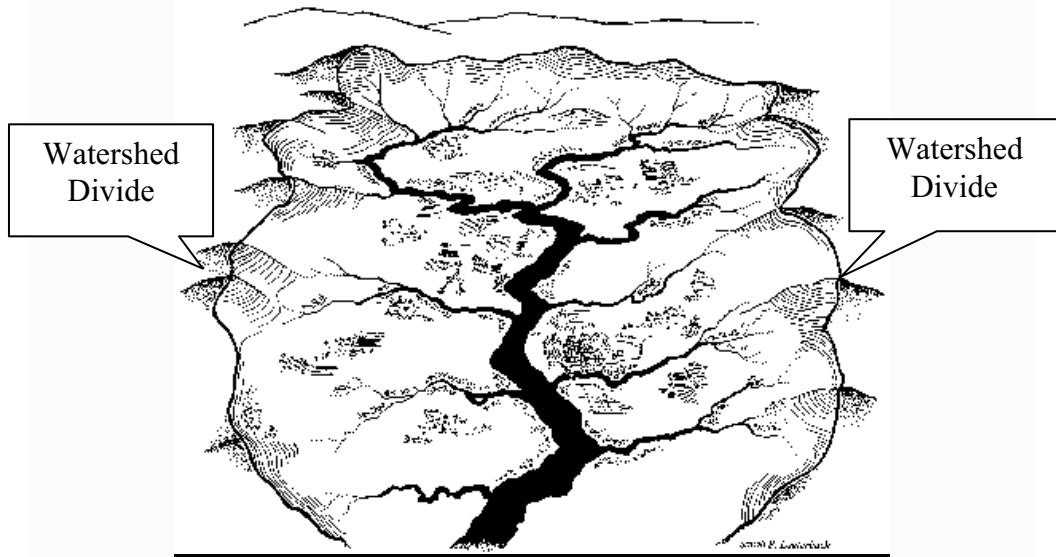


Figure 1: Some Landforms

Peak level is the top, or one of the tops, of a hill, mountain, or range, ending in a point; often, the whole hill or mountain. Peak is the narrow part of a vessel's bow, or the hold within it (Figure 2).

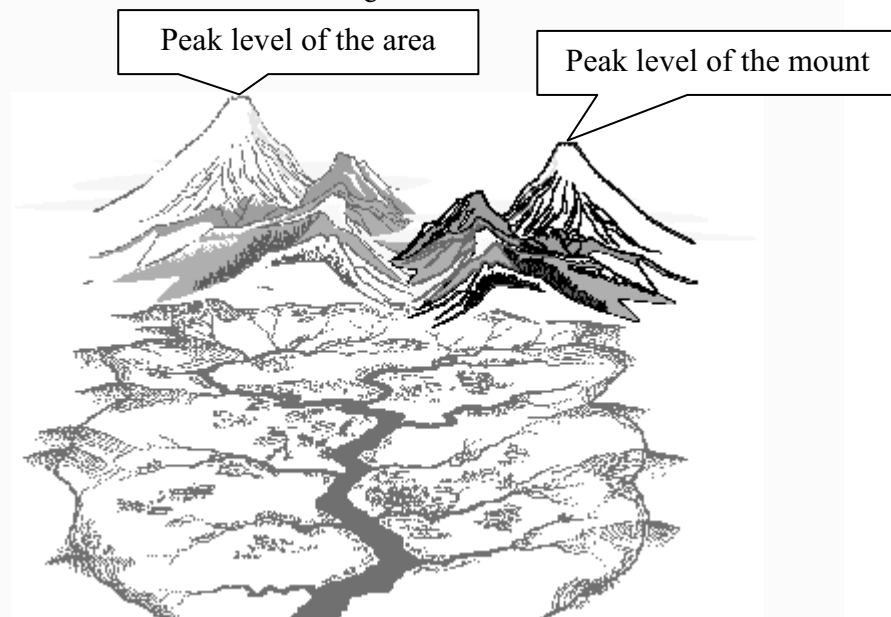


Figure 2: Mount and it is the highest point (www.parks.ashland.or.us)

In this regard there are a lot of important sample in the Earth. In our study, some samples take places belong to Balkans (www.peakware.com).

The Nemertsika Mountain (2.198 meters) is a border frontier and separates Greece from Albania. The Nemertsika peak is taken from the Greek side of the border (Photo 1).



Photo 1: The Greek peak of Nemertsika mountain (Photo by [Anastasios Tzomakas](#)).

Babin zub (The Grandmather's tooth) is the most beautiful peak of Stara planina (Balkan Mountains) (Photo 2). The Stara planina is a border frontier and separates Serbia and Montenegro.



Photo 2: The rocks of Babin zub (Grandmather tooth) (Photo by Miroslav Dokman).

Bobotov kuk, this strange name represents the highest mountain peak in the Republic Montenegro (2523 meters) from Dinaric Alps. The peak is a border frontier and separates Serbia and Montenegro (Photo 3).



Photo 3: The rocks of Bobotov kuk (Dinaric Alps).

The summit of Rtanj, named Siljak (1565m). Šiljak (1565m) is the highest point of cone shaped 7 km long mountain Rtanj, in the east-central region of Serbia. Rtanj is one of the last mountains at the southern end of Carpathian range. The peak is a border frontier and separates Serbia and Montenegro (Photo 4).



Photo 4: The rocks of Šiljak (Balkan Mountains) (Photo by Miroslav Dokman).

A watershed is a geographic area of land in which all surface and ground water flows downhill to a common point, such as a river, stream, pond, lake or wetland. Watershed or water divide, it is important geographical, and often also political boundary, is the line separating neighboring basins (Figure 3).

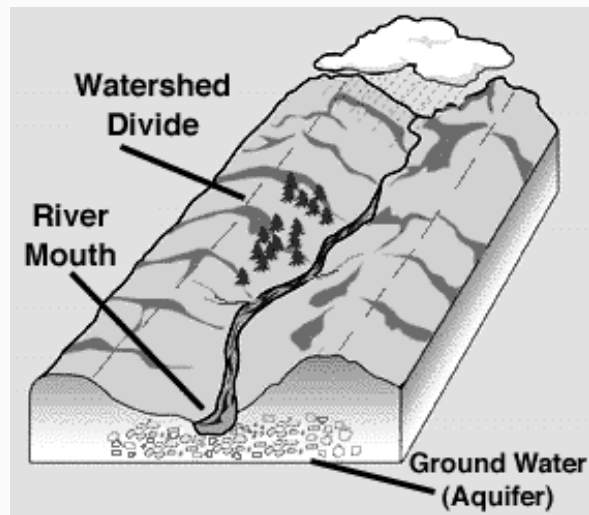


Figure 3: A Watershed area

A watershed can be thought of as the land area from which water, sediment and dissolved materials drain to a common watercourse, normally a pond, lake, or stream. Just as a city, county or state has boundaries, so does a watershed (Figure 4).

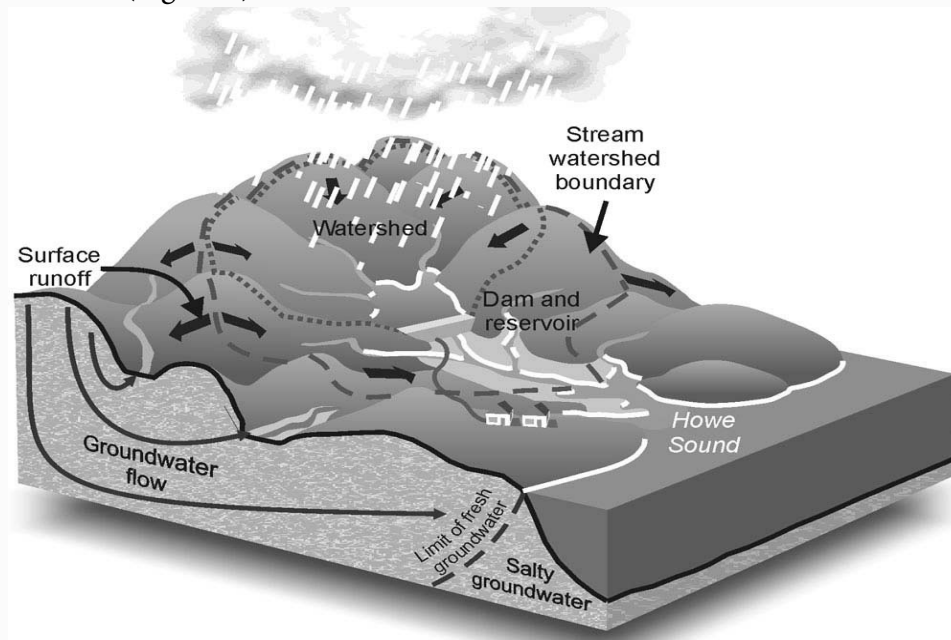


Figure 4: A Watershed (www.geopanorama).

Precipitation falling inside this line is delivered to small streams or tributaries which join to form rivers. In mouthy or hilly country, the divide lies along topographical peaks and ridges, but in base or flat country the divide may be invisible – just a more or less notional line on the ground on either side of which falling raindrops will start a journey to different rivers, and even to different sides of a region or continent (Figure 5).

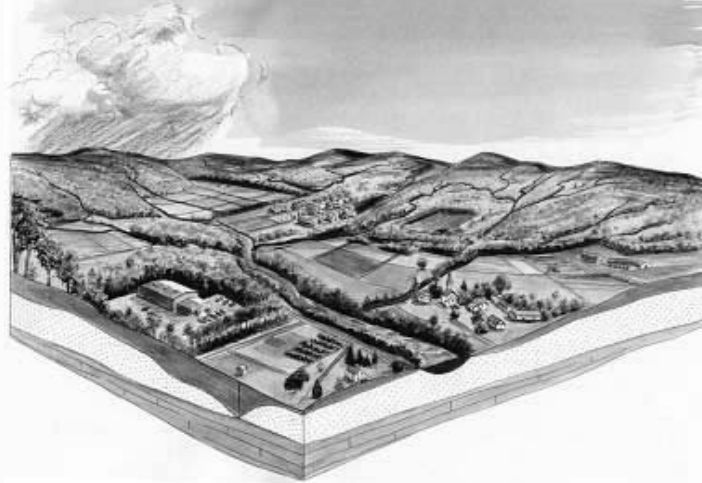


Figure 5: A Catchment Area, (www.millriverwatershed.org).

A drainage basin is an extent of land where water from rain or snow melt drains downhill into a body of water, such as a river, lake, reservoir, estuary, wetland, sea or ocean. The drainage basin includes both the streams and rivers that convey the water as well as the land surfaces from which water drains into those channels, and is separated from adjacent basins by a drainage divide (Hoşgören, 2007). The point where two watersheds connect is called a divide because it divides the path of rainwater into two different watercourses (Goudie, A.S., 2004). Each drainage basin is separated topographically from adjacent basins by a geographical barrier such as a ridge, hill or mountain, which is known as a water divide (Figure 6).

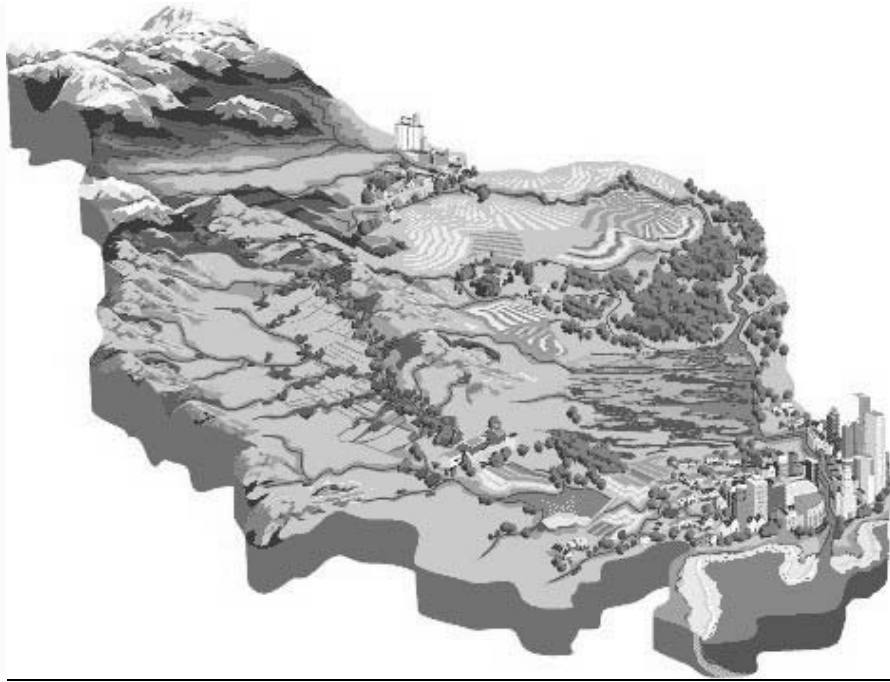
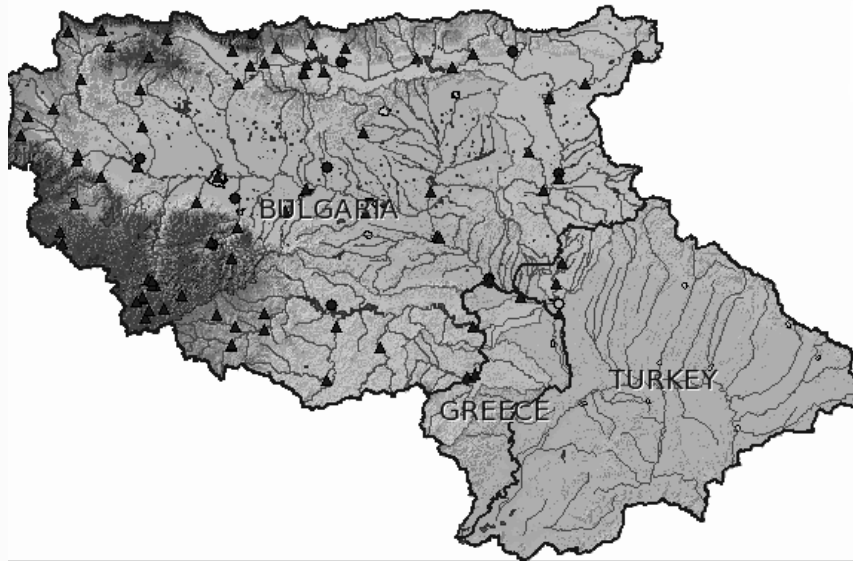


Figure 6: A Drainage Basin (www4.agr.gc.ca).

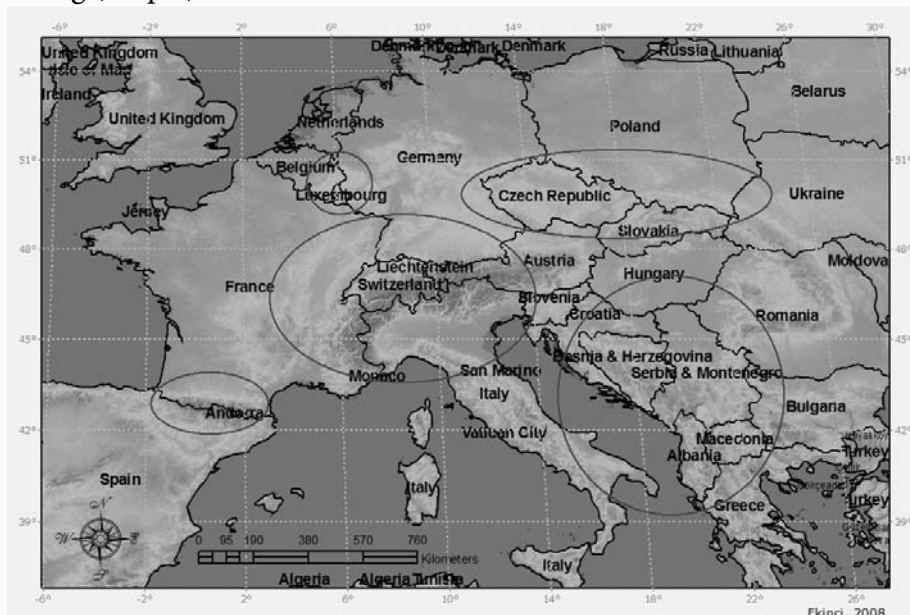
Other terms that are used to describe a drainage basin are catchment, catchment area, catchment basin, drainage area, river basin, water basin and watershed (Lambert, 1998). (Animation 1), (www.techalive.mtu.edu).

The main function of a watershed is to capture, store and release water back into streams, rivers or lakes where it can be utilized by plants, animals and people during dryer periods. Furthermore we all live in a watershed. Balkans is comprised of some major (Adriatic, Aegean, Mediterranean, Black sea and Sea of Marmara) and a lot of minor watersheds or drainage basins (Monget, 2004). Each of these major watersheds is made up of numerous smaller scale sub-basins and sub-watersheds (Map 1).



Map 1: Meriç River Basin (Sezin etg, 2007).

As it known a lot of countries frontiers had been drawn according to watersheds. For example; Spain-France (Pirenes); Italy- Austria – Switzerland (Alps); Czech – Poland- Slovakia (Karpats); Switzerland-France (Juras) borders etg (Map 2).



Map 2: Boundary samples

Hydrograph's Function and Effects on Boundaries

Hydrography is the science that deals with the measurement and description of the physical features of bodies of water and their littoral land areas. Hydrogeography is predominantly concerned with the amounts and quality of water moving and accumulating on the land surface and in the soils and rocks near the surface and is typified by the hydrological cycle. Thus the field encompasses water in rivers, lakes, seas, groundwater, and aquifers and to an extent glaciers in which the field examines the process and dynamics involved in these bodies of water (Hoşgören, 2004; Goudie, 2004).

Rivers, lakes and seas from hydrography features are used to determine of borders.

A river is a natural stream of water, usually freshwater, flowing toward an ocean, a lake, or another stream. In some cases a river flows into the ground or dries up completely before reaching another body of water (Atalay, 1986).

The border on river is determined by thalweg. Thalweg is the longitudinal outline of a riverbed from source to mouth. The thalweg (thalveq) (sometimes called the "valley line") is a line drawn to join the lowest points along the entire length of a streambed or valley in its downward slope, defining its deepest channel. It thus marks the natural direction (the profile) of a watercourse (Figure 7).

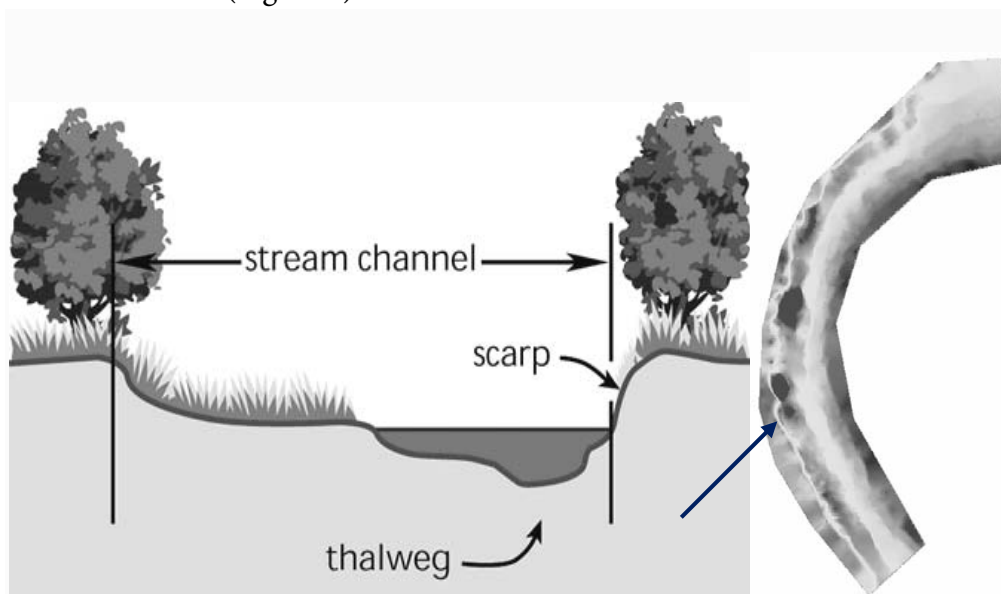
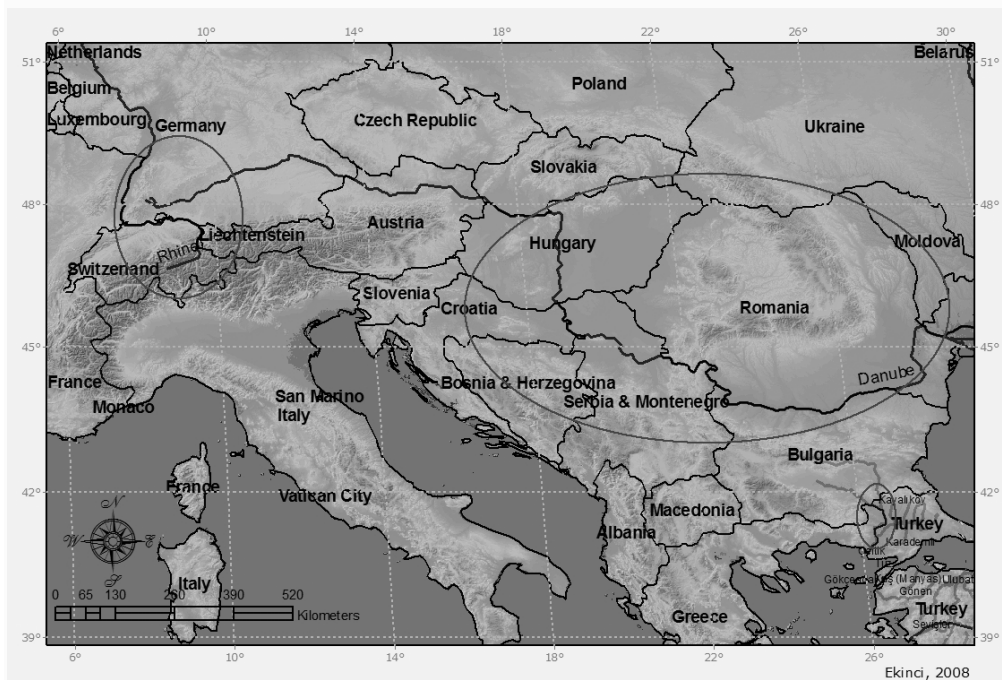


Figure 7: A river valley and its thalweg (www.fgmorph.com).

The thalweg principle is the principle which defines the border between two states separated by a watercourse as lying along the thalweg. The precise drawing of river borders has been important on countless occasions; notable examples include the Shatt al-Arab (known as Arvand Rud in Iran) between Iraq and Iran, the Danube in central Europe, the Kasikili/Sedudu Island dispute between Namibia and Botswana, settled by the International Court of Justice in 1999, and the 2004 dispute settlement under the UN Law of the Sea concerning the offshore boundary between Guyana and Surinam, South America, in which the thalweg of the Corentyne River played a role in the ruling (<http://en.wikipedia.org>.)

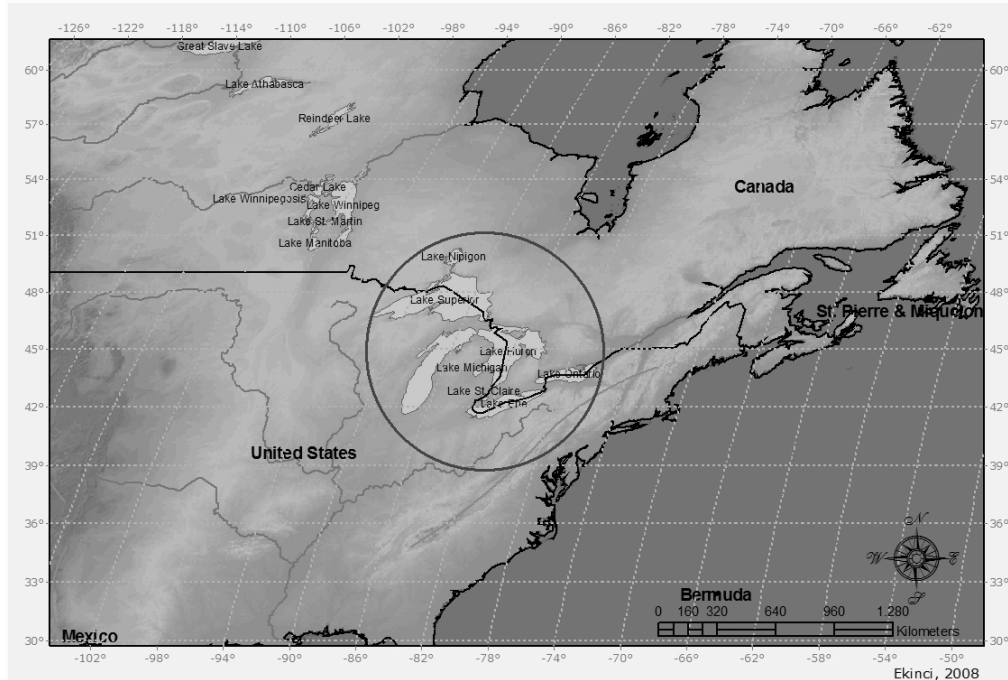
There are borders samples according to thalweg. These samples were given below. Romania - Bulgaria (Donua); Turkey - Greece (Meriç); Bulgaria-Turkey (Rezve); Hungary- Balkans (a barch of Douna called Drava) (Map 3).



Map 3: Boundary samples

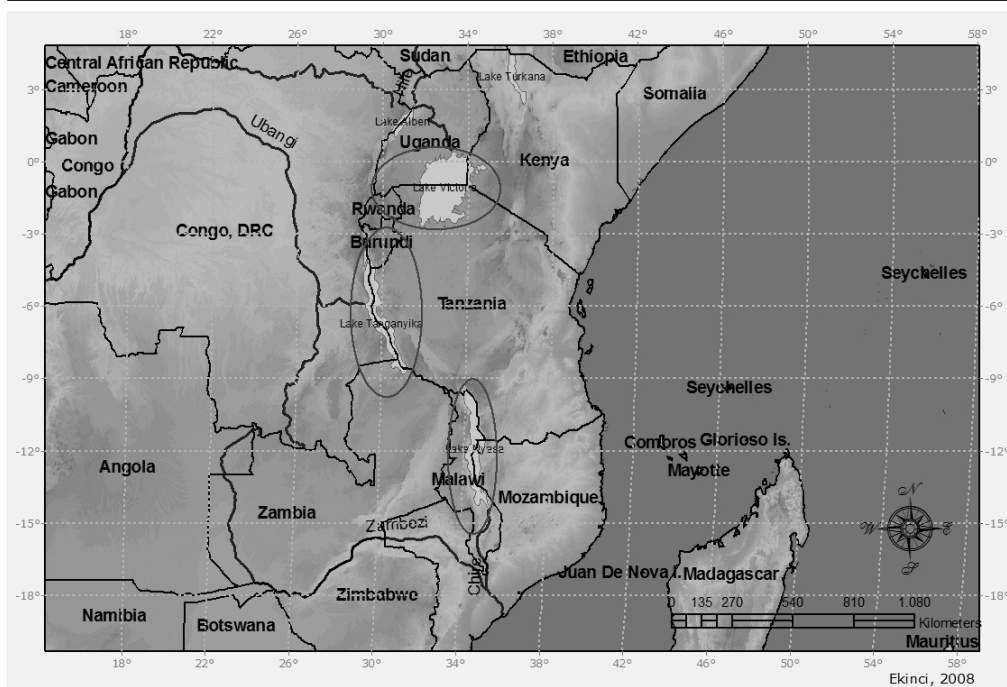
A lake is a terrain feature (or physical feature), a body of liquid on the surface of a world that is localized to the bottom of basin (Hoşgören, 2004).

Lakes Region in North America is a border line between USA and Canada (Map 4) .



Map 4: Boundary samples

Cad Lake in Africa is border among Cad, Nigeria and Cameroun. Tanganyika Lake creates border between Tanzania and Zaire (Map 5) (Göçmen, 1994).

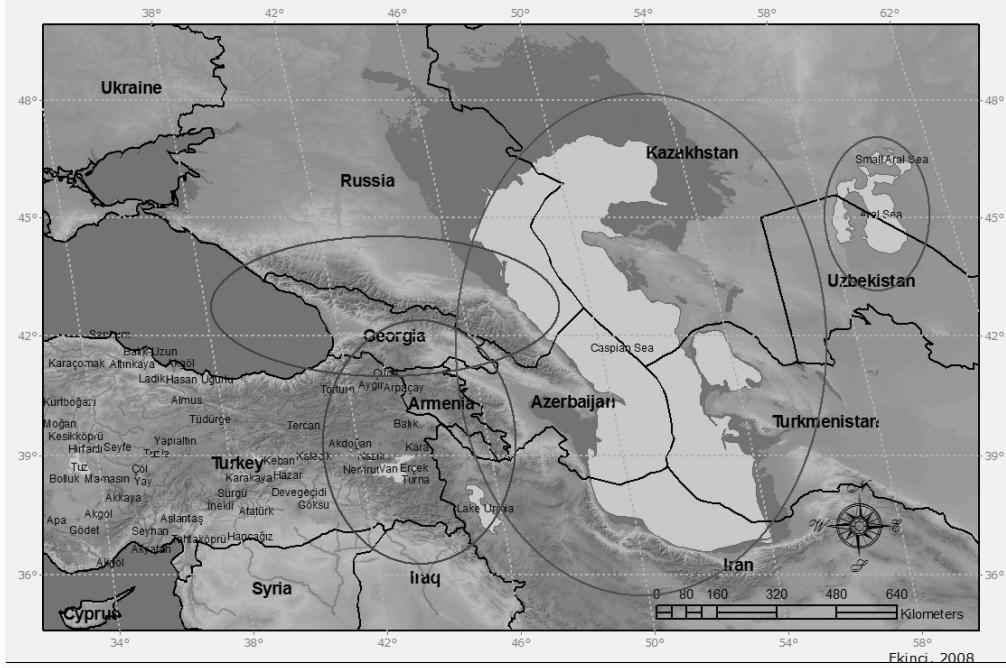


Map 5: Boundary samples

A Sea; the term sea refers to certain large bodies of water, but there is inconsistency as to its precise definition and application (Hoşgören, 2004).

Most commonly, a sea may refer to a large expanse of saline water connected with an ocean, but it is also used sometimes of a large saline lake that lacks a natural outlet, e.g. the Aral Sea.

Actually Caspian Sea is a lake, but it accepts as a sea creates a border among Azerbaijan, Turkmenistan, Kazakhstan, and Russia Federation (Map 6).



Map 6: Boundary samples

Because seas divide mainland and countries from each other it is accepted as a natural border. For example Black Sea separates Turkey, Ukraine, Romania and Aegean Sea separates Greece and Turkey. It can be seen Map 7.



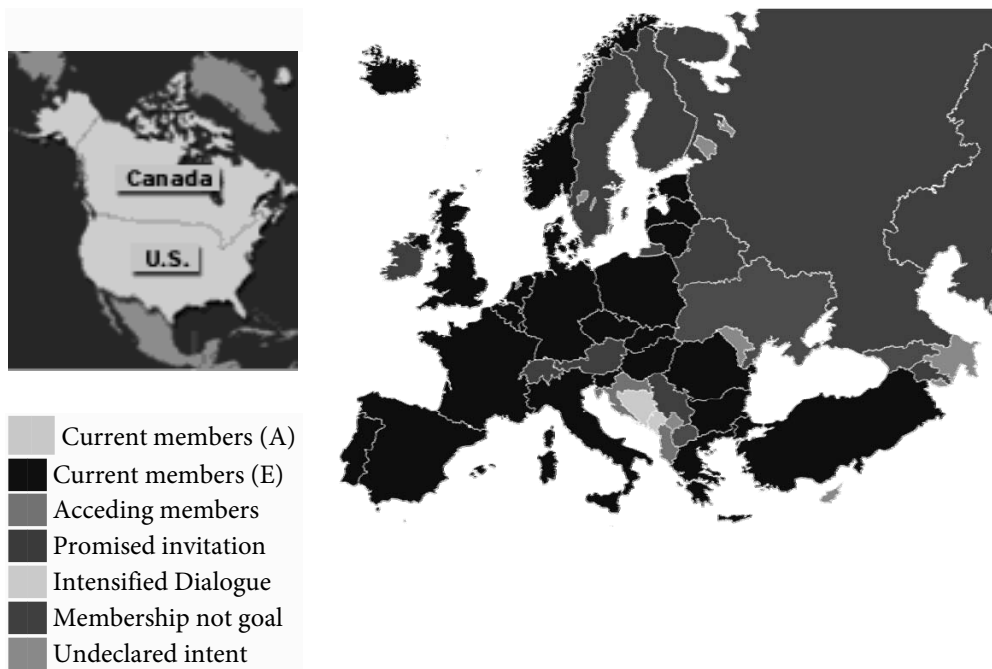
Map 7: Balkans and Its Surrounding (<http://en.wikipedia.org>.)

Conclusion:

Now we have main argument for conclusion. Political unites includes both countries and international organizations. Countries' border generally is drawn by physical geography features, but international organizations' is not drawn by these factors. Are they the basic criteria to determine of international organizations' borders? For example we can analyze NATO.

We know that NATO comprises twenty-six members (Map 8) Belgium, Bulgaria, Canada, the Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, the United Kingdom, and the United States. At the NATO summit in

Bucharest (April 2008) Albania and Croatia were officially invited to start accession talks with the alliance, and signed the accession protocols on July 9, 2008.



Map 8: NATO members Countries (www.nato.int; <http://en.wikipedia.org>).

As seen NATO have member countries from America, Europe to Asia. So these countries are separated with ocean and seas without creating a geographic unit. Than physical geography criteria is not enough to determine the borders of NATO as an international organization.

Result

Physical geography features are more affect to determine of country borders than international organizations like NATO and EU. Other say these factors' impact stage is not adequate on international organizations. There are assessment role belong to human factors. Human factors are cultural and ethnic diversity, economic and military features, historical and architectural

structure etc. So human factors are affecting much than river, lake, and mount criteria in determination of frontier. Geomorphologic and hydrological features are still dominated to determine of countries frontier as ancient time such as Balkan Countries which secure independence new.

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