

# Deep Groundwater as an Underground System of Water Supplies on Earth

by

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## Abstract

This article conjectures existence of deep groundwater as a permanent source of water on Earth. It discusses possible originating sources of this water proposing new hydrogeologic cycle for its circulation. Deep groundwater, unlike ordinary groundwater, is found deep within the core of Earth and can be visualized as an underground system of water lakes interconnected with rivulets and streams that occasionally surface turning into the rivers of surface water.

## 1 Models of Groundwater

### *1.1 New Model of Groundwater*

Water is one of the vital components of our life support system. It is commonly believed to originate from atmospheric precipitation and not within the Earth's interior, as we will propose later. The atmosphere of Earth holds water in the form of humidity forming clouds, fog, mist, and other climatic phenomena out of it. The atmospheric water originates from surface water as a result of its evaporation under the influence of heat. According to our model, surface water, in its turn, originates from groundwater and is constantly replenished by it. If we retrace the origin of water on the Earth, we will go back to the early period of its formation when the surface waters did not exist and the only water that was on the planet was hidden underneath its core. During those early stages of Earth's formation, as we propose, certain chemical processes were initiated whose final product was water (supposedly, initially it was H-O and not H<sub>2</sub>-O). They still take place within the interior of our planet, generating water and sustaining its supplies on the surface.

### *1.2 Existing Models of Groundwater*

Modern theory of groundwater assumes that groundwater is an accumulation of subsurface water due to the precipitation and following penetration of water into the underground area of its storage. Groundwater is considered to be connected to surface springs and water reservoirs. Subsurface water has always been considered to be a sporadic accumulation of disconnected pieces of underground water. Modern theory of groundwater ignores the possibility of existence of underground sources of persisting nature that could be called underground lakes that would play a role of the source to persisting groundwater.

Existing models of groundwater can be subdivided into two categories: theoretical models and empirical models. Theoretical models are built upon a notion of the groundwater as the flow of water through subsurface media. Empirical models are not based on any theoretical concept and describe groundwater based upon monitoring data.

## 2 Groundwater As a Freely Flowing System Of Underground Water

The theory of groundwater that we propose complements the etheric model of Earth's structure discussed other works of the author. It assumes that groundwater is a system of underground water originating from the network of underground reservoirs of persistent nature. The reservoirs of persistent nature that feed the underground rivulets and streams have never been postulated to exist before. These underground lakes are fed by the water generated by the chemical processes occurring deep within the crust of Earth. These chemical processes are part of the natural process of planetary perspiration. The process of planetary perspiration has never been studied before. The process of planetary perspiration is that process that is responsible for the existence of all water on the planet. The process of planetary perspiration is the only source of water on Earth.

The theory of groundwater proposed in this paper explains the existence of the unexplained phenomena of ‘uphill’ flow of groundwater observed in nature. It explains the existence of permanent water sources in the desert areas. It also explains the existence of persistent water streams giving birth to surface rivers.

The theory of groundwater proposed in this paper can be used to search for the permanent fresh water supplies on earth – the underground lakes.

### 3 The Model of Persistent Groundwater

#### 3.1 The Location of the Underground Lake

The model of persistent groundwater is based on the underground lake theory of groundwater. The model of persistent groundwater will postulate the existence of underground lakes from which the groundwater flows. The speed of the groundwater flow will be dependent on level at which the underground lake from which the groundwater flows is located.

Let us denote the speed of the groundwater flow by  $v$ . Let us denote the height of the underground lake by  $H$ . ( $H$  is measured from the surface downward). Then the speed of the groundwater flow at point  $x$ , at height  $h(x)$  will be equal to:

$$v = -K \frac{H - h(x)}{L}$$

By measuring velocity  $v$ , one can determine the height at which the underground lake is located as a function of the distance from it  $L$ .

Assuming that the stream from the underground lake flows straight from it, the elevation of the underground lake can be found as a function of the velocity of the stream:

$$H = -v \frac{\Delta h}{\Delta v} + \Delta L v \frac{v + \Delta v}{\Delta v} + h(L)$$

where  $v$  is the velocity of the stream at the elevation  $h(L)$  distance  $L$  from the lake and  $\Delta v$  and  $\Delta h$  are the change in the speed and the elevation distance  $L + \Delta L$  from the lake.

In more general case when the stream flows along an arbitrary path, the relationship between the elevation, speed and the length of the path is exactly the same except  $L$  has the meaning of the length of

the path and can no longer be considered to be the measure of the distance between the lake and the location along the stream .

### 3.2 The Distance Between the Underground Lakes

The distance between the underground lakes can be calculated if the speed of the two streams of groundwater flowing close to each other but originating from two different underground lakes are measured.

## 4 New Hydrogeologic Cycle

Classical hydrogeologic cycle can be subdivided into the following phases: evaporation, condensation and precipitation, infiltration and transportation. The idea of hydrologic cycle is very simple: there is water on the surface of the planet (lakes, rivers, oceans, plants, soil moisture, etc.) that under the action of solar radiation and heat changes its liquid state into the gaseous one and eventually, comes back to the surface and subsurface of our planet where the process takes another turn and repeats itself. There are many details to this cycle, but conceptually it is very simple.

In lieu of proposed new model hydrogeologic cycle will acquire additional processes and water motion on Earth will no longer be circular but will have a permanent source that will replenish ground and surface water supplies on Earth. New hydrogeologic cycle can be written as:

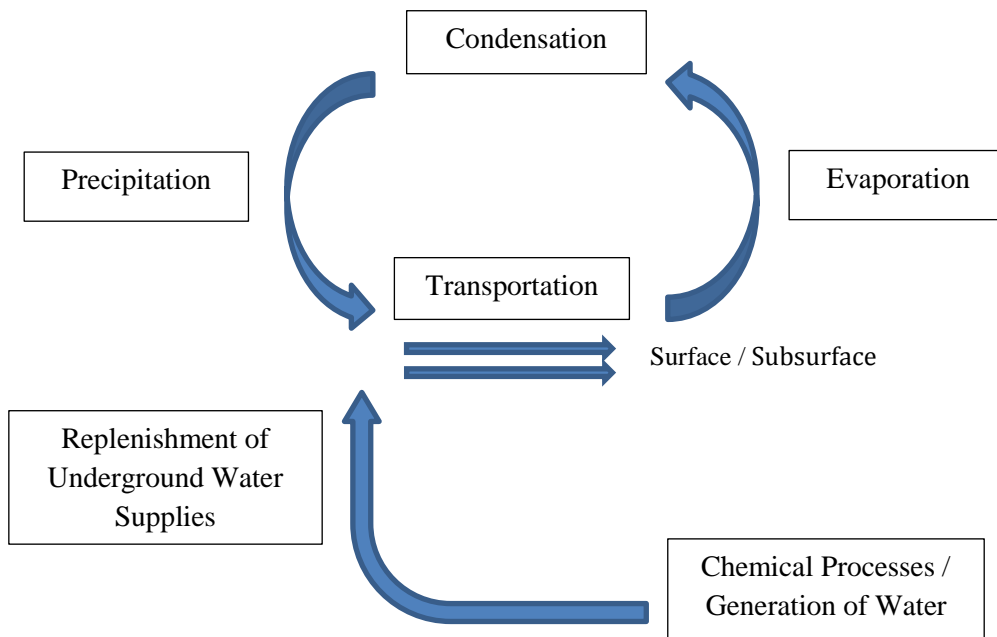


FIG.3. New Hydrogeologic Cycle

Chemical Processes->Underground Lake->Groundwater->Surface water->evaporation->Precipitation

Precipitation does not replenish underground lakes, it temporarily raises the water level. In time the water increase due to precipitation penetrates into the ground where it is absorbed by the inner layer of the planet where active chemical processes take place.