

## Excavation multiple up drafting tunnels in coastal mountains: A simple solution to resist against the severe drought in sub tropical zones

Mohammad Ali Daei (1), Manizheh Daei (2), and Bijan Daei (3)

(1) General Practitioner, Biology Researcher, Iran, Islamic Republic Of (drdaei@gmail.com), (2) Isfahan University of Technology, Isfahan, Iran (mdaei\_mgh@yahoo.com), (3) Independent Researcher, Vancouver, Canada (bdaei@yahoo.com)

**Abstract:** At many sub tropical places in the globe, including the Persian Gulf in the south of Iran, there is continuously a tremendous amount of steam in the air, but it fails to transform to cloud because of the surrounding overheated lands. Reduction in precipitation in these regions has been extraordinary in recent years. The most probable reason is the global warming phenomena. Many dried forest remains, in these regions are referring to much more precipitations not long ago. All around the Persian Gulf, Oman Sea, Arab sea, and red sea there are enough steam to produce good precipitation nearly year round. The main missed requirement in this zone is the coldness. This fact can be well understand from a narrow green strip in Dhofar which is indebted to a cold oceanic stream that approaches to local shore during four months yearly. This natural cold stream helps a better condensation of water vapor and more precipitation but only in a narrow mountainous land. Based on this natural phenomenon, we hypothesize a different design to cool the water vapor with the same result. Prevention of close contact between the water vapors and hot lands by shooting the steam directly into the atmosphere may help to produce more cloud and rain. Making multiple vertical tunnels in mountains for upright conducting of humid air into the atmosphere can be a solution. Fortunately there are a few high mountain ranges alongside of the coastline in south part of Iran. So excavation of drafting tunnels in these mountains seems reasonable. These structures act passively, but for long term do their work without consuming energy, and making pollution. These earth tubes in some aspects resemble to Kariz, another innovative structure which invented by ancient Iranians, thousands of years ago in order to extract water from dry lands in deserts. Up drafting earth channels can be supposed as a wide vertical kariz which conduct water vapor into the atmosphere from the hot land near a warm sea, something like passive cooling towers in power plants. Many experiments and practices are indicating that these simple, cheap, and environmentally friendly structures can work continuously and effectively without an operator. We expect hundreds of these structures alongside the coastline in the south, will be able to change the local climate positively forever. Also upright earth tubes may have extra benefits if we choose the right points for drilling. Chasing escaping streams, finding precious minerals and stones, producing well ventilated area for recreation are among of the probable opportunities. Almost certainly, these by-products, in majority of cases will compensate the costs.

**Key words:** up drafting tunnels, conducting water vapor, steam, cloud and rain production, hot lands. Global warming