## Subject : Rise & Fall of Caspian sea - level     Date : 99-07-01

**Abbas Masoumian (born in 1929, graduated in 1957 from Tehran University Faculty of Engineering with an M.S. degree in the field of civil engineering).**
**Address : 3 Safa Lane – Shahid Araghi St. – Khadjeh Abdollah Ansari St. Shariati Av.**
**Tehran 16618 – IRAN**
**Fax number     : ( 98 ) ( 21 ) 2277 67 39**
**Tel.number      : ( 98 ) ( 21 ) 2284 73 23**
**E-Mail            :** masoumian@caspiansealevel.net
**Web-Site address:** www.caspiansealevel.net

In my opinion the cause of the periodical rise and fall of the Caspian sea level is;not in the increase and decrease of the in-pouring rivers' drainage and regional precipitation , nor in the variation of sea surface evaporation ,nor in the variation of sea water density , nor in the elimination or spread of some parts of the sea area , nor in the deformation of the sea basin. In support of my viewpoint it should be noted that If the sea level rise was due to in-pouring rivers' drainage and regional precipitation, then, for a rise of 225 cm ( What happened during 1987-94 ) the volume of sea water should have shown an increase of about 1500 billion cubic meters- and for a fall of 170 cm ( What happened during 1933 – 41) the volume of sea water should have experienced a decrease of about 1200 billion cubic meters. Since  observations and investigations have not shown such variations in the volume of sea water, these kinds of theories are not logical and substantiated. Also the views on the fluctuation of sea basin is not based on reality and acceptable .

After many years of study and research,most of which is based on my observations dating back to 1953 , I have found another cause  for this phenomena, which is based upon the deformation of sea surface in the Caspian sea, as follows :

**1-**We know that a considerable part of earth's mass (volume) is consisted of molten and doughy materials .

**2-**We also know that the gravitational force acts between the earth and objects,and attracts them toward the center of the earth ,and that in a free fall under vacuum,it causes a gravitational acceleration " g " of about 9.8 meters per second per second .

**3-** Besides slight differences of  " g " in different points on the earth's surface of different latitudes, which is due to the centrifugal force produced at a given perpendicular distance from the axis of rotation of the earth, and distance from the earth's center of mass (which varies from 9.78 to 9.83 – and these variations don't effect the solution), there is another factor that may change the value of "g" on the earth's surface. In the following paragraphs I am going to give the explanation that would be the major guide to the final solution.

**4-**The molten and doughy materials inside the earth are not homogeneous, they are consisted of distinct and huge bulks with different densities which generally vary from 2.8gr/cubic cm to 10.6 gr/cubic cm (In fact, in addition to the factors mentioned

above, the differences of the values of "g" are mainly due to the differences of those densities).

**5-** The presence of very high and different temperatures in various parts of molten and doughy materials inside the earth, large differences of densities of various molten and doughy bulks , orogeny phenomenon ( that generally happened long time ago ) , appearance and reality of volcanoes , the occurrences of many earthquakes on the earth ;all prove that the molten and doughy materials inside the earth are not calm and motionless, but they have a kind of very slow rotational movement .The regime of intermittent fluctuation of the Caspian sea level shows that the period of this movement is about 100 years.The proof of this rotational motion and the determination of its period are possible through measuring the values of " g " in different proper points on the earth's surface and its renewals every 6 months or annually for the same points and locations, and by observing the variations of " g " and its displacement direction, and also by measuring the amount of displacement resulted from the very movement of these light and heavy masses of the earth's inside.The linear diffusing speed of this rotational movement on the earth's surface is estimated to be about 45 m/h.

**6-**Considering the effects of the conditions explained previously in parts 3, 4, and 5, it is evident that during the rotation of molten and doughy materials inside the earth, if a distinct and huge mass of high density situates itself in the vicinity of a certain area of the earth's surface ,the gravitational force in that area will increase ( although it is relatively very slight ).If this region includes the Caspian sea domain ,the following phenomena will occur :

**6-1-**Considering that the total volume of the Caspian sea water is estimated at 500 thousand billion cubic meters,even a slight increase in the " g " factor applied to the wide surface and the great volume of water of the Caspian sea, would cause the body of the sea water to be attracted or drawn with a more gravitational force toward the center of the earth, since the surface of the sea water is a part of the earth sphere, this additional gravitational force causes the convexity on the curvature of sea water surface to diminish (e.g. drop of 25 centimeters from 3000 meters arch rise in the middle of the sea ), and the surface of the middle part of the sea goes down, since the volume of water should remain constant , the water level in the coastal zone goes up and it is clear that this rising would be maximum in the coastal line ( the width of coastal zone in every side of the sea is estimated to be about %5 of the width of sea at the selected section ).Likewise when a huge bulk of molten and doughy materials with lower density situates in the vicinity of a certain area of that part, ( it replaces the high density bulk ) ,the situation is opposite , so that in the middle part ,the surface goes up and in the coastal zone the surface goes down , (like the effect of the gravitational force of the moon on the oceans and seas from a distance of 400,000 km.Since this distance is very long,it has a slight effect on " g ",however this slight change causes tide every 24 hours).

**Conclusion :**

**First :** The major rise of sea surface level in the coastal zone of the Caspian sea will always be accompanied by a major fall of sea surface level in the mid part of the sea ( and vice versa ).

**Second -** If the position, and situation of huge and distinct bulks of molten and doughy materials with high density and those of low density are symmetric with respect to the earth's center , regarding the interval between previous occurrences of the fluctuations of the Caspian sea level ,one can predict that the next major falling of sea level in coastal zone will approximately happen in 2050 , and the next major rising will be in 2100 ( the tracing its way is also possible ).

**7-** The schematic diagram for the rising of the sea level in the coastal zone , and falling of the sea level in the middle part , is shown below ( that is what happened during 1987- 94 ). Since the inverse process ,i.e. falling of the sea level in the coastal zone and rising of sea level in the middle part ( that happened during 1933 - 41 ) , is essentially the same in principle, its diagram and the curve of gm are not presented.



Water Body of Caspian Sea
(figure is schematic)
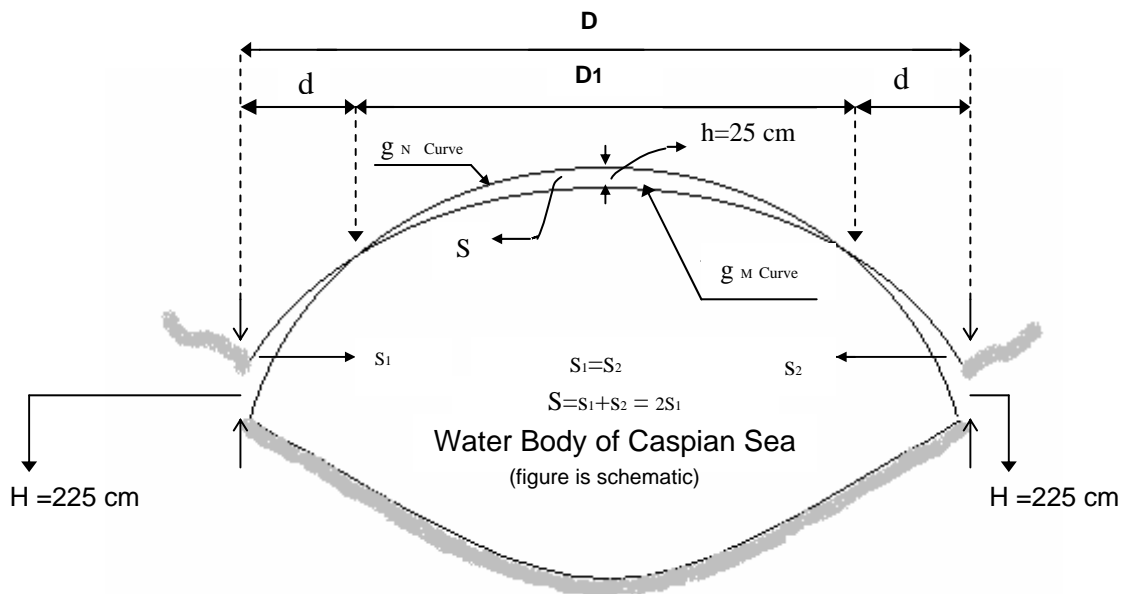
The equation of $D_1 = \%90\ D$ is an estimation.      Calculations are approximate.

| | | |
|---|---|---|
| $D_1 = \%90\ D$ | D=Sea-width in the selected section | $g_N$=Normal gravity |
| $d = \%5\ D = 1/18\ D_1$ | $D_1$=Sea-width in the middle part | $g_M$=High gravity |
| H=225 cm (observed) | d=width of coastal zone | $g_m$=Low gravity |
| h=25 cm (Calculated) | $D_1$=18d | $g_M > g_N > g_m$ |

$S \# D_1\ h/2 = 2s_1 = dH = 225d$ ; $D_1\ h/2 = 18d\ h/2 \longrightarrow 9dh = 225d \longrightarrow h = 25$ cm

## Note:

**1-**The major rising of the sea level in coastal zone of the Caspian sea and of the Urmia lake occurred simultaneously, also the occurrence of earthquake in Rudbar, Manjil, and parts of Gillan & Zanjan  ( June 1990 ) coincides with the period of the rise of the Caspian sea level in coastal zone.

**2-**The slight falling of sea level has started  from 1998 on the coastal zone, and up to middle of 1999 has fallen about 70 cm, and as an estimation it shall continue for the next four or five years. As long as this falling continues, (until reaching its normal

level), a short-cut as well as a certain manner by which my theory could be verified is to measure and control the rise and fall of sea level in the coastal zone and mid part of the sea.If these recordings show changes of the two in opposite directions; then my theory is proven valid. Since the sea surface level variations in the mid part of the sea is about 0.1 of the variation in the coastal zone, therefore the measurements & recordings should be done with a very high precision.

### 3-The variation of " g " and its influence on three other phenomena:

**3-1-** Sea water turbulence in the Bermuda triangle region is probably due to the vortical movement of the bulks of molten and doughy materials with quite different densities inside the earth, which causes the variation of " g " and consequently the resultant turbulence in that region.

**3-2-** Since in the occurrence of earthquake, an increase ( decrease ) in " g " value helps breaking of the concave ( convex ) layers of crust liable to breaking, by recognition of different forms of folded layers of the crust, and using geographical maps relating to the variational patterns of " g " value, probably one can forecast to some extent the occurrence of earthquake, kind of impulsions ( vertical or horizontal ), and whether the earthquake accompanies by much or less aftershocks.It should be also noted that as the variation of " g " value is not the main determinant factor for the occurrence time of earthquakes, therefore many earthquakes have happened and will happen even without the variation of " g " value ( and vise versa ). But the variation of " g " value certainly affects sea level and concerning earthquakes it is at least a warning signal.

**3-3-** If the cause of involuntary up & down of airplane turbulent movements in some part of some air routes ( the phenomenon known as air-pockets ) is due to variation of " g " value ( which is probable ) , then besides finding out the real cause of that phenomenon , it could provide an excellent guide in preparing the world-wide geographical map concerning the variation of " g " value on the surface of the earth.