3 Scientific evidence.

Our research on Atlantis involved some concepts of geography. That is obvious, since we already learned that Plato's Crtias is full of geographical details and so is the Timaeus.

In the last cenury, during '70s, the main theory of Atlantis, which hailed the Azores as the peaks of the submerged continent, collapsed irreversibly. In fact geologists found a way to explain the drift of continents, a theory that Wegener attempted to demonstrate in the early 1915. However, Wegener collected skeptical opinions since he was not able to explain the nature of the force that divided the Pangea in the actual continents (the Pangea was the original prehistoric continent from where the actual took shape). Thanks to the development of disciplines such as oceanography and geology scientists were able to find some lines where Earth's crust was fractured: that means Earth's crust isn't a unique stiff piece but a jigsaw puzzle where the pieces are consituted by earth clods, or plates. This discovery gave trust even to the studies of sismic and volcanic activity.

Certainly knowing Earth's structure and its moves is the better way for understanding Plato's conclusion which states “Among earthquakes and volcanic explosions Atlantis sunk thus giving birth to shallow waters”. An unequivocable scientific explanation of this fact provides a key for solving the mystery of Atlantis. Generally Earth can be divided in three different layers from the most internal up to the outer: nucleus, mantel and crust. The first ones behave like fluid matter, since matter itself undergoes high temperature and pression, while the last is rigid. More exactly, between crust and mantel, we can see another layer (partially fluent), the *astenosphere*. The thickness of crust is less abundant in the oceanic floor (5 km) and deeper around mountains (up to several tenths of miles). Wegener's theory, though didn't knew the engine of plate's moves, was correct: It explained not only the complementariety of opposite continents' coasts but even the similar distribution of sedimentary rocks they have and, in his opinion, the formation of some mountain chains such as andes and Himalaya. That's true and we shall see why. For the moment we have come to a first conclusion: continents can move. How?

There are two main classes of crust's moves, and they obey to twp different priciples of physics. the first kind is vertical, or *isostatic*. Why ? We said that crust lays over a layer that features an “amortizing” (fluid) behaviour: in fact astenosphere's rocks are easily deformable if compared to the crust and so, in a certain way, the last can float over. It's a mechanism similar to the one concerning the principle of Archimede, where we have solid objects floating in a fluid: they receive a trust from down directed to the top equal to the weight of the portion of fluid they engaged. so even the crust, where it's more compact, sinks easier (close to mountains) moving down and viceversa. An example of such mechanism can be provided by the Scandinavian peninsula. During the last ice age it was almost entirely covered by ice extensions up to 2 kms deep. Yhe melting of part of them relieved the weight that encumbered over crust and astenosphere. So, after the ice melting up to now, the peninsula slowly raised (today raises of some millimeters per year). That's because the trust from the bottom isn't adsorbed by ice weight any more. So this first movement of crust has a simple explanation and we must notice that it's very slow (not perceptable by our eyes, obviously).

Only during '70s thanks to deep soundings of the ocean floor such ideas could be verified. In fact they discovered that these floors are less flat than they thought and they were crossed by submarine *ridges*. Such ridges, in their center are featured by *rift valley*, which are openings of the crust that comunicate with the second layer, the mantel. Incandescent magama comes out from the mantel, reaching rift valleys, and then gets cold giving shape to the rocks, becoming part of the crust itself. To tell the truth, ridges, which took form just thanks to the cooled magma, point out the limits of plates and they are centers of insatbility since they feed volcanic explosions and sismic activity. Plates can move giving birth to a second kind of crust movement, the horizontal or *drift* one.

Plates can show different movements between them: they can converge (green), diverge yellow) or rub each other (red). the first tipology gives birth to mountains thanks to the superimposition of sedimentary layers and the resistance of rocks that get deformed when colliding. That is the case of the Himalaya, which was raised thanks to the pressure of the Indian peninsula. When plates converge can origin some layers of *subsidence,* where part of the crust, overlayed, comes back in the mantel becoming incandescent magama again. The points of divergenze are featured by a continuous flow of magma. When two plates rub each other usually cause earthquakes. In fact rocks, being deformed while rubbing, are charged of potential energy which is released in the shape of mechanical waves when they break. These waves are usually called earthquakes. A good example can be the Californian peninsula and the temible earthquakes of San Francisco. This city will be surely erased by strong earthquakes since they worked out that the energy entrapped in the rocks can be enough for giving a lethal stroke during the next breaking of the rocks (an inevitable event). Among other features of the ridges there are tha *faults*, da kind of trasversal fracture. Even the movements of drift are slow (few centimeters per year). Actually they think that inside the mantel, being fluid and comparing it to the sun, there are convective cells (an phoenomena similar to the boiling water) which would trust from the bottom (thanks to friction forces) the crust.

Continents, as we can see them today, moves with plates, which they are anchored and whose profiles don't coincide with their coasts but instead can be revealed by ridges and ocean deeps. the movement that mostly we are interested in is the isostatic one, because in accordance to Plato a big continent vanquished under the waters ina single day, while the Scandinavian peninsula took some thousand years for raising of some centimeters! It's obcious that a continent could sunk only with its plate. On the contrary we can imagine what could happen. Let's take a piece of marble and try to make a piece of its area sink over it . Hitting that with a hammer we discover we just brok the piece of marble wthout any sinking. This fact, translated in giant measures, causes great catastrophes: lthe big and fast breaking of the crust would leave too much potential energy and would give birth to dynamic forces that would kill any existing being (thanks to sismic waves, eartquakes and so on). Obviously the killer would be the energy gathered during a long span of time and then the events that would establish a new geographical equilibrium. If existed a force able to make a plate sink it'd be just a bit different, because the plate would rub in its limits with other plates thus causing similar events. Of course it's likely that forces able to do such things never appeared in the history of Earth. Meteorites just leave some circular holes (craters) in the ground and dust in the atmosphere and so we can't speak of sinking continents. We have some examples of this last case in Earth and, above all, in the Moon. We do not know of any large meteorit that has fallen in to the Earth able to destroy an area like Atlantis. A meteorite as big as Cipro (or even smaller) would be enough for causing unreparable damage to our safety. Now it's hard believing that Atlantis, with all its great mountains, could have been submerged by waters ina single day. To tell the truth, it's impossible. There can be only one more possibility: the raising of the sea level. In fact, while the surface of the crust has been always modified by atmpospherical agents the sea level has been never costant. When ice starts to gather at the poles, in some periods, the sea level lowers and viceversa. Each time an ice age comes to an end the ice melts causing the raising of sea level. Actually the sea level raises some centimeters per year and the ice gathered in Antarctica could, if melted, raise the level of 200 m. Such a raising occurred already at the end of the last ice age (Wurm). In fact, about 12,000 years ago, ice, which covered great part of Europe up tp the Alpes, smelted raising the sea level. Scientists worked out that they caused a raising of 140 meters (anyway not more than 200 m) but it can be considered a variable data since different tecniques of measurement provided results ranging from 90 meters up to 180 meters. People study this fact on the theorical amount of ice which previously gathered in the world and on core - borings of ocean floor which at some levels can show rocks cooled under atmosphere. Actual data show that continents are in the same position they were 12,000 yeras ago, except the fact their coasts were flooded by the raising sea level. Only small island of few kmq could be completely submerged by such a raising. Mountains, plateaus, hills and other features of the five continents are today in the same place they were 12,000 years ago, there is no doubt about that. Even Atlantis, if really existed, is in the same place where it was. Luckily enough the South America is a perfect copy of that.

That means that, accepting the date of Atlantis destruction at 9,650 AC, each actual sea floor under 250 meters was still a oceanic floor when Atlantis flourished. Atlantis' city, being placed in a plateau and defended by mountains (we remember that the concept of mountain recalls an elevetion of at least 600 meters), couldn't be flooded by oceanic waters, but just by the waters of an inland sea; In our case we are speaking of lake Poopò that, from geologic data, resulted to be an inland sea, engaging all the rectangular plain, in 38,000 AC and then just in 9,000 AC. The conclusion of Plato regarding the doom of Atlantis (sunken) of course couldn't take place. We can think that the homonymous city, heart of the empire, was instead flooded. Andes, as we saw, took form thanks to the drift of South America's plate, which rubbed against the next one (on its left). So under andes there is a zone of subsidence, which gives birth to volcanoes and earthquakes. Atlantis was in fact destroyed by such natural phoenomena and by heavy rains. All these facts really happened at the end of last ice age and gave birth to a transitory time which brought the geography of Earth from an equilibrium to another. It was a necessary time (because, each physical quantity must change with continuity) which in earlier times probably caused even the extinction of dinosaurs.

In any case we certainly know about the changes which happened at the end of the last ice age, but scientists aren't able to explain what caused them yet. There are some different theories, more or less reliable. From one side they think some big celestial bodies fell in our planet in the shape of meteorites. Another explanation could be the transitory passagge of a big body that had gravitational relationship with Earth. We can say nothing for sure but it seems likely something changed the inclination of earth's axis thus making possible some cold areas get more solar rays (in other words, rays now hit the surface with an angle next to 90 degrees) and viceversa. So that from one side we had a gathering of ice (Siberia) and from another they melted. Obviously the different inclination of the axis changes also the celestial map of constellations. Regarding this fact we're interested now in commenting Atlantis' sudden disappearance. Probably the tale of Atlantis was told by survivors, people who fled out from South America in any way. After the disaster, when people came back to seek for Atlantis, they followed wrong coordinates (because the axis changed position) maybe going off shore. We know that constellation were a valid reference for people whrn sailing. Alternative we can just hypotize it was the capital city (a sort of island ringed by water canals) to be flooded and not the island. Of course volcanic activity, as lot of people believe, can't nake big islands sink. Think that the explosion that occurred at Thera between 1600 – 1520 AC after making much noise opened a hole of about 11x7 kms and 180 meters deep and, like the explosion of Krakatoa in 1883, has been one of the gratest explosions in the last thousands and thousands years. Of course lot of Thera disappeared because it was consituted mostly by the same volcano, and so speaking of sinking isn't so exact: in this case we have a disintegration. We see that this fact can olnly interest places next to the volcano. Effects of ashes, machanical waves and some other can affect even distant regions (e.g.: Thera's disaster raised waves and ashes that weakened Crete's civilization) but the physical digregation of crust interests only the point of explosion. So it's abvious that a strong volcanic activity can make only small island disappear or can do craters in continental shelfs. Andes are full of volcanoes but they're still there....

Looking at ice distibution during the last ice age we can assume the poles were slightly moved than the actual positions, being the North in Terranova, and the South in the Pacific coasts of Antarctica. So ice covered Canada, Greenland and North Europe up to Alpes in the North, While in the South most part of Antarctica was buried under the ice except the part closer to South America. Other continents could have temperate climes. For example in North America and siberia we had the presence of many mammoths. The former distribution of ice is possible thanks to geologic analysis and even to a zoologic one . Even the extincted saber thooted cat lived in America thus shwing there were a fine clime.

At last, once we found a geographic area that fits all Plato's details (and they're many) we've surely found Atlantis. This area is actually accessible since nothing that Plato said about its disappearance really happened.