Geophysical Research Abstracts, Vol. 7, 02418, 2005
SRef-ID: 1607-7962/gra/EGU05-A-02418

Earthquakes - Volcanoes (Causes and forecast)

E.Tsiapas
KOSMOS Institute of Geophysical Research

EARTHQUAKES - VOLCANOES (Causes and Forecast) Elias Tsiapas,Researcher Paraliakos, 10,Nea Styra Evia GR 34015 EARTHQUAKES- VOLCANOES Cause: The earthquakes are caused by: A) The differentiated revolution of lithosphere- pyrosphere, the lithosphere having slower speed of axial revolution than the underlying pyrosphere (the pyrosphere's revolving speed is progressively increasing deeper to the core which is turned in higher speed than the pyrosphere's mantle and the lithosphere causing thus the development of the Earth's electromagnetic field). B) The existence of "negative" projections and cavities at the lower part of the lithosphere. C) Various components' motion found mainly in liquid form in the space between lithosphere and pyrosphere (MOHO discontinuity). Some of these components are: water, carbon dioxide, sulphur dioxide, hydrogen sulphide etc. continuously coming up from the pyrosphere. The above components are found in relatively low quantities throughout the pyrosphere's surface without causing major earthquakes. When, however, at some point in the space between lithosphere and pyrosphere, these components are concentrated in high quantity, their motion to the east, causes earthquakes, eruptions and other phenomena in the following procedure: The shape of the continents results from the original continent's splitting, this is the reason that there are so extensive superficial abnormalities such as mountains, mountain chains as well as, under them, respectively "negative" projections of larger sizes there (Isostasy). Such projections are also found far from the limits of the lithospheric plates under mountains and mountain chains inside compact plates - continents. Further projections are also found in the area where the tectonic plates converge (Sinking - mounting).In the western side of the projections: more and major earthquakes are caused. The lithosphere consisting a 2% of all the earth's mass, rotates in lower (differential) speed than the pyrosphere because of: A) Lower initial orbital speed of the solid pieces of which the original continent and the ocean crust were formed, B) The different state (solid) from the pyrosphere (liquid),C) The attraction of the moon and the sun, D) The inactivity and E)

The hydrospheric action (tide). Besides, the existence of the mentioned above liquid components in the space between lithosphere and pyrosphere, contribute to diminished friction among them.The above phenomena result to the lithosphere's retardation by one rotation every about 100 revolutions of the pyrosphere. At the northern hemisphere of the solid crust the continental mass is larger than that of the southern and with the earth's revolution a higher centrifugion develops and this has as result that the magnetic and the geographic axes do not coincide (shaking). Because of the lithosphere's lowest revolving speed than the pyrosphere's, at the western point of the projection (penetrating into the pyrosphere) higher pressures prevail over those ones at the eastern areas. When in an area between the lithosphere and pyrosphere a high quantity of fluids is concentrated, these fluids move, carried away by pyrosphere from west to east in almost the same speed to this, with small alterations due to the morphology of the lithosphere, that is, it is lower under the continental areas, presenting many "negative" projections, while, when they move under normal flat lithospheric surfaces, they are at large extent, of small thickness and higher speed.When, however, on its course the mass of these fluids meets a projection, it is gradually concentrated at its western part, displacing the pyrosphere. The separation of the fluids from the pyrosphere is, there, clear. Because of increased pressure and their motionless state, their penetration in the lithosphere is high and on their ascent to the surface, because of decreased pressure, they are aerified. These components' penetration causes various phenomena, which are visible on the surface, over this place, with or without special instruments. Some useful forerunning phenomena for the forecast of the earthquake's epicentre are: A) The crust increased temperature over this area, B) Changes of the level and temperature of underground waters, C) Sulphurous smells and, if in the area of the foreseen epicentre there are seas or lakes, death of fishes or change in their behaviour are caused to the water because of these components' dissolution and D) Electromagnetic alterations etc. Such phenomena are intensively noticed about 2-3 days before the earthquake. When these liquid components causing the earthquakes are concentrated at the western side of a projection, they displace the pyrosphere and occupy this area until they reach the lowest part of this projection.Just when the quantity of the fluids exceeds the capacity of an exact area, they start to escape under the projection with direction to the east. Since the pressure at the eastern point of the projection is significantly lower, these fluids, on their escape, in the form of eruption, are aerified, their flow is accelerated and all their mass pass to the eastern part of the projection (BERNOULLI phenomenon). During their escape, significant phenomena are caused such as: 1) Strong sound wave (roar before the earthquake),2) Overheating of gasses, because of inside friction and ionisation, resulting to a strong electric field, because of which flashes are caused to the atmosphere (Electric discharges) over this place,3) Depression at the western side of the projection and 4) The place, which was

previously held by the above, mentioned components, now it is occupied violently by the liquid mass of pyrosphere, tending to follow the course of the gasses. But because of its highest viscosity it strikes against the projection causing an earthquake, cracks of the lithosphere and superficial destructions, mainly at the eastern part of the epicentre. Earthquakes also take place at "negative" cavities of lithosphere. Their differences from the earthquakes, taking place at the western points of the "negative" projections of lithosphere, are the following: A) The direction of the pyrospheric striking is vertical to the lithosphere, that is from the lower to the upper part, B) They are mainly of small depth, C) The energy emitted from the striking is distributed over the lithosphere in circles around the focus. The intensity of the earthquakes depends mainly on the quantity of the fluids, the capacity and the angle of the projection. In case that the earthquake happens under the ocean crust the energy from the striking of the pyrosphere on the crust, is transferred to the sea water, resulting to large water masses' displacement (TSUNAMI). Besides the under the sea earthquakes and the accompanying consequences (strong electric fields- enrichment of water with various toxic gasses - strong vibration) cause some problems and even death to the fish found in this area. At some points the ocean crust is particularly thin. This is mainly due to the continuously happened cracks of the lithosphere. e.g. in the area of Vermudes triangle". When under such a cavity a high quantity of fluids is found what follows are the above-mentioned phenomena for the earthquakes. But, here, we do not have a earthquake because, at the same time with the escape of gasses, at the eastern point and the depression noticed in this area, because the curst is thin and the pressure exerted on it by the underlying ocean water is high, the crust cracks and the area which would be occupied by pyrosphere and cause an earthquake, is not occupied by water.Over this point an instantaneous fall of the water level is noticed and in the atmosphere a depression and cathodic air currents. Besides, when the water touches the uncovered pyrosphere, some quantity evaporates, and a dense fog is locally formed. The length of these phenomena is short, because when the water touches the pyrosphere the cracked crust is quickly restored and a calm is noticed again.

PRE-SEISMIC - POST-SEISMIC TREMORS When a high quantity of fluids is concentrated at the western part of a projection, some time, some hours before the main earthquake some quantities of fluids escape causing, then, some small tremors (pre-seismic tremors). When at the western point of a negative projection (mountain root or lithosphere's sinking front) a strong earthquake takes place, this projection at one part cracks and many other smaller projections are formed with such angles that whatever small quantities of liquid components pass under there cause numerous earthquakes of less intensity because of less capacity (Post-seismic tremors). The frequency and the intensity of the "post-seismic" tremors are diminished as time passes, because the angles of these projections because of frequent strike of the pyrosphere become

dull.However, at the so-called "negative" cavities the post-seismic tremors are least. For the above-mentioned reasons every earthquake (pre-seismic tremor, main earthquake or post-seismic tremor) is caused by different masses of liquid components passing through this area.

VOLCANOES As it was above mentioned when an earthquake takes places, it causes cracks to the lithosphere. The cracks in flat areas close relatively quickly because of plasticity and carried deposits, while the cracks on the mountains and mountain chains are slower restored. If in a short period under this point a significant quantity of fluids is concentrated again (cause of earthquakes) they come out of cracks towards the surface, aerified because of pressure difference, accelerated, their temperature is significantly raised, the surrounding rocks melt, enlarge the existent cracks and carry away with them a quantity of magna (lava).Besides, very frequent earthquakes activity is noticed at the converging limits (sinking - mounting) of the lithospheric tectonic plates. According to the above mentioned the eruptions follow the earthquakes in some exact areas. The eruption is accompanied by usually low intensity earthquakes because the gasses come out gradually and not in a short period of time as it happens with the earthquake. The gasses, start to come out when their origin reach the western point of the projection. While, during the earthquake's activity, the gasses escape to east, after the area is filled with them, at the western point of the projection. The activity of a volcano is completely discontinued, when there are not any liquid components under the crust of the volcano, though the crater remains open.

FORECAST OF EARTHQUAKE As it was above mentioned the earthquakes are caused because of lower revolving speed of the lithosphere than that one of the pyrosphere and the existent large masses of fluids-gasses under the lithosphere, moving from west to east, carried away by pyrosphere. When in their course, these components meet projections or cavities of lithosphere, they cause earthquakes. The forecast is possible by the following ways: A) From statistical studies, with a earthquake as starting point, we may know: a) the course to east followed by the fluids which caused this earthquake, b) the projections they'll meet in their course, c) the lime they'll take to reach them and d) the intensity of that expected earthquake. For Greece we take as starting point the earthquakes taken place in Western America between the Equator and the 45th parallel circle. The runways which the fluids will follow causing earthquakes pass under the crust of the American continent, the Atlantic Ocean, converge to Gibraltar, Western Mediterranean Sea and arrive under Greece where they'll cause new earthquakes of proportional intensity. The required time for such a running is about 50 days. After Greece, they continue their cost eastwards. B) For a more accurate determination of the epicentre we use the most reliable forerunning phenomena being the crust's raised temperature localized to a cone having as top the hypocentre

and centre of base the epicentre of the expected earthquake. By means of a thermometer's set we observe the increase of temperature, which can be easily found mainly in underground waters, a few days before an earthquake, takes place. So, we know exactly where a high quantity of fluids has been encircled and their escape eastwards will cause an earthquake. With the combination of both these methods the earthquakes may be accurately foreseen. Let's notice that the forecast stops being effective if an eruption takes place, located between the area where the earthquake took place, which is taken as starting point, and the area where the new earthquake is expected to happen. This means that the fluids- gasses, which would cause the earthquake, escaped to the atmosphere from the volcano's crater. E.g. for Southern Greece the forecast stops being effective if 5-7 days before, Aetna and Stromboli volcanoes in S. Italy explode. The frequency and the intensity of the earthquakes at international level are diminished when there is a strong volcanic activity and vice versa. The elevation of the earthquakes and volcanoes is alternating every about six months.

LONG-TERM FORECAST OF EARTHQUAKES When in an area of high intensity an earthquake takes place, a part of the projection cracks and its angle becomes obtuse when in a short period of time a same or higher intensity earthquake does not take place in this area. The required area for the restoration of this projection (either by thickening or sinking of the tectonic plate) is statistically calculated.

EARTHQUAKE'S NEUTRALIZATION Some earthquakes may be neutralized as follows: By the ways we above mentioned we observe that under the lithosphere a concentrated high quantity of fluids move, which, if they pass under cavities or projections they'll cause earthquakes. If in their course a volcano is found, we contribute to the opening of the crater in due time (with explosives which we have previously placed into the crater). The explosives are fired when the origin of the fluids arrives in under the crater (this becomes known by the methods we apply for the forecast of earthquakes). These components coming out, gradually, from the volcano, neutralize the cause of the earthquake farther easterly. Besides, by this applied method the possibility of more violent and destructive eruption is diminished, because with the gradually coming out gasses a high quantity of lava is impeded to come out.