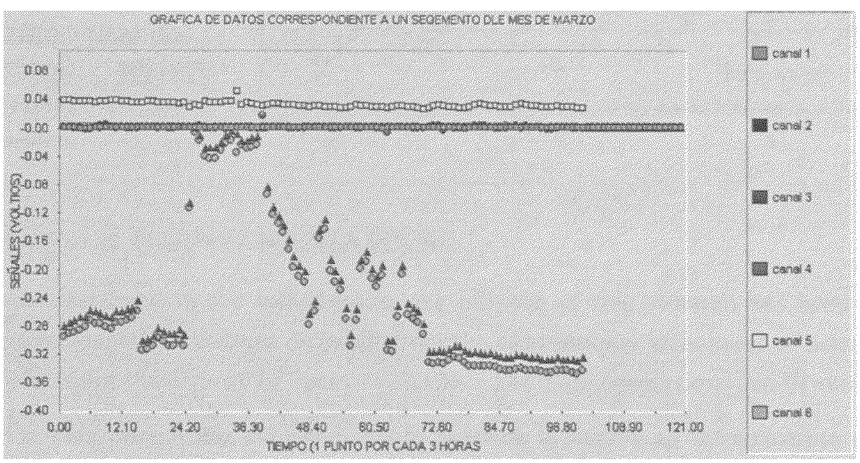
The next graph displays data corresponding to the period march 3 to march 22, 2,000. As the graph shows, channels 3 and 6 continue to display large signals even after the eruption of February 29. However, the other channels do not show any significant features. In further visits to the Patrocinio Station, it was possible to observe how the volcano diminished its activity in a progressive fashion, initially with frequent, periodic eruptions, and later with minimal fumarolic activity in the crater.

Comparing graphs 1 and 2 one can summarize that the effect of the magmatic eruption is best displayed as large-magnitude signals or anomalies, in the order of 300 to 400 millivolts According to the hypothesis presented, this is to be expected if one considers that during the eruption there was an abrupt rise of the magma column to the surface creating the pressure variations in the rocks which induce the self-potentials.

As it can be seen in graph # 2, between the 6th and the 8th of March channels 3 and 6 return to the values displayed in early February, in the order of - 40 millivolts. However, long after the eruption, these channels display different magnitudes in the order of -340 millivolts. Unfortunately, at this point there is no apparent justification to explain this odd behavior. Rainfall, which could affect the behavior of the electrodes, is not present during this time of the year.

In the next months, from April until June, there were no significant signals of any kind. Only during the rainy season can one observe small signals, probably due to small phreatic-type eruptions, which took place in august during the rainy season.



Graph # 2 signals detected during the month of March, after the eruption which took place on February 29. This graph spans from march 3 till March 15.

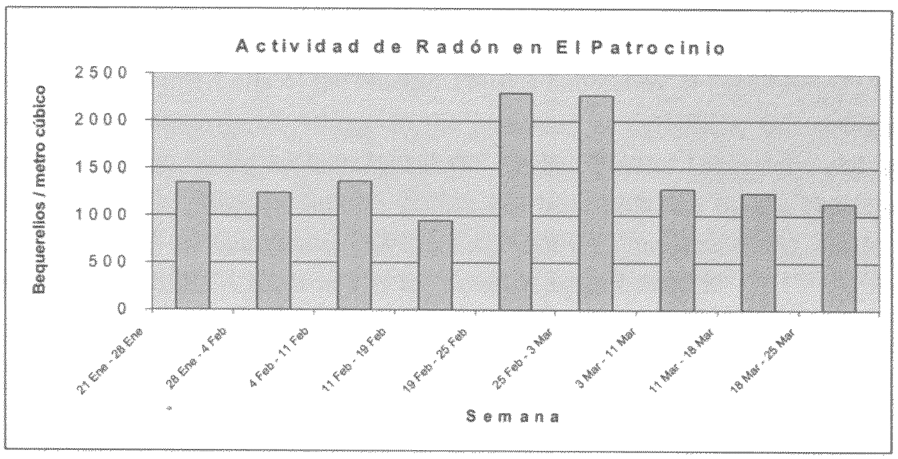
RADON:

As in the case of electro-telluric signals, a precursor-type signal was also detected via the radon monitoring, which preceded the eruption by a week. As previously mentioned, acrylic-type detectors were employed for this experiment. Graph # 3 displays data gathered for the El Patrocinio station. Taking into account that the eruption took place on February 29, one can conclude that there is a signal prior to the eruption. In this case, the entire signal is recorded in a two-week period which begins on February 19 and ends on march 3rd.

Given the fact that the data were gathered during the dry season, one cannot attribute this feature to atmospheric phenomena. Furthermore, the detected signals on the order of 2,400 Bq/ m^3 are beyond the average value recorded for this station in 1,996 which has a magnitude of 1,200 Bq/ m^3 . Additionally, the feature is well beyond an amount surpassing three standard deviations, which is on the order of 300 Bq/ m^3 for this station as measured in 1,996.

This analysis via comparison with averages and standard deviations allows for better sustainability of the results obtained thus far, strengthening the hypothesis that a major magmatic eruption is preceeded by an abrupt increase in radon activity

Graph # 3 radon activity monitored between January and March 2,000. The eruption took place on February 29, 2000. Note the abrupt signal lasting two weeks.



CONCLUDING REMARKS

As mentioned in the introduction, the purpose of this research has been to design and implement experimental techniques different from the conventional techniques of seismology and geo-chemistry to monitor the activity of Pacaya volcano The main conclusions can be summarized as follows:

1. This project has shown that it is possible to deploy an infrastructure of geo-physical sensors to monitor pre-eruptive activity.

2. In relation to this particular research, during the period in which data was gathered, a large magmatic eruption took place, as well as very small phreatic eruptions, which show that these techniques can be used to monitor such volcanic activity. However, it is necessary to recognize that one single magmatic eruption cannot yield definite proof on the use of these techniques alone to monitor volcanic precursors. Statistically speaking, one should put these techniques to further tests in order to demonstrate their effectiveness in the determination of precursor signals, given the fact that at this time only one case has been tested so far.

3. In relation to the magnetic monitoring, the results are still inconclusive. Although the existence of precursor signals cannot be ruled out, it is probable that such signals associated with the ascent of the magma column are under the threshold of detection of the techniques implemented in this project, and thus, more precise instrumentation is needed to detect such signals.

4. In the case of radon, this research has been fruitful in displaying the fact that this technique shows promise in the detection of precursor signals, which can be attributed to magmatic eruptions. Such a signal confirms the hypothesis presented by R. García et al. [17] in relation to enhancements in radon activity prior to an eruption of this type.

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