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Editor's Note: A correction published in Eos on April 13, 1999, was incomplete and did not recognize the coauthor of the work cited in the correction or the affiliation of the primary author. Therefore, we have published the authors' letter below in its entirety.

Support for VAN's Earthquake Predictions Is Based on False Statements

Uyeda [1998] (Eos, November 24, 1998) made the following statement in support of the work by P. Varotsos and coworkers (the so-called "VAN" group), who claim to be able to predict earthquakes in Greece using geoelectrical observations. "On March 5 and 26, 1993, strong earthquakes hit Pirgos city, Greece. Despite heavy damage, there was no loss of life because the citizens were prepared due to VAN predictions." However, as we explain below, this statement is completely false.

In early 1993, an earthquake sequence started in southwestern Greece close to the city of Pirgos. The sequence was well monitored by the Greek national seismographic network, which is operated by the Institute of Geodynamics of the National Observatory of Athens (NOA). Several moderate shocks were recorded in the few days up to February 14, 1993, when an event of $M_L=3.9$ took place. (All magnitudes in this letter are the local magnitudes M_L given in the monthly bulletins of NOA, also found in the Internet pages of NOA: <http://www.gein.noa.gr/>).

On the following day, articles appeared in three of the most respected newspapers in Greece (*Eleftherotipia*, *Ethnos*, and *Nea*) in which Varotsos was quoted as claiming that he had "issued a successful prediction to 22 international research centers" and that he

had informed the Greek authorities prior to the quake.

On February 25th, the seismic activity near Pirgos resumed after a period of quiescence. On the same day, an article appeared in the newspaper *Eleftherotipia* in which Varotsos was quoted as stating that an earthquake of magnitude 6 would strike Pirgos. This news reached the citizens of Pirgos and panic overtook the general population, many of whom chaotically fled from the city.

On the next day, February 26th, the state district attorney initiated an investigation into "the distribution of false information to the people of Pirgos." That evening Varotsos was present in the city of Pirgos. He appeared on the "ANT1" national TV news program, and stated that it was not his fault that the people had panicked. He urged them to return to their homes in Pirgos because "...VAN has no indications of a forthcoming earthquake ...". These statements were also reported in the Greek press (that is, February 27: *Nea*, *Eleftheros Tipos*, *Apogevmatini*; February 28: *Apogevmatini*; March 2: *Eleftheros*, *Eleftherotipia*, *Avriani*, *Nea*).

On March 5th, an earthquake of magnitude $M_L=5.3$ occurred more than 120 km south of Pirgos in the Ionian Sea. Varotsos thereupon claimed to the Greek press that: "...his predic-

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tion was right and that the earthquake was mislocated by NOA and that it should have been located around 50 km more to the north..." However, he said nothing about the fact that his prediction about Pírgos had been publicly withdrawn several days earlier. Note that the macroseismic evidence was fully consistent with the NOA's epicentral solution. (See the following newspaper stories: March 6: *Mesimvriini*, *Avriani*, *Apogevmatini*; March 7: *Eleftherotipia*, *Imerisia*; March 9: *Eleftherotipia*, *Nea*.)

On March 18th, an earthquake of $M_L=4.9$ took place 100 km northwest of Pírgos, and was felt near Aegion in the center of the Gulf of Corinth. Varotsos again publicly claimed a successful prediction, and said that "...the epicenter was again mislocated by NOA...by more than 70 km to the west...in the Ionian Sea." Varotsos's statement once again was contradicted by macroseismic evidence that supports NOA's solution. (See the following newspaper stories: March 20: *Ethnos*; March 21: *Apogevmatini*.)

Seiya Uyeda, a co-worker of Varotsos, arrived in Athens on March 21 and was quoted in Greek newspapers as saying that "Varotsos should be given a Nobel prize because ...VAN is the biggest invention since the time of Archimedes..." (March 21: *Eleftherotipia*, *Kathimerini*; March 26: *Eleftherotipia*). At the same time, Varotsos and Uyeda reported new evidence for an impending earthquake from their Ioannina station [see Varotsos *et al.*, 1998a] and on March 24 they sent a telegram to the Minister of Public works saying that "...they felt that their 'new evidence' could not be trusted to the government because of previous leakage to the public of VAN's predictions..." No prediction was made public by VAN, and on March 26th the city of Pírgos was hit by a series of moderate earthquakes followed by a main shock of $M_L=5.0$.

One woman died and nine people were injured. However, it is absurd for Uyeda to claim that VAN issued a successful prediction that saved lives, as not only had no public prediction been issued by VAN in the several weeks before March 26, but Varotsos had in fact publicly withdrawn his earlier prediction. Furthermore, the March 26 earthquake was too small to cause significant damage in any event.

Uyeda's [1998] statements about VAN's physical methods are also false. His statement that "Magnetotelluric noise can first be eliminated [by VAN's methods] because it appears on all dipoles simultaneously," is unfounded. If by "magnetotelluric noise" he means the natural electromagnetic field, it is well known that electric field measurements by themselves (these are the data VAN are using) cannot determine the transfer function between the Earth's electric and magnetic fields over the entire frequency bandwidth nor its variations with time, which is required to remove the induction effect from VAN's measurements in real time.

Chouliaras and Rasmussen [1988] showed that the induction effect can be efficiently removed by the classic magnetotelluric method, but that the simultaneous measurements of both the electric and magnetic fields are essential to truly distinguish between a crustal electrical signal and "noise."

On the other hand, by "magnetotelluric noise" Uyeda might mean noise from industrial sources, which is VAN's biggest headache. Such noise cannot be removed by any presently known method, including VAN's. Consider the noise emitted from the "antenna park" of communications transmitters on the outskirts of the city of Ioannina. This facility is just a short walk from VAN's observatory on the Mitsikeli mountain. A recent magnetotelluric survey [Pham *et al.*, 1998] showed that

the noise emitted from this "antenna park" has the same "fingerprints" as the signals that VAN claim as geoelectrical precursors of earthquakes.

Uyeda said that: "The VAN group apparently accomplished [the] task of noise reduction in their data analysis techniques." We disagree completely, but even if this statement were true, why would anyone want to install a station for monitoring minute changes in the Earth's electric field in an industrial area in the first place?

Most of VAN's "predictions" during the early 1980s were based on data from their Pírgos observatory in Northwestern Peloponisos [Varotsos and Alexopoulos, 1984a,b]. When Chouliaras and Rasmussen visited that station in the spring of 1983, they discovered a mesh of wire used as an antenna for a radio transmitter buried under VAN's station. A Greek soldier manning the site said that the radio signals could be received "as far away as Germany."

After more than 17 years of research, VAN have not presented any satisfactory evidence that the signals they are observing are being generated by a hypothetical preparatory process of earthquakes at distances over 100 km from their observatories. The few signals that have been published in VAN's papers are usually insufficiently presented (that is, restricted windows of data, missing units, lack of technical information, etc.). See, for example, Figure 2 in Varotsos *et al.* [1998a]). It is a basic principle of science that raw data should be made freely available so that published work can be independently replicated, but VAN flatly refuse to do this. Furthermore, the recent failure of VAN's prediction based on signals observed at VAN's Ioannina observatory on June 21, 1998, which VAN said "might correspond to an EQ

activity with $M=6.0$ and AN epicentre probably lying between ZAK and the area labeled I" [Varotsos *et al.*, 1998b], shows that no confidence can be attributed to data from VAN's Ioannina station.

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References

Chouliaras, G., and T. Rasmussen, The application of the magnetotelluric impedance tensor to earthquake prediction research in Greece, *Tectonophys.*, 152, 119-135, 1988.

Pham, V. N., D. Boyer, G. Chouliaras, J. L. Le Mouél, Rossignol, and G. N. Stavrakakis, Characteristics of electromagnetic noises in the Ioannina region (Greece): A possible origin of so called "Seismic Electric Signals" (SES), *Geophys. Res. Letters* 25, 2229-2232, 1998.

Uyeda, S., VAN method of short-term earthquake prediction shows promise, *Eos, Trans. AGU*, 79, 573-580, 1998.

Varotsos, P., and K. Alexopoulos, Physical properties of the variations of the electric field of the Earth preceding earthquakes I, *Tectonophys.*, 110, 73-98, 1984a.

Varotsos, P., and K. Alexopoulos, Physical properties of the variations of the electric field of the Earth preceding earthquakes II, *Tectonophys.*, 110, 99-125, 1984b.

Varotsos, P., K. Eftaxias, M. Lazaridou, N. Bogris, and J. Makris, Note on the extension of the SES sensitive area at Ioannina station, Greece, *Acta Geophysica Polonica*, 46, 55-60, 1998a.

Varotsos, P., K. Eftaxias, M. Lazaridou, N. Bogris, and J. Makris, Additional evidence in the extent of the SES sensitive area around Ioannina, *Acta Geophysica Polonica*, 46, 273-275, 1998b.