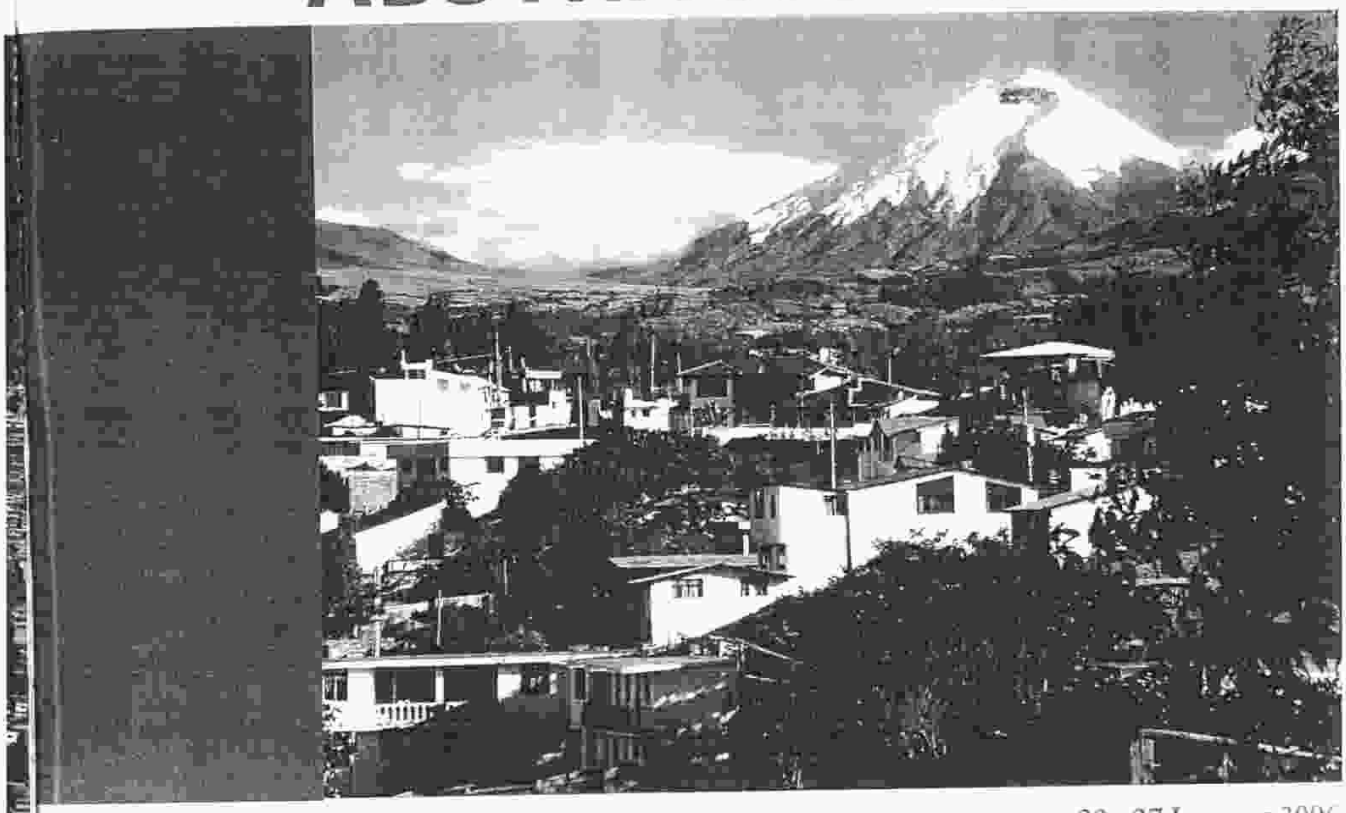
ABSTRACTS VOLUME



23 - 27 January 2006

Fourth Conference
Cities on Volcanoes
IAVCEI
Quito-Ecuador 2006

data distribution, 76 maps showing baseline values distribution, 76 maps showing anomaly values distribution, 8 maps for regional variability of factor scores of elemental associations resulting from R-mode factor analysis, 13 land use maps for toxic elements selected following the action criteria established by Italian Law (D.M. 471/99), and 10 maps showing radioactivity values distribution. Comparison of Pb isotopes ($^{206}Pb/^{207}Pb$ vs $^{208}Pb/^{207}Pb$) in volcanic urban soil was useful to discriminate between anthropogenic contribution from leaded fuels and natural contents (background) in Campi Flegrei and Vesuvius soils. Geochemical maps produced for Naples are very useful because they help to distinguish background values being related to the alkalic volcanic soils on pyroclatic rocks of Campi Flegrei and Vesuvius from baseline and anomalous values being related to anthropogenic activities (motor vehicles and industrial plants). In this way, high hazard areas for human health, which exhibit an heavy metal contamination have been, unambiguously, individuated.

A new gravity map in a densly inhabited area (Ciampino and Marino Districts) of Colli Albani Volcanic District characterized by the occurence of geochimical manifestation

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The Colli Albani is a quiescent Volcanic District, located almost 20 Km southeast of Rome. It has been active since at least 600 ka and it belongs to the potassic and ultrapotassic Roman Magmatic Province, a northwest-trending chain of volcanoes that developed along the Tyrrhenian Sea Margin of Italy during middle and late Pleistocene time.
The volcanic history is dominated, in the first time, by the explosive eruptive activity (Tuscolano-Artemisio Phase), that formed the caldera; after a years of dormancy the activity took place in the centre of the caldera, Monte delle Faete Edifice, was characterized by effusive and strombolian activities. The Albano maar (< 70 ka) represents the most recent activity of the hydromagmatic phase and cannot be considered extinguished yet. Infact, at present, the area is characterised by almost continuous low-level seismic activity (Amato et al., 1994, 1995) and by the presence of an intense deep CO_2 degassing process, which causes widespread gas emission (CO_2 and H_2S), and numerous soda water discharges (Chiodini & Frondini, 2001). A broad area N of lake Albano (Rome, Ciampino-Marino) is the one most strongly characterized by the occurence of geochimical manifestation of a still-active subvolcanic system which are hazardous factors for the resident population. This anomalous degassing area was found to be coincident with positive gravity anomaly ("Ciampino high", Di Filippo & Toro, 1995), drawing to the surface, deep structures with its geometry.
In order to define better the deep geological and structure setting between Ciampino and Marino Districts, gasses are able to reach a suitable migration rate for the formation of soil-gas anomalies throw faults and fractures, and geological distribution in sub-surface (sedimentary substratum, mainly consisting of marine sand and sandy clays of Plio-Pleistocene age, who filled the extensional basis, and Mesozoic-Cenozoic carbonaceous-marly-siliceous succession from Umbro-Sabina Series), a new gravity map was costructed using data from the 1:100,000 Gravimetric Map of the Italian Geological Service, gravity surveys performed by Di Filippo & Toro in 1995 and from recent gravity surveys performed by the authors that included 300 new survey stations.
On the basis of this information a new residual anomaly map has been prepared by substracting the first order Regional Field from Bouguer anomalies. The residual anomaly map is very detailed and represents the most suitable picture for understanding the structure of the prevolcanic substratum. The superficial geological data, the drill log data, and metamorphic xenoliths from the eruption of Colli Albani (Funiciello & Parotto, 1978) and gravity data have been analyzed all together in order to know sub-surface structure of this area and make a three-dimensional gravity model. In order to define the heterogeneity of the lithotypes some sections have been prepared by gravity model.

Impact of degassing events on environment and human settings near Poás Volcano; Costa Rica.

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Poás volcano (10°11'15"N, 84°13'48"W, 2708 m a.s.l) is located N of the Central Valley, where the most developed and populated cities are located downwind. Historic reports since 1828 to the present show various levels of activity. Strombolean activity was documented in 1910 and 1953-1955. During these last 50 years there have been alternated episodes of phreatic and gas activity. These eruptions send important volumes of toxic gases to the surroundings originating the desiccation of the hot-acid lake. In such cases even fine sediment is carried by prevailing winds to greater distances, provoking negative impacts on natural vegetation, commercial plantations, infrastructure and on human and animal health. The loss of employment, family disintegration, crop reduction and lost capacity to receive loans from banks are also part of the effects during extraordinary events.
The most impacted area is located downwind, W and SW of the volcanic source. At times, the prevailing winds get inverted impacting plantations, pastures and the local economy at villages located S of the summit. Since 1980, three extraordinary degassing events have taken place (1989-1990, 1994 and 1999) impacting differently several of the mentioned areas. Impact also varies depending on the magnitude of the event, season and elements under influence.
Acute cases of effects on human health (allergies, respiratory problems, eye irritation, etc) have not been systematically documented. Drinking water within the National Park was seriously affected during the 1989-90 event, causing the authorities to declare the water *non-safe* for drinking and even to close the Park temporarily. Drinking water used in affected communities depend on catchment in the upper areas of streams closer to the summit, hence gastric effects due to consumption has to be properly studied.
Natural and commercial forests have faced partial and total degradation due to necrosis and rapid withering related to dry and/or wet acid deposition. Exotic species showed to be more prone to suffer. Important patches of annual and semi-annual crops have been severely affected by similar effects. Coffee, pasture, vegetables, and other commercial products have sensibly decreased their yield due to abnormal defoliation, loss of flowers and tender fruits. In the same sense, cattle have endured, cases of diarrhea, weight loss and other digestive disorders. Lastly, corrosion over metallic structures is a widespread concern. More often than in other non-volcanic zones, barb wire, roofing and fences have to be often replaced. Cement, wood and other construction elements are also, although mildly, affected by local acidification.
Due to Poás location and activity, prevailing weather conditions and location of important urban and rural communities in its surroundings, it is timely to take proper measures to reduce environmental, economical and social effects to this already disadvantaged area.