

## K/AR, FISSION TRACK DATING AND MAGNETOSTRATIGRAPHY

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The purpose of the present review is to provide a bibliography on the studies conducted by Italian researchers concerning K/Ar and fission track age determinations and paleomagnetic measurements of the Quaternary in Italy. The general criteria utilized for this selection are as follows. All works that are co-authored by Italian researchers have been included. In those cases in which a part or all of the radiometric and/or paleomagnetic measurements were performed abroad, the contributions of Italian researchers are generally in the areas of data interpretation and organization. Assessments as to the reliability of the data reported have been omitted here because only some authors attempt to discuss discrepancies between field and laboratory results. In addition, it should be noted that recent re-investigations sometimes conflict with earlier interpretations. We have also included review papers which contribute to a better understanding of chronology and/or magnetostratigraphy, though many do not contain new data. Abstracts of papers presented at national and international congresses are listed even though some studies were published later in their complete form.

As the Quaternary is not a well-defined period and the Plio-Pleistocene boundary is still a matter of debate, works dealing with subjects that are closely related to the Quaternary have also been included even if some of the studies are not directly concerned with Quaternary formations. We would like to point out that in addition to research conducted exclusively or in part by Italian researchers, foreign authors have contributed to the study of the Quaternary in Italy. These papers do not appear in the present selection. However, they may be located by consulting the bibliographies in the studies by Italian authors listed here.

Although this review is limited to Quaternary formations in Italy, contributions to the study of recent formations in other countries by Italian geochronologists should not be overlooked. These contributions are the result of international cooperation in scientific research which has intensified considerably, especially in the last twenty years.

One may also note that many of the works listed also represent methodological and technological contributions and they demonstrate that Italian research institutes have not limited their activities to simply utilizing equipment and technology developed abroad.

The names of the researchers and institutions involved in this field of research may be obtained from the bibliography which reflects the high level of international cooperation achieved in this field in Italy. In addition, we would like to cite the institutions where research is being carried out by means of K/Ar, fission tracks and magnetostratigraphy:

- Istituto di Geologia Marina, CNR, Bologna; (K/Ar, Paleomagnetism)
- Istituto di Geocronologia e Geochimica Isotopica,

CNR, Pisa; ( $^{39}\text{Ar}/^{40}\text{Ar}$ , K/Ar, Fission Tracks, Paleomagnetism)

- Centro di Studio per la Geocronologia e Geochimica delle Formazioni Recenti, CNR - Istituto di Geochimica, Università di Roma; (K/Ar)

- Dipartimento di Geofisica e Vulcanologia, Università di Napoli; (K/Ar)

- Osservatorio Vesuviano, Napoli. (Paleomagnetism)

These institutions utilize modern equipment and the facilities are comparable to their foreign counter-parts.

It is necessary to stress the influence that technological innovations have had on the study of the Quaternary. Increased sensitivities in the new rare-gas mass spectrometers, for example, have permitted an extension of the use of K/Ar dating to very recent rocks which was not possible in the past. Improved electronics in magnetometers now permit researchers to reconstruct magnetostratigraphies of low-magnetization sedimentary series. In addition, more powerful techniques (i.e.  $^{39}\text{Ar}/^{40}\text{Ar}$ , fission tracks) permit consistency checks and cross-calibrations of questionable data, cases in which small absolute errors make for large relative errors.

Furthermore, the period from 1970 to the present has also witnessed several new methodological investigations concerning the influence of geo-chemistry on Ar chronometry, the sedimentological-mineralogical investigation of rock magnetism, and the fundamentals of standardization and intercalibration of the fission track method. It could therefore be concluded that some earlier studies may require revision.

In conclusion, we must state that it is difficult to summarize the main points of the works listed here because of their interdisciplinary nature. However, they represent substantial progress in all the research areas related to Quaternary, such as stratigraphy, geology, biostratigraphy, macro- and micropaleontology, palinology, volcanology, neotectonics, archeometry, and paleoecology.

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