

## **Franco Maria Talarico obituary**

We mourn the passing of cherished colleague Franco Talarico, Antarctic researcher from 1986 through 2020.

Franco Maria Talarico was born in Ivrea on 8 December 1960. He graduated *cum laude* in Geology at the University of Turin in 1985, presenting a study on high-pressure rocks of the Sesia–Lanzo Zone in the Western Alps.

In 1986, Franco joined the University of Siena, initially as contract researcher for analyzing rocks from Antarctica; in 1990 he became a permanent University Researcher, and in 2003, achieved the rank of Associate Professor. Franco was Director of the Siena section of the Italian Antarctic Museum until January 2020.

The first Antarctic Expedition of the Italian *Programma nazionale di ricerche in Antartide* (PNRA) was conducted during the austral summer of 1985–86. The geological programme was oriented toward geological reconnaissance and mapping of the area around Terra Nova Bay, in northern Victoria Land (NVL). Expedition scientists enthusiastically sampled several tons of rocks that were shipped to Italy (in April 1986), and required immediate attention. The Department of Earth Sciences of the University of Siena was charged with the petrographic characterization of the collected material before the beginning of the second expedition (in December 1986): a true challenge that was embraced by scientists from several universities and research institutions. Franco accepted the charge of studying the high-grade rocks, including newly discovered granulites. Within only a few months Franco was able to amalgamate his expertise in microstructural analysis from the Turin school, with the principles of the chemographic analysis of metamorphic parageneses, basic tools for reconstructing P–T–t evolution of metamorphic rocks.

The 1990–91 expedition completed the mapping and sampling of granulitic rocks of the Deep Freeze and Mountaineer ranges. Subsequent work by Franco and colleagues constrained the P and T conditions, but the age of metamorphism and role in the Ross orogeny still remain open questions, and Franco continued to work on these problems.

Franco's second Antarctic field experience, during the 1993–94 season, was particularly successful, yielding great discoveries. The finding of kyanite in late quartz veins (during a memorable long night, after several attempts) along the flanks of Mt. Levick led to recognition of a counterclockwise P–T–t path for the low-pressure metamorphic rocks of the Wilson Terrane in northern Victoria Land. The discovery of fresh eclogitic rocks in the Lanterman Range provided convincing evidence that the boundary between a magmatic arc (the inboard Wilson Terrane) and the accreted outboard Bowers and Robertson Bay terranes is a true "suture zone".

Franco participated in 15 other expeditions to Antarctica, either within the sponsorship of PNRA or in the context of international initiatives. At the beginning, the primary interest was the Palaeozoic Ross–Delamerian orogeny, developed at the Pacific margin of Gondwana. The investigations took Franco to South Australia, northern Victoria Land, southern Victoria Land, Britannia Range and the Shackleton Range. In the Shackleton Range, Franco (together with German geologists) discovered ophiolitic rocks that are considered to be remnants of the Mozambique ocean within the East Antarctic craton. As host of two international expeditions, Franco had the opportunity to visit two cratonic areas in Queen Maud Land and Adelie Land. Of particular relevance was the discovery (jointly with a German colleague) of the Mertz Shear Zone in George V Land, which turned out to be the continuation of the Kalinjala Mylonite Zone of South Australia. This finding verified the

connection between Antarctica and Australia during the time of the Rodinia supercontinent, which preceded Gondwana.

Due to his invaluable knowledge of the Transantarctic Mountains geology and his capacity for meticulous analysis, Talarico was a natural candidate for Cape Roberts Project and ANDRILL programmes that recovered sediment cores during five drilling seasons (1997-1999 and 2006-2007). The cores contained abundant zones of diamict and crystalline rock material to be characterized – rapidly. Using facilities in the Crary Science Lab at McMurdo Station, Franco counted and visually classified more than 250,000 clasts which were charted graphically on paper logs of the cores at 1:3 scale. To encourage the visual examination and discussion of these logs, a long flat space was needed. With a sense of mischief and great practicality, Franco offered a novel suggestion: “Why not lay out the paper logs in a “stratigraphic” sequence along the central ramp between floors of the Crary lab?” There, Franco and collaborators moved along the logs on hands and knees, spending hours discussing the sedimentary features and clast assemblages. This visual and statistical analyses of the clasts demonstrated that their distribution and nature were sensitive to long-term orbital oscillations. Within ANDRILL, his work led to an affectionate designation of a new branch of sedimentary petrology: “clastology”. Franco’s “clastological” studies of the gravel fraction and dropstone provenance provided fundamental contributions that led to the recognition of oscillations of Late Cenozoic Antarctic ice sheets and evidence of an interplay between climate and tectonics in the Ross Sea region.

Franco was also an enthusiastic member of the ANDRILL Science Committee. The Italian participation in this ambitious research program owes much to Franco’s perseverance and ability to promote the initiative and gain support of the Italian National Antarctic Research Programme.

A few years later, during his final Italian Antarctic Expedition (2014-2015), Franco contributed greatly to advances in geological knowledge of northern and southern Victoria Land, notably, the detailed study of one of the largest and most important fossil forests of Antarctica in the area of Allan Hills. The fossil forest dates back to the Triassic Period.

Due to his deep knowledge of the Ross Sea and surrounding areas petrography, Franco and his PhD students recently joined the International Ocean Discovery Program IODP Exp 374 scientific team, in 2018, as shorebased members, contributing to further significant progress in the reconstruction of the Antarctic Ice Sheet Evolution.

Even if most of Franco’s scientific activity was conducted in the Italian Alps and Antarctica, many will remember field experiences in other parts of the world, such as his expeditions to the crystalline rocks of Arctic Siberia and Tanzania.

In 1999, the Italian Accademia Nazionale dei Lincei awarded the Felice Ippolito Prize to Professor Talarico.

In 2000, he received the Antarctica Service Medal of USA from the National Science Foundation.

Franco Talarico is considered nationally and internationally as an authoritative scientist and educator. The testimonies of geology professionals, who he inspired during their undergraduate and graduate studies in Italy and in the context of Antarctic research, attest to his impact on the next generation of earth scientists.

We will not comment further Franco’s professional stature, but simply conclude by sharing some of the attributes used in the many messages of condolences we received: curious, patient, gentle, enthusiastic, meticulous, inspirational scientist, intellectually adventurous, committed and clear, able to explaining complicated connections....

Franco Maria Talarico died on 15th December 2020, one week after his 60th birthday.



Ciao Franco, we miss you, and will ever-celebrate your scientific contributions, generous spirit, and warm camaraderie in Antarctic research.

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