Final project report

Project ID: 2002/5.4
Title: Antarctic Meteorites
Principal investigator: Marcello Mellini
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Duration: two years
Assigned funding: € 77.468,00

Activities and results

Field work in Antarctica: from Dec. 2003 to Jan. 2004, we performed a meteorite search campaign in Northern Victoria Land (Miller Butte, Frontier Mountain, Johannessen Nunatak); the team was composed by Luigi Folco (Siena; field leader), Natale Perchiazzi (Pisa), Pierre Rochette (Aix-en-Provence).
Through systematic search, we found 4, 19 and 101 meteorites, at Miller Butte, Johannessen Nunatak and Frontier Mountain, respectively. Two more meteorites were found during field reconnaissance, at Mount Walton and Mount Dewitt.
On the top of Frontier Mountain, we identified an important concentration of micrometeorites, within glacial sediments.

Laboratory investigations in Italy: prior to (and after) the expedition, we have deepened our knowledge of the mechanism responsible for meteorite concentration in Antarctica, by analyzing the existing geomorphological and glaciological data.
Furthermore, we have been busy with:
- Preliminary meteorite classification, by completing the classification of the 173 specimens collected during the 2001 field trip, as well all the new ones collected in 2003-2004.
- Advanced investigation of selected meteorites, focused to a) evolution of primitive chondritic meteorites; b) extraterrestrial magmatic processes in achondrites.
- Tephra: in addition to their volcanologic meaning, englacial tephra may have also an important glaciological stratigraphic and structural meaning. We completed the geochemical and mineralogical characterization of tephra collected prior to 2003-2004, and started an attempt to determine their absolute age, through Ar-Ar geochronology.
- Magnetic susceptibility as a tool for speditive meteorite classification.

Products

A – papers in scientific magazines

B – book chapters
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C - proceedings of international conferences
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D – proceedings of national meetings and conferences
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E – thematic maps
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F – patents, prototypes and data bases
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G – exhibits, organization of conferences, editing and similar
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H - formation (PhD thesis, research fellowships, etc.)

Research specialist (assegno di ricerca)
• Cristiano Ferraris

PhD students
• Alessandro Burroni
• Pietro Curzio
• Michele Macrì

Research units

Siena
Marcello Mellini
Luigi Folco
Antonio Zeoli
Cristiano Ferraris
Alessandro Burroni
Pietro Curzio

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Anna Maria Fioretti
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Programma Nazionale di Ricerche in Antartide (PNRA)

Pisa
Natale Perchiazzi
Marinella Laurenzi

Roma
Adriana Maras
Paolo Ballirano
Michele Macri
Ernesto Palomba

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