

## Final project report

<i>Project ID</i>	2002/4.7
<i>Title</i>	Geological mapping of Victoria Land, Antarctica
<i>Principal investigator</i>	Piero Carlo Pertusati
<i>Institution</i>	Department of Earth Sciences, Pisa University
<i>Email</i>	pertusati@dst.unipi.it
<i>Duration</i>	2 years
<i>Assigned funding</i>	67139,40 Euro

---

## Activities and results

Project objectives have been attained by critical revision of mapping, stratigraphic, structural, metamorphic and magmatic data in Italy and field research in Antarctica (2002-2003 – 2 researchers). In both northern and southern Victoria Land, stratigraphic problems related to the Wilson Terrane and Mesozoic covers have been investigated in some key areas some of which were not previously mapped. Results confirm the Jurassic age of the Beacon sandstones at Section Peak as proposed by Norris (1965), rejecting the successive Triassic age by Collins et al. (1986). Moreover, it is also confirmed that Jurassic volcanism consists in two distinct events. An early event (Exposure Hills, Mawson and Prebble Formations) with pyroclastic products and volcano-sedimentary breccias; a second event represented by basaltic dolerites (Ferrar Dolerite) and lava flows (Kirkpatrick Basalt). According to some authors the second magmatic event developed in a time span of nearly 1 My. The new stratigraphic data obtained in lacustrine sediments at the base of Kirkpatrick Basalt define an late Sinemurian-early Pliensbachian age and indicate that the two volcanic events are separated by a time interval of nearly 6 My. A geological map at scale 1:500000, presented in the Poster session at the IGC of Florence 2004, and the related publications synthesize the results of these researches. The geological map is in progress. The base for the detailed geological-structural map (scale 1:100.000) has been set up with the topographic background where the geology of less doubtful zones has been reported. At the same time, further analysis on metamorphic sediments samples (Prietsley Formation and Prietsley Schist) have been carried out in order to better characterize the lithologies and their metamorphic degree.

---

## Products

### A – papers in scientific magazines

1. RIBECAL C. (2007): Early Jurassic miospores from Carapace Nunatak, Victoria Land, Antarctica. **Rev. Palaeobot. Palynol.** 144 (1-2), 3-12.

### B – book chapters

--

## Programma Nazionale di Ricerche in Antartide (PNRA)

### C - proceedings of international conferences

1. MUSUMECI G, PERTUSATI P.C., RIBECAI C. & MECCHERI M. (2006): Early Jurassic Fossiliferous Black Shales. In the Exposure Hill Formation, Ferrar Group of Northern Victoria Land, Antarctica. In: SIDDWAY C., RICCI C.A. (eds.), Proceedings of the Workshop Frontiers and Opportunities in Antarctic Geosciences. **Terra Antartica Reports** 12, 91-98.
2. PERTUSATI P.C., RIBECAI C., CAROSI, R. & MECCHERI M. (2006): Early Jurassic age for youngest Beacon Supergroup strata based on palynomorphs from Section Peak, North Victoria Land, Antarctica. In: SIDDWAY C., RICCI C.A. (eds.), Proceedings of the Workshop Frontiers and Opportunities in Antarctic Geosciences. **Terra Antartica Reports** 12, 99-104.

### D – proceedings of national meetings and conferences

--

### E – thematic maps

1. CASNEDI R., PERTUSATI P.C. & SALVINI (2001), Co-Authors: CAROSI R., MECCHERI M., MUSUMECI G., OGGIANO G. & RICCI C.A.: Antarctic Geological 1:250000 Map Series – Reeves Nèvé Quadrangle (Victoria Land). PERTUSATI P.C. & TESSENHON F. (Coord.): GIGAMAP (German-Italian Geological Antarctic Map Program). Museo Nazionale dell'Antartide- Sez. Scienze della Terra, Siena.
2. CAPPONI G., MECCHERI M. & PERTUSATI P.C. (2003), Co-Authors: CAROSI R., CRISPINI L., MUSUMECI G., OGGIANO G., ROLAND N.W. & TESSENHON F. : Antarctic Geological 1:250000 Map Series – Freyberg Mountains (Victoria Land). PERTUSATI P.C. & TESSENHON F. (Coord.): GIGAMAP (German-Italian Geological Antarctic Map Program). Museo Nazionale dell'Antartide- Sez. Scienze della Terra, Siena.
3. CAROSI R., MECCHERI M., MUSUMECI G. & PERTUSATI P.C. (2003), Co-Authors: OGGIANO G. & RICCI C.A.: Antarctic Geological 1:250000 Map Series – Sequence Hill Quadrangle (Victoria Land). PERTUSATI P.C. & TESSENHON F. (Coord.): GIGAMAP (German-Italian Geological Antarctic Map Program). Museo Nazionale dell'Antartide- Sez. Scienze della Terra, Siena.
4. PERTUSATI P.C. , MUSUMECI G., CAROSI R. & MECCHERI M. (2007), Co-Authors: BARONI C., CAPPONI G., CARMIGNANI L., CASTELLI D., CRISPINI L., DI VINCENZO G., GHEZZO C., GOSSO G., LOMBARDO B., MONTRASIO A., OGGIANO G. RICCI C.A., ROCCHI S., SALVINI F., SKINNER D.N.B., TALARICO F. & TESSENHON F.: Antarctic Geological 1:250000 Map Series – Mount Melbourne (Victoria Land). PERTUSATI P.C. & TESSENHON F. (Coord.): GIGAMAP (German-Italian Geological Antarctic Map Program). Museo Nazionale dell'Antartide- Sez. Scienze della Terra, Siena.
5. PERTUSATI P.C. (in press), from contribution by: CAPPONI G., CAROSI R., CASNEDI R., CRISPINI L., MECCHERI M., MUSUMECI G., OGGIANO G., PERTUSATI P.C., SALVINI F. & STUMP E., Co-Authors: BARONI C., CARMIGNANI L., CASTELLI D., COLOMBO F., DELISLE G., DI VINCENZO G., GHEZZO C., GOSSO G., KLEINSCHMIDT G., LOMBARDO B., MONTRASIO A., ORSI G. RICCI C.A., ROCCHI S., ROLAND N.W., SCHMIDT-THOME' M., SKINNER D.N.B., TALARICO F. & TESSENHON F.: 1:500000 Geological Map of the area between Freyberg and Prince Albert Mountains, Victoria Land-Antarctica. Exposed in preliminary draft at the IGC of Florence 2004.

### F – patents, prototypes and data bases

--

### G – exhibits, organization of conferences, editing and similar

1. MUSUMECI G, PERTUSATI P.C., RIBECAI C. & MECCHERI M. (2004): Early Jurassic Fossiliferous Black Shales. In the Exposure Hill Formation, Ferrar Group of Northern Victoria Land, Antarctica. **Frontiers and Opportunities in Antarctic Geosciences, Pontignano 29-31 august 2004.**
2. PERTUSATI P.C. with contribution by: CAPPONIG., CAROSI R., CASNEDI R., CRISPINI L., MECCHERI M., MUSUMECI G., OGGIANO G., SALVINI F., STUMP E., Co-authors: BARONI C., CARMIGNANI L., CASTELLI D., COLOMBO F., DELISLE G., DI VINCENZO G., GHEZZO C., GOSSO G., KLEINSCHMIDT G., LOMBARDO B., MONTRASIO A., ORSI G., RICCI C.A., ROCCHI S., ROLAND N.W., SCHMIDT-THOME M., SKINNER D.N.D., TALARICO F., TESSENHON F. (2004): Geological Map 1: 500000 of Victoria Land, Antarctica. Program and abstracts, IGC Florence 2004.
3. RIBECAI C. (2004): Jurassic miospores from Carapace Nunatak, Victoria Land, Antarctica. **XI International Palynological Congress, Granada 4-9 July 2004. Polen, 443-444.**
4. RIBECAI C. (2004) : Jurassic miospores from Carapace Nunatak, Victoria Land, Antarctica. **Frontiers and Opportunities in Antarctic Geosciences, Pontignano 29-31 august 2004.**
5. RIBECAI C., PERTUSATI P.C., CAROSI, R. & MECCHERI M. (2004): On the age of the Beacon Supergroup at the Section Peak locality (Northern Victoria Land, Antarctica) : a review. **Frontiers and Opportunities in Antarctic Geosciences, Pontignano 29-31 august 2004.**

### H - formation (PhD thesis, research fellowships, etc.)

1. Research fellowship on "Stratigraphic and palynologic study of Gondwanian Mesozoic of Victoria Land (Antarctica)"

**Research units**

**Unità 1 (PISA)**

Piero Carlo Pertusati	Full Professor
Rodolfo Carosi	Assistant Professor
Gianni Musumeci	Researcher
Chiara Montomoli	Researcher
Cristiana Ribecai	Fellowship holder
Francesco Mazzarini	Researcher CNR

**Unità 2 (TORINO)**

Bruno Lombardo	Senior Researcher
Daniele Castelli	Assistant Professor

**Unità 3 (PAVIA)**

Raffaele Casnedi	Full Professor
Andrea Di Giulio	Assistant Professor

**Unità 4 (GENOVA)**

Giovanni Capponi	Full Professor
Laura Crispini	Assistant Professor

**Unità 5 (SASSARI)**

Giacomo Oggiano	Full Professor
Anselmo Di Pisa	Researcher

---

**Date: 09/02/2012**

---

*Notes*

The delay in submitting the report to the CSNA is due to the fact that to date the project has received only partial funding allocated for missions, fellowship. No funding was received for investment in Italy (scientific instruments). For these reasons it is not possible to provide a full financial report, and consequently the report is to be considered not definitive.