Data repository item 1: Methods and data sources

Airborne Magnetic Data

Aeromagnetic data have been acquired by Sanders Geophysics Limited for the Servicio Geológico Minero de Argentina (SEGEMAR, 1998). The survey design was based on 0.5 km line spacing on land and 2 km offshore, with lines oriented N-S and with orthogonal tie lines 4 km apart. The flight clearance was 120 m.

The magnetic anomalies have been re-calculated using the Definite Geomagnetic Reference Field (DRGF) for the time of the survey, January 1998. A minimum curvature algorithm was used for gridding at 0.1 km spacing using Geosoft Oasis Montaj© in the area displayed on figure 5. The initial magnetic image exhibited a remaining nearly N-S trend that was removed. The resulting grid was expanded about 25 km from each border to minimize edge effects and ringing problems when using the digital Fourier transform. The reduction to the pole filter (Blakely, 1995) was applied in the wave number domain, via Fast Fourier Transform.

Multichannel Seismic Reflection Profiles

Profile TM-08 was acquired in the frame of the TESAC project (Italian *Programma Nazionale di Ricerche in Antartide* – PNRA) on October 1999. The seismic processing applied to the data was carried out at the *Istituto Nazionale di Oceanografia e di Geofisica Sperimentale* (OGS) by Geletti (2001). Alternative geological interpretations of this seismic profile can be found in Yagupsky (2003) and Tassone et al. (2008).

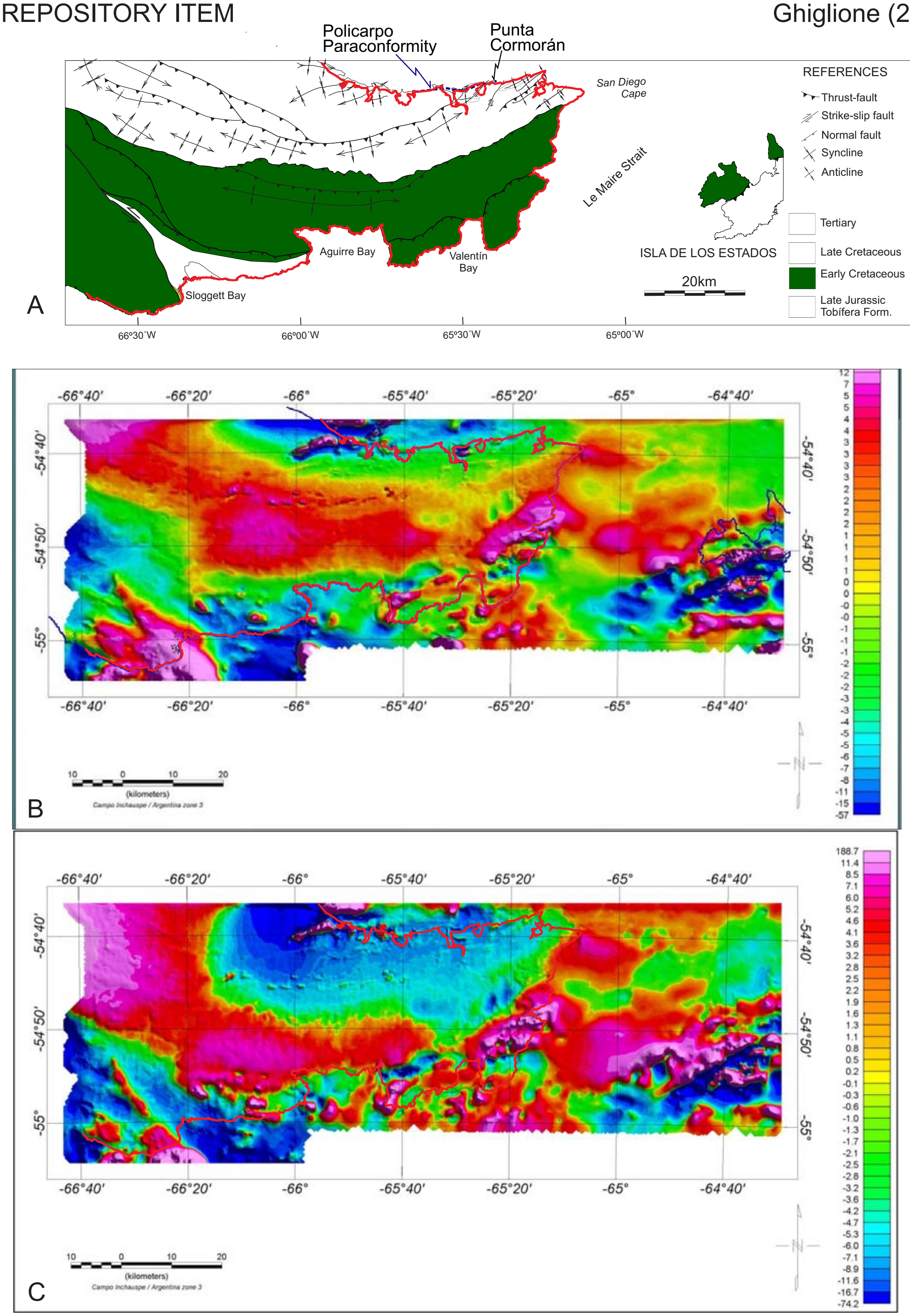
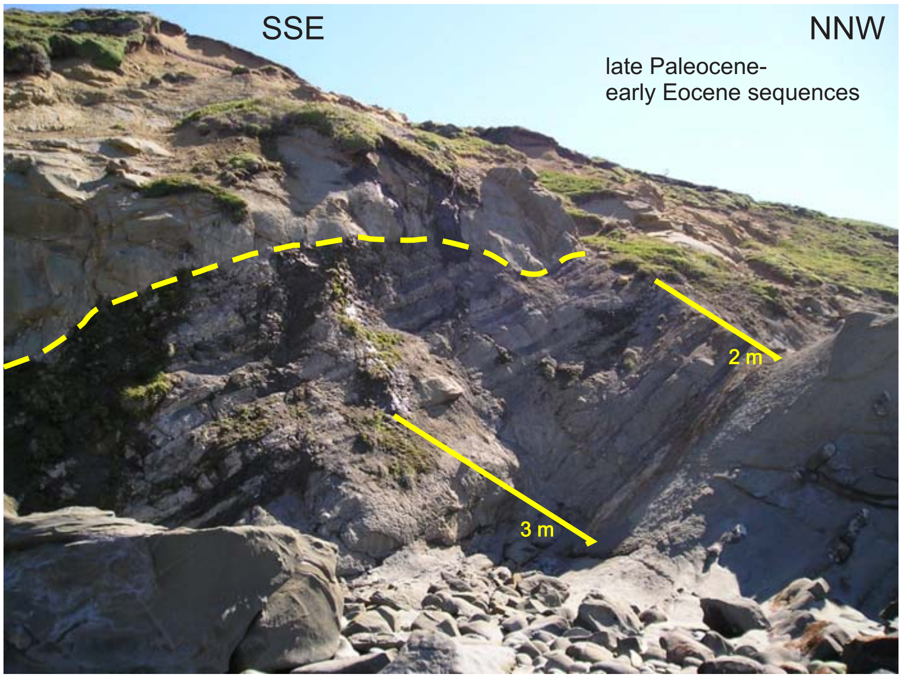
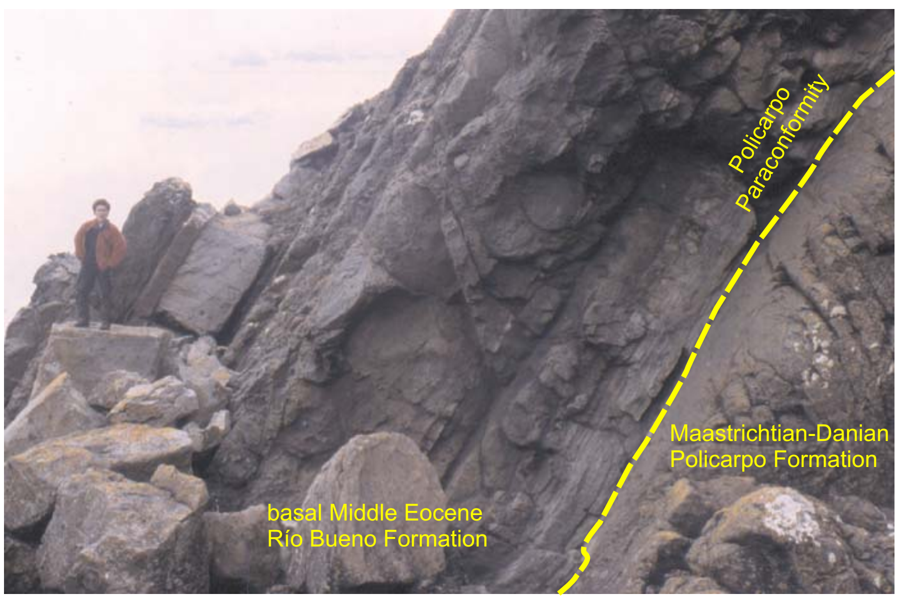


Figure DR1. Geological and geophysical information from Tierra del Fuego. The tree figures have the same scale and the same georeferenced coast line in continuos red line. A: Geological map of Peninsula Mitre. Stratigraphy and age are from Furque and Camacho (1949), Malumian and Olivero (1989), Olivero et al. (2002, 2003) and Ghiglione and Ramos (2005). For map location, see Figure 3. B: Total Magnetic Intensity (TMI) map from airborne magnetic survey (SEGEMAR, 1998). C: Total Magnetic Intensity Reduced to Pole (TMI/RTP) map processed from B.

FIGURE DR 1



A



B

Figure DR2. A: Wedge-shaped late Paleocene-early Eocene sequences at Noguera Point. See Figure 4B for location. B: Policarpo Paraconformtity between the basal middle Eocene Río Bueno Formation to the left (north) and the maastrichtian - danian Policarpo Formation to the right (south) in Punta Cormorán. The hiatus represents at least 11 Ma. See Figures 3 and DR1A for location.

Stratigraphy and age are from Furque and Camacho (1949), Malumian and Olivero, (1989) and Olivero et al. (2002, 2003).

FIGURE DR 2

Figure DR3. A: Extensional faults at Punta Noguera. Cliff height is about 40 m. See Figure 4B for location.
Stratigraphy and age are from Furque and Camacho (1949), Malumian and Olivero, (1989) and Olivero et al. (2002, 2003).

FIGURE DR 3

FIGURE DR 4

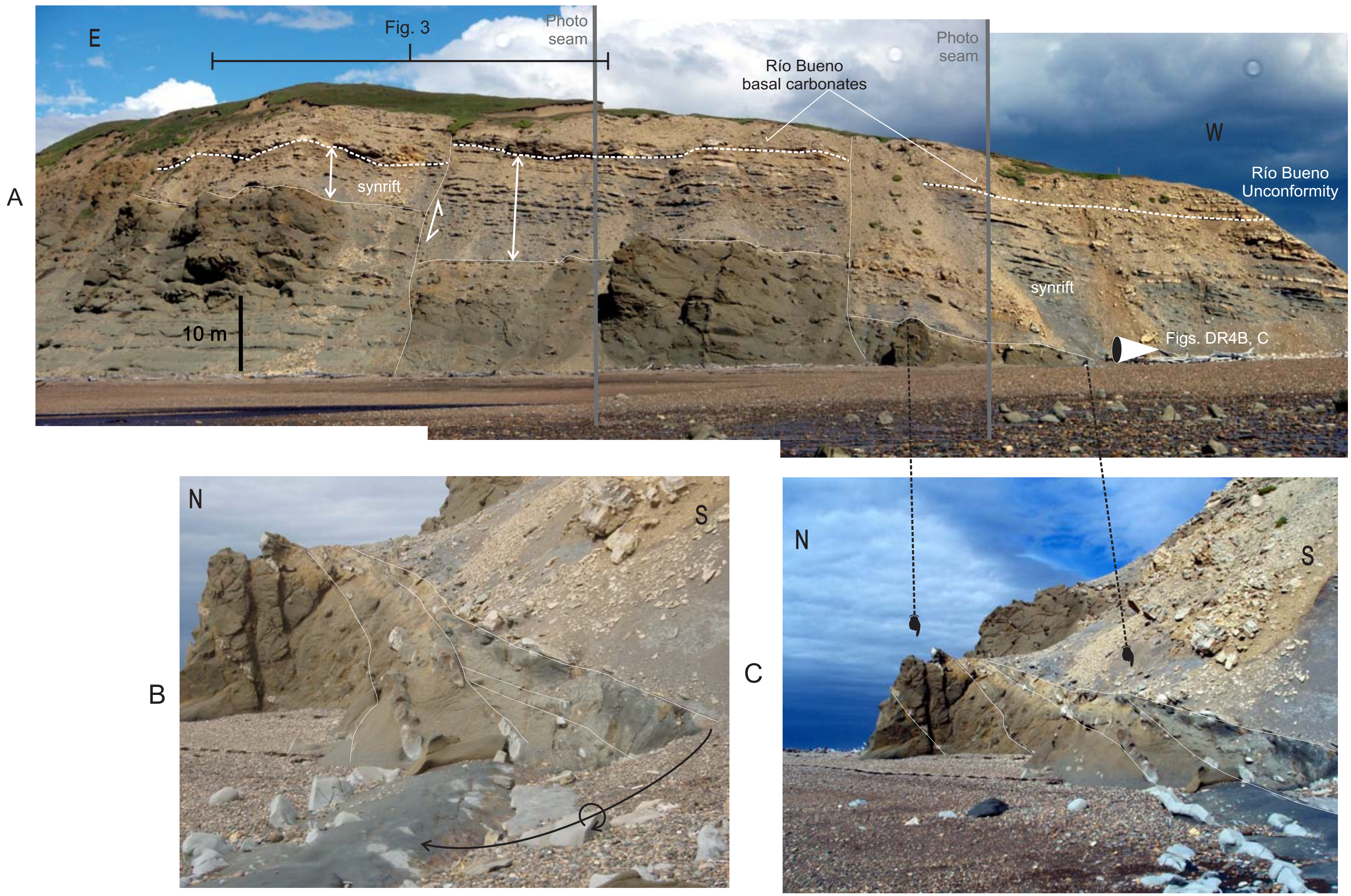


Figure DR4. A: Late Paleocene-early Eocene synrift sequences at Leticia River outlet. At least two main synsedimentary normal faults can be recognized. The carbonatic Río Bueno Formation (basal middle Eocene) is unconformably covering the early Eocene normal faults. See Figure 4B for location. B, C: Rotational onlap of synrift sequences from Fig. DR4A, in concordance with a N-NW deeping rotational normal fault active during sedimentation as shown in Fig. 4C. Stratigraphy and age are from Furque and Camacho (1949), Malumian and Olivero, (1989) and Olivero et al. (2002, 2003).

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