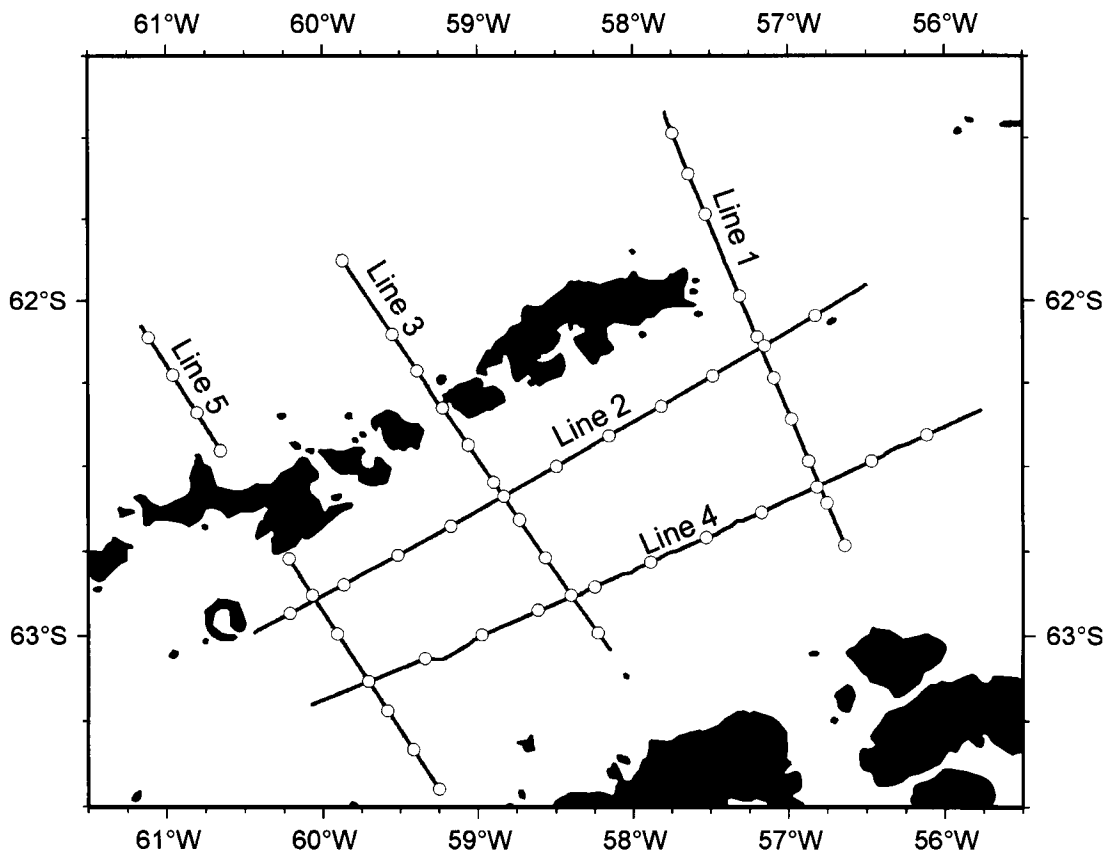


Cruise: NBP00-2
Ship: RVIB *Nathaniel B. Palmer*
Chief Scientist: Jamie Austin
Start Date, Port: April 5, 2000 Punta Arenas, Chile
End Date, Port: May 6, 2000 Punta Arenas, Chile
Cruise Location: Bransfield Strait, Antarctica
Funding Agency: NSF, Polar Programs OPP-9814041
Source: six-gun, 3000 cu in array



The OBS field effort was designed to collect wide-angle reflection and refraction air gun data to understand the geometry of crustal thinning associated with active extension in Bransfield Strait. Line 2 is located along the neovolcanic zone axis. Lines 1, 3, 4, and 5 are located coincident to previously acquired Ewing MCS data.

Line 1 suffered from consistent problems with the 1,000 cu in gun (gun #1), the largest of the *Palmer's* six-gun, 3000 cu in array, and by poor weather towards the end of the OBS deployment phase, which consumed a significant proportion of the contingency time built into the pre-programmed OBS recording window. There was no time available to repair gun #1 when it failed; more than half of Line 1 was acquired without gun #1. Line 1 was shot with an average shot spacing of 215 m.

Lines 2-3 were shot with an average shot spacing of 240-250 m. Analysis suggested that previous shot noise was not a major problem, so lines 4-5 were shot with an average shot spacing of 180 m. For most instruments the vertical channel had the highest signal-to-

noise for longer offset arrivals, but the hydrophone channel was superior for some shallow-water instruments. Shear arrivals were observed by many instruments.

The OBS numbering scheme follows the line numbers: OBSs 101-111 were located on Line 1, OBSs 201-211 on Line 2, OBSs 301-311 on Line 3, OBSs 401-411 on Line 4, and OBSs 501-511 on Line 5. We lost one OBS on Line 3 (302) and had two, one on Line 1 (108) and one on Line 5 (504) that did not record data, for reasons not yet fully-diagnosed. In general, OBSs deployed on the shallow SSI pedestal yielded poorer quality data. The sea floor of this pedestal is ice-scoured, and is both hard and rough (morainal deposits? cobbles and boulders?), as best as we can deduce from bottom imaging tools (SeaBeam, 3.5 kHz). In the case of OBS 302, the sea floor could have been so rough that the OBS toppled over as it landed, trapping it beneath its anchor frame. Noise due to poor ground coupling also may have been exacerbated by strong currents, e.g., in Nelson Strait (Line 3).

The OBSs recorded 4 components. Channel 1 – vertical. Channel 2 – radial horizontal. Channel 3 – transverse horizontal. Channel 4 – hydrophone. All instruments have been located and oriented.

The second leg of the Bransfield Strait OBS experiment took place on cruise NBP00-7A in October-November, 2000.