

5.1 Base readings and gravity ties.

Before and after the survey the operator carried out base readings of the LaCoste & Romberg air-sea gravity meter S-99. In both cases the 25th September and 13th October respectively the ship was moored at the same location in port. See Figure 2 and Table 3. During the 18 days long campaign the instrument had a drift of about 1mgal. Ideally no ship movements should occur while doing a base reading.

The S-99 meter of the University of Bergen has the calibration factor: 1 Counter Unit = 0.9967 mgals. Thus gravity given as 11260.2 counter units corresponds to 11223.0 mgal

Date	J. day	GPS-time h m s	t_b	Gravity a_b CU	Spring T. CU	Heigh h_b (m) quay over see level
25.09.2002	268	12:55:00	268.53819	11260.2	11260.0	4.15
13.10.2002	286	13:45:00	286.57292	11259.0	11258.6	3.95

Table 1 Base readings at navy port in Valparaíso before and after the survey. The quantity t_b specifies the time as a fraction of Julian day.

An absolute gravity station $979607089.18 \pm 1.12 \mu\text{gals}$ exists at the premises of Servicio Hidrográfico y Oceanográfico de la Armada (SHOA) in Valparaíso.

The 20th September 2002 a gravity tie was made to a point A at the Navy Port in Valparaíso, next to the mooring site of R/V Vidal Gormaz. See Figure 2. Two land gravity meters were used, a Scintrex instrument and a LaCoste and Romberg G411 meter. The results obtained by first making measurements at A, then at the absolute gravity station at SHOA and finally at the quay again are shown in Table 4. The L&R meter G411 in the measurement range has a calibration factor of 1.06166. Within a deviation of 0.01 mgal both gravimeters measured point A to have a gravity value 13.24 mgal higher than the absolute station at SHOA, thus resulting in an absolute value of $g_{bl}=979620.33$ mgal.

Location	GPS time	Land gravity meter	Gravity measurements	Recording #
Navy Port at point A	15:24:40	Scintrex	3033.949	100
	15:29:30		3033.944	101
	15:55:00	L&R G411	3153.39	
	15:59:00		3153.42	
SHOA	16:26:00	Scintrex	3020.704	200
	16:29:20		3020.700	201
	16:39:00	L&R G411	3140.98	
	16:43:00		3140.91	
Navy Port at point A	17:08:00	Scintrex	3033.950	300
	17:12:00		3033.945	301
	17:22:00	L&R G411	3153.45	
	17:25:00		3153.40	

Table 2 Gravity tie between absolute gravity station at SHOA (Servicio Hidrográfico y Oceanográfico de la Armada) and the navy port in Valparaíso.

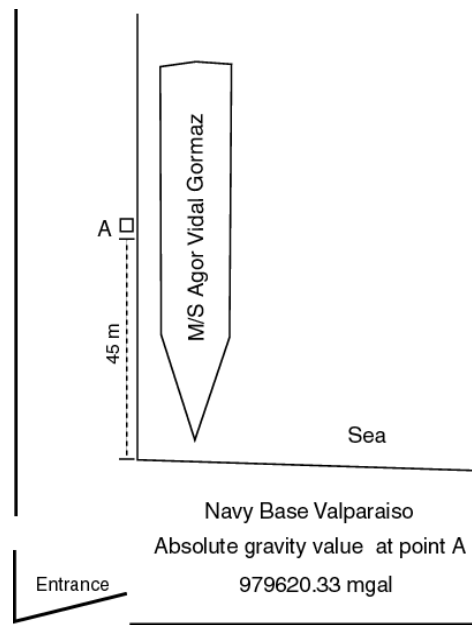


Figure 1 Absolute gravity value at navy port in Valparaiso, Chile.