

The Magnetization of an Underwater Caldera: A Time-Lapse Magnetic Anomaly Study of Axial Seamount

Bailey Fluegel^{1,2}, Maurice Tivey¹, Joseph Biasi^{3,4}, William W. Chadwick Jr.⁵, and Scott L. Nooner⁶

¹Woods Hole Oceanographic Institution, Woods Hole, MA, ²Northwestern University, Evanston, IL, ³Dartmouth College, NH, ⁴University of Oregon, OR, ⁵Oregon State University, OR, ⁶University North Carolina Wilmington, NC

Contents of this file

Figures S1 to S2
Table S1

Introduction

This supporting information provides examples of AUV Sentry calibration figures for the compass swing method and the vector calibration method as discussed in the main article. Also included here is a summary table of the final variation of corrected magnetic field compared with the original variation of the observed magnetic calibration spin data.

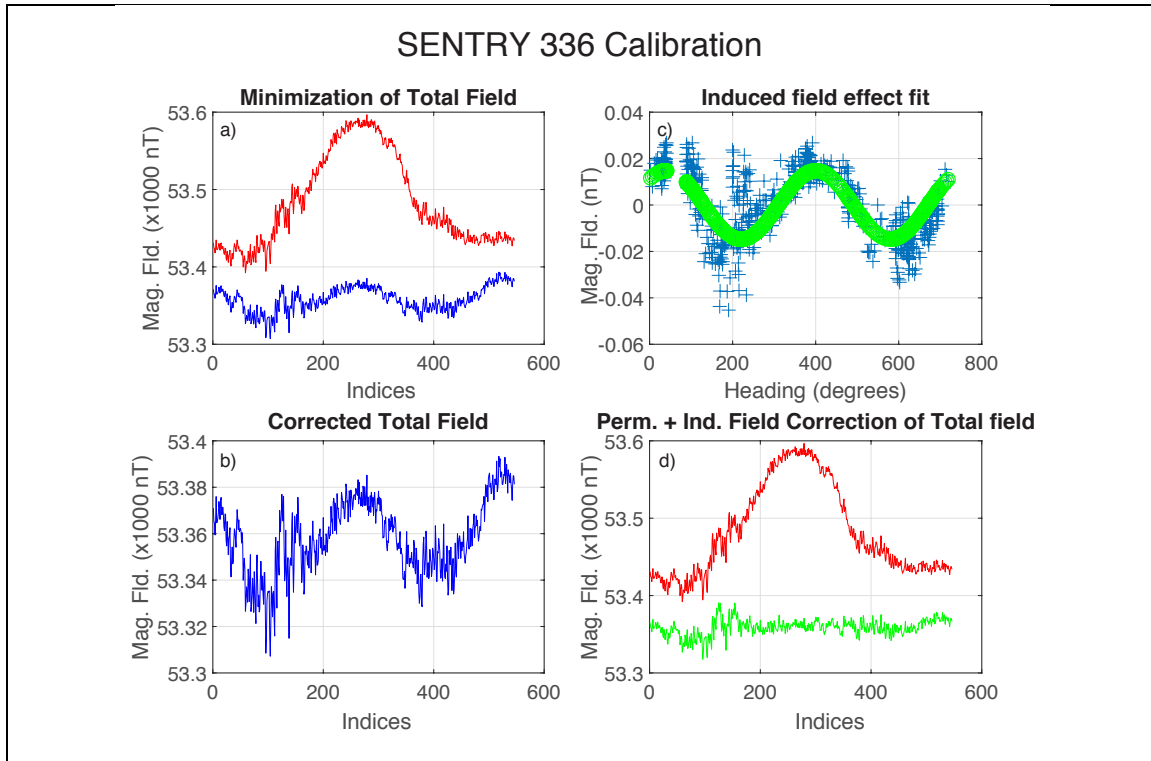


Figure S1. Example of compass-swing calibration summary for calibration spins of Sentry Dive 336 showing a) observed total field (red) and total field corrected for permanent field effect (blue) b) field corrected for permanent field effect c) fit for induced field component (green) vs. observed data (blue) and d) final corrected field (green) compared with observed uncorrected field (red). Final variation level was 72 nT.

SENTRY 568 Calibration

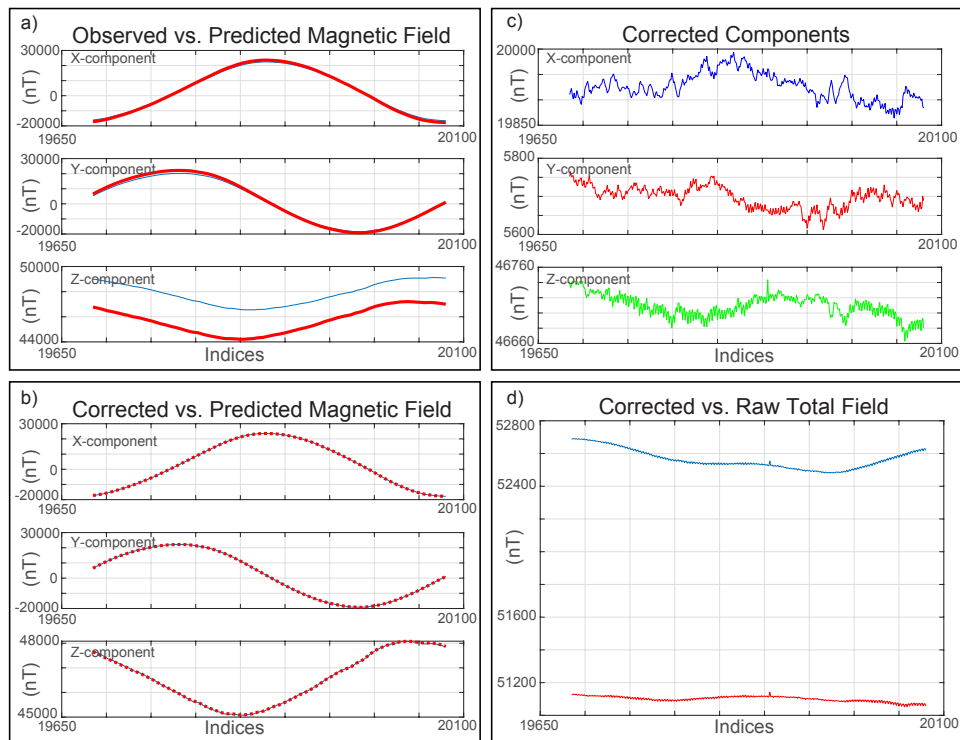


Figure S2. Example of vector calibration summary for calibration spins of Dive 568 showing a) observed magnetic field (blue) and predicted magnetic field (red) using information about the vehicle's attitude and the IGRF value for the given location, b) corrected (blue) and predicted (red) magnetic field, c) corrected components of the magnetic field, and d) total corrected field (red) compared to raw field (blue). Final variation level was 89 nT.

Dive Number	Original Total Field Variation (nT)	Corrected Total Field Variation (nT)
336	204	72
337	362	88
338	247	42
339	268	73
340	488	50
341	354	32
442	118	27
443	561	77
444	135	67
445	105	38
446	221	36
562	275	120
563	151	44
564	143	46
565	109	44
566	101	55
567	143	60
568	211	89
Average	233 ± 134	59 ± 24

Table S1. Summary of calibration results for Sentry Dives showing original total field variation versus the final corrected total field variation.