

1 **APPENDIX**

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3 **Table\_A1:** The evaluation of the EGM08 (d/o 2190) at the GPS/leveling benchmarks in Greek islands. Unit:  
4 [cm]

Study Area (Greek Islands)	Geoid Height Residuals $(N_{GPS/lev.} - N_{model})$					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max	mean	std	rms	$\widehat{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta\widehat{W}_o^{LVD}$ (cm)
EGM08 (d/o 2190)							
CRETE	-125.2	-31.7	-82.1	18	84	62636860.7702±0.0705	-73.7
GAVDOS	-82.3	-74.6	-78.5	5.5	78.5	62636861.5403±0.6230	-81.4
RHODES	-125.2	-18.5	-72.7	24.7	76.8	62636856.2443±0.1511	-28.4
THASOS	-67.3	-47.6	-56.4	6.2	56.7	62636859.6481±0.3117	-62.5
LIMNOS	-90.9	-51.7	-75.4	9.1	75.9	62636860.6447±0.2077	-72.4
AG. EUSTRATIOS	-69.4	-59.2	-65	4.5	65.1	62636859.2063±0.4407	-58.1
SKIATHOS	-83.7	-55.5	-75.4	10.6	76	62636860.4940±0.2658	-70.9
SKOPELOS	-118.6	-82.1	-91.5	12.2	92.2	62636861.7870±0.3116	-83.9
ALONISOS	-101.2	-78.1	-85.4	9.2	85.8	62636861.9347±0.3599	-85.3
KYRA PANAGIA	-100.3	-86.7	-92.9	6.9	93.1	62636863.0102±0.5089	-96.1
SKANTZOURA	-72.9	-61.4	-67.8	4.8	67.9	62636860.1562±0.4407	-67.6
SAMOTHRAKI	-81.4	-51.6	-64.5	8.8	65.1	62636859.9342±0.3117	-65.3
LESVOS	-90.1	-54.2	-75	9.1	75.5	62636861.7996±0.1411	-84.0
SKYROS	-86.8	-43.9	-70.1	12.8	71.1	62636860.4515±0.2938	-70.5
PSARA	-66.9	-36.5	-56.1	13.5	57.3	62636859.6672±0.4407	-62.7
CHIOS	-69.1	-21.7	-39.9	12.7	41.8	62636858.8076±0.1799	-54.1
SAMOS	-174.3	-62.6	-82.7	27.9	87	62636862.4542±0.2355	-90.5
FOURNOI	-87.8	-51.9	-63.2	14.2	64.5	62636859.3952±0.3598	-60.0
IKARIA	-99.7	-67.2	-79.3	8.6	79.7	62636859.8765±0.2787	-64.8
PATMOS	-81	-62.4	-69.9	6.6	70.2	62636860.0741±0.3331	-66.7

LEROS	-81	-65.4	-74.6	4.8	74.7	62636861.0056±0.2787	-76.1
AGATHONISI	-110.2	-108.7	-109.5	1.1	109.5	62636864.9004±0.5088	-115.0
KALYMNOS	-69.8	-60	-64.7	3.7	64.8	62636859.9844±0.3331	-65.8
KOS	-84.1	-46.5	-63.8	9.5	64.4	62636860.1790±0.2444	-67.8
NISYROS	-97	-79.4	-87.4	7.3	87.6	62636861.9792±0.4406	-85.8
TILOS	-71.7	-58.8	-64	5.5	64.2	62636859.1254±0.3598	-57.3
SYMH	-45.8	-21.4	-35.7	10.6	37	62636856.4715±0.3941	-30.7
KARPATOS	-83.8	-49.4	-64	9.7	64.7	62636859.59750.2077	-62.0
KASOS	-72.1	-63.3	-68.5	3.6	68.6	62636859.6437±0.3597	-62.4
KASTELORIZO	-91.2	-75.8	-83.3	7.2	83.5	62636862.9755±0.4406	-95.8
SYRNA	-62.7	-49.7	-58.2	5.8	58.4	62636859.3278±0.4406	-59.3
ANAFI	-39.2	-37.1	-38	1.1	38.1	62636857.8986±0.4406	-45.0
ASTYPALAIA	-78.5	-49.3	-66.7	9.7	67.2	62636860.2792±0.3331	-68.8
AMORGOS	-75.3	-60.8	-66.8	5.6	67.1	62636859.9665±0.2787	-65.7
LEROS	-55.1	-41.4	-46.4	6.1	46.7	62636857.6629±0.4406	-42.6
SANTORINI	-45.9	-29.4	-38.9	4.6	39.2	62636858.3611±0.2657	-49.6
IOS	-80.4	-55.9	-64.8	9.6	65.4	62636860.5721±0.3331	-71.7
SIKINOS	-63.1	-58.9	-61.1	1.7	61.2	62636860.1079±0.4406	-67.1
FOLEGANDROS	-73.1	-67.2	-70	2.6	70	62636861.0742±0.4406	-76.7
IRAKLEIA	-85.3	-81.3	-83.3	2.9	83.3	62636861.6074±0.5088	-82.1
SHINOUSA	-100.7	-96.1	-98.4	3.3	98.5	62636863.0964±0.5088	-97.0
KOUFONISIA	-61.1	-57.5	-59.3	2.5	59.3	62636859.0258±0.5088	-56.3
KIMOLOS	-72.2	-67.6	-69.9	3.2	69.9	62636860.5974±0.5088	-72.0
MILOS	-99.1	-65.5	-73.9	10.8	74.6	62636861.5347±0.3116	-81.3
SIFINOS	-66.6	-47.8	-58.4	6.3	58.7	62636859.2686±0.3598	-58.7
ANTIPAROS	-191.7	-78	-116	65.6	127.8	62636861.8408±0.5088	-84.4
PAROS	-75.5	-56.2	-69.1	6.7	69.4	62636860.1548±0.3116	-67.5
NAXOS	-101.7	-64.5	-77.8	9.9	78.4	62636860.4438±0.2203	-70.4
SERIFOS	-85.4	-66.9	-78.5	6.3	78.7	62636860.7402±0.3598	-73.4

KYTHNOS	-75.2	-62.5	-69.8	5	69.9	62636859.4740±0.3598	-60.7
KEA	-103.3	-88.9	-94.4	4.5	94.4	62636862.2917±0.3116	-88.9
MYKONOS	-97.3	-77.2	-88	6.9	88.3	62636860.2347±0.3331	-68.3
DILOS	-87.3	-80.4	-83.9	4.9	83.9	62636860.3470±0.5089	-69.5
SYROS	-144.1	-79.4	-94.9	22.3	97.2	62636861.8490±0.3331	-84.5
TINOS	-87.8	-73.1	-79.5	5.4	79.7	62636860.0458±0.3116	-66.5
ANDROS	-103.2	-76.5	-89.6	8	90	62636860.6568±0.2544	-72.6
EYVOIA	-103.3	-37.4	-69.6	11.7	70.5	62636859.4835±0.098	-60.8
OTHONOI	-107.4	-104.5	-105.9	2.1	106	62636864.5440±0.5089	-111.4
MATHRAKI	-96.8	-96.8	-96.8	----	96.8	62636863.6711±0.8815	-102.7
EREITHOUSA	-105	-105	-105	----	105	62636863.9921±0.8815	-105.9
CORFU	-101.5	-45.2	-84.2	16.8	85.8	62636862.0126±0.2138	-86.1
PAKSOI	-69.3	-69.3	-69.3	----	69.3	62636861.4951±0.8815	-81.0
ANTIPAKSOI	-71.1	-71.1	-71.1	----	71.1	62636861.6979±0.8815	-83.0
LEUKADA	-98.5	-73.6	-86.6	9.8	87.1	62636862.7857±0.2938	-93.9
KASTOS	-50.9	-50.9	-50.9	----	50.9	62636858.8232±0.8814	-54.2
KALAMOS	-50.9	-50.9	-50.9	----	50.9	62636858.8549±0.8814	-54.5
MEGANHSI	-86.1	-86.1	-86.1	----	86.1	62636862.4698±0.8814	-90.7
MAKRI	-56.1	-56.1	-56.1	----	56.1	62636859.1842±0.8814	-57.8
PYSTROS	-77.6	-77.6	-77.6	----	77.6	62636861.3287±0.8814	-79.3
PRASO	-80.7	-80.7	-80.7	----	80.7	62636861.6839±0.8814	-82.8
ITHAKI	-74.8	-52.4	-60.4	10.2	61.1	62636859.6119±0.4407	-62.1
KEFALONIA	-82.2	-40.8	-63	9.7	63.7	62636859.7018±0.1971	-63.0
ZAKYNTHOS	-90	-66.9	-76.2	5.8	76.4	62636860.8914±0.2544	-74.9
KYTHIRA	-59.9	-31.3	-47.5	9	48.3	62636857.5982±0.2657	-42.0
ELAFONHSOS	-29.9	-29.9	-29.9	----	29.9	62636856.2193±0.8813	-28.2
ANTIKYTHIRA	-71.7	-68.4	-70.1	1.7	70.1	62636859.8669±0.4406	-64.7
SPETSES	-61.8	-61.8	-61.8	----	61.8	62636859.7321±0.8814	-63.3
YDRA	-80.3	-60.9	-70	9.8	70.5	62636860.2241±0.5088	-68.2
PLATONHSI	-80.5	-80.5	-80.5	----	80.5	62636861.4453±0.8813	-80.5

PETASI	-182.9	-182.9	-182.9	----	182. 9	62636871.5105±0.8813	-181.1
POROS	-72.9	-64.8	-68.8	5.7	68.9	62636860.6771±0.6232	-72.8
SALAMINA	-61.6	-49.9	-55.7	5.5	56	62636859.1050±0.4407	-57.0
AIGINA	-66.4	-51.5	-56.1	6.1	56.4	62636859.1795±0.3942	-57.8

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**Table A2:** The evaluation of the DIRR5 (d/o 300) at the GPS/leveling benchmarks in Greek islands.

Study Area (Greek Islands)	Geoid Height Residuals ( $N_{GPS/lev.} - N_{model}$ )					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max.	mean	std. dev.	rms	$\widehat{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta\widehat{W}_o^{LVD}$ (cm)
DIRR5 (d/o 300)							
CRETE	-116.0	85.6	-24.6	38.6	45.6	62636857.7708±0.0456	-43.7
GAVDOS	42.9	52.0	47.5	6.4	47.7	62636848.7534±0.4021	46.5
RHODES	-116.0	136.8	1.6	65.7	65.4	62636846.6183±0.0975	67.8
THASOS	-57.8	-20.2	-35.9	15.4	38.7	62636858.3027±0.2012	-49.0
LIMNOS	-34.8	-13.1	-26.2	7.4	27.2	62636855.9545±0.1341	-25.5
AG. EUSTRATIOS	-64.4	-51.4	-57.3	5.6	57.5	62636858.4517±0.2845	-50.5
SKIATHOS	-66.7	-29.7	-51.3	12.6	52.7	62636858.5861±0.1715	-51.9
SKOPELOS	-76.9	-38.1	-50.8	14.0	52.4	62636857.9885±0.2011	-45.9
ALONISOS	-35.5	-3.8	-17.0	11.5	20.0	62636854.8150±0.2323	-14.1
KYRA PANAGIA	-41.5	-30.0	-37.3	6.3	37.6	62636857.2306±0.3285	-38.3
SKANTZOURA	-11.6	-5.7	-9.2	2.8	9.5	62636854.3684±0.2845	-9.7
SAMOTHRAKI	-18.6	1.7	-9.6	8.3	12.4	62636854.4147±0.2012	-10.1
LESVOS	-89.0	-8.0	-51.4	17.1	54.1	62636858.7441±0.0911	-53.4
SKYROS	-25.8	-8.3	-16.2	6.1	17.2	62636855.2258±0.1896	-18.3
PSARA	-57.2	-22.8	-43.6	15.7	45.7	62636858.2533±0.2845	-48.5
CHIOS	-68.0	-11.5	-32.9	14.4	35.8	62636856.9432±0.1161	-35.4

SAMOS	-158.6	-4.9	-30.9	38.4	48.2	62636855.4681±0.1520	-20.7
FOURNOI	-41.9	7.2	-6.7	19.0	18.6	62636853.9734±0.2322	-5.7
IKARIA	-46.2	-1.5	-15.5	14.5	20.7	62636853.9233±0.1799	-5.2
PATMOS	-55.9	-30.0	-38.8	9.0	39.7	62636857.0822±0.2150	-36.8
LEROS	-58.6	-33.9	-45.3	9.2	46.1	62636857.7750±0.1799	-43.8
AGATHONISI	-74.8	-74.4	-74.6	0.3	74.6	62636860.7050±0.3284	-73.1
KALYMNOS	-77.8	-56.5	-67.3	8.4	67.7	62636860.1302±0.2150	-67.3
KOS	-109.3	-78.0	-94.4	8.4	94.8	62636863.1988±0.1578	-98.0
NISYROS	-129.4	-114.2	-120.9	7.4	121.0	62636865.8490±0.2844	-124.5
TILOS	-80.7	-63.8	-70.8	6.2	71.0	62636860.1657±0.2322	-67.7
SYMH	-33.4	-7.3	-23.8	11.3	25.8	62636856.1164±0.2544	-27.2
KARPATOS	-89.1	-3.4	-42.6	29.4	51.3	62636855.8411±0.1341	-24.4
KASOS	-11.7	-2.7	-7.6	3.9	8.4	62636853.9749±0.2322	-5.7
KASTELORIZO	30.3	51.5	39.9	10.8	40.9	62636849.0322±0.2844	43.7
SYRNA	-14.4	-5.9	-9.7	3.9	10.3	62636854.3768±0.2844	-9.8
ANAFI	-16.4	-10.0	-13.4	3.3	13.7	62636854.5014±0.2844	-11.0
ASTYPALAIA	-66.3	-25.2	-35.0	14.2	37.4	62636856.7496±0.2150	-33.5
AMORGOS	-101.3	-86.6	-92.6	5.2	92.8	62636862.4444±0.1799	-90.4
LEROS	-62.3	-53.8	-57.1	3.7	57.2	62636858.9900±0.2844	-55.9
SANTORINI	-38.4	-16.2	-28.0	6.9	28.8	62636856.3574±0.1715	-29.6
IOS	-96.6	-65.0	-76.6	12.0	77.4	62636860.7899±0.2150	-73.9
SIKINOS	-74.0	-66.5	-70.5	3.6	70.5	62636860.1968±0.2844	-68.0
FOLEGANDROS	-68.0	-59.6	-64.3	3.6	64.4	62636859.6774±0.2844	-62.8
IRAKLEIA	-114.8	-106.9	-110.8	5.6	110.9	62636863.9776±0.3284	-105.8
SHINOUSA	-121.0	-120.7	-120.9	0.2	120.9	62636865.2386±0.3284	-118.4
KOUFONISIA	-70.8	-70.2	-70.5	0.4	70.5	62636860.2970±0.3284	-69.0
KIMOLOS	-75.2	-73.5	-74.4	1.2	74.4	62636860.6636±0.3284	-72.6
MILOS	-87.5	-49.8	-62.2	12.0	63.2	62636859.9955±0.2011	-66.0

SIFINOS	-88.3	-73.0	-77.3	5.8	77.5	62636861.2263±0.2322	-78.3
ANTIPAROS	-207.2	-90.3	-132.5	64.9	142. 7	62636863.5239±0.3284	-101.2
PAROS	-84.6	-57.4	-74.5	9.7	75.1	62636861.1450±0.2011	-77.4
NAXOS	-80.7	-32.0	-61.3	16.4	63.3	62636860.0332±0.1422	-66.3
SERIFOS	-58.3	-32.6	-47.4	8.9	48.1	62636858.4794±0.2322	-50.8
KYTHNOS	-49.2	-24.2	-36.6	10.2	37.7	62636856.8563±0.2322	-34.6
KEA	-81.0	-49.9	-61.8	10.2	62.6	62636860.0293±0.2011	-66.3
MYKONOS	-50.8	-34.8	-44.0	5.3	44.2	62636857.4707±0.2150	-40.7
DILOS	-52.4	-49.1	-50.8	2.3	50.8	62636858.4325±0.3284	-50.3
SYROS	-119.8	-51.7	-64.5	24.8	68.5	62636860.0650±0.2150	-66.6
TINOS	-27.8	-4.2	-12.9	8.2	15.0	62636855.1921±0.2011	-17.9
ANDROS	-61.4	-15.3	-34.1	16.7	37.7	62636856.3457±0.1642	-29.5
EYVOIA	-113.6	8.6	-54.0	25.2	59.5	62636858.9612±0.0632	-55.6
OTHONOI	-127.0	-107.9	-117.5	13.5	117. 8	62636864.4046±0.3285	-110.0
MATHRAKI	-72.0	-72.0	-72.0	----	72.0	62636860.4525±0.5690	-70.5
EREITHOUSA	-73.8	-73.8	-73.8	----	73.8	62636860.6313±0.5690	-72.3
CORFU	-47.0	13.8	-26.7	18.2	32.0	62636855.7217±0.1380	-23.2
PAKSOI	-7.5	-7.5	-7.5	----	7.5	62636854.1327±0.5690	-7.3
ANTIPAKSOI	-16.0	-16.0	-16.0	----	16.0	62636854.9669±0.5690	-15.7
LEUKADA	-31.2	-4.7	-23.2	7.8	24.3	62636855.9479±0.1896	-25.5
KASTOS	-43.4	-43.4	-43.4	----	43.4	62636857.6550±0.5689	-42.5
KALAMOS	-36.3	-36.3	-36.3	----	36.3	62636856.9556±0.5689	-35.6
MEGANHSI	-47.9	-47.9	-47.9	----	47.9	62636858.0969±0.5689	-47.0
MAKRI	-67.8	-67.8	-67.8	----	67.8	62636860.0466±0.5689	-66.5
PYSTROS	-87.6	-87.6	-87.6	----	87.6	62636861.9814±0.5689	-85.8
PRASO	-82.7	-82.7	-82.7	----	82.7	62636861.5085±0.5689	-81.1
ITHAKI	20.2	33.3	28.9	6.1	29.4	62636850.4552±0.2844	29.4
KEFALONIA	-2.3	120.4	75.1	37.5	83.5	62636844.1876±0.1272	92.1
ZAKYNTHOS	-61.9	76.2	36.1	43.8	55.4	62636852.8923±0.1642	5.1

KYTHIRA	6.6	64.5	30.7	23.9	38.3	62636850.9446±0.1715	24.6
ELAFONHSOS	0.3	0.3	0.3	----	0.3	62636853.3728±0.5688	0.3
ANTI KYTHIRA	-29.1	-15.8	-21.4	5.8	21.9	62636855.3030±0.2844	-19.0
SPETSES	-79.8	-79.8	-79.8	----	79.8	62636861.2186±0.5689	-78.2
YDRA	-33.5	-15.2	-23.4	9.3	24.6	62636855.5793±0.3284	-21.8
PLATONHSI	-38.1	-38.1	-38.1	----	38.1	62636857.1299±0.5689	-37.3
PETASI	-138.9	-138.9	-138.9	----	138.9	62636867.0110±0.5689	-136.1
POROS	-45.0	-34.4	-39.7	7.5	40.1	62636857.5283±0.4022	-41.3
SALAMINA	-77.0	-59.6	-65.8	7.8	66.1	62636859.5448±0.2844	-61.4
AIGINA	-81.8	-62.6	-71.3	7.2	71.6	62636860.3108±0.2544	-69.1

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**Table A3:** The evaluation of the TIMR5 (d/o 28 0) at the GPS/leveling benchmarks in Greek islands.

Study Area (Greek Islands)	Geoid Height Residuals ( $N_{GPS/lev.} - N_{model}$ )					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max.	mean	std	rms	$\overline{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta \overline{W}_o^{LVD}$ (cm)
TIMR5 (d/o 280)							
CRETE	-110.7	92.7	-23.0	39.3	45.4	62636857.9335±0.1002	-45.3
GAVDOS	38.7	48.3	43.5	6.8	43.7	62636849.1465±0.8852	42.5
RHODES	-110.7	130.6	2.4	63.5	63.3	62636846.8355±0.2147	65.6
THASOS	-58.7	-16.5	-31.0	15.4	34.2	62636857.7808±0.4429	-43.8
LIMNOS	-43.3	-18.8	-31.8	7.7	32.7	62636856.6178±0.2952	-32.2
AG. EUSTRATIOS	-67.2	-54.3	-59.9	5.6	60.1	62636858.7429±0.6262	-53.4
SKIATHOS	-69.8	-28.1	-51.2	13.4	52.7	62636858.5535±0.3776	-51.5
SKOPELOS	-75.5	-36.4	-49.1	14.0	50.8	62636857.8232±0.4428	-44.2
ALONISOS	-33.8	-2.3	-15.8	11.6	19.0	62636854.6942±0.5113	-12.9
KYRA PANAGIA	-43.9	-32.2	-39.8	6.6	40.1	62636857.5294±0.7231	-41.3
SKANTZOURA	-9.5	-2.8	-6.5	2.9	6.9	62636854.0702±0.6262	-6.7

SAMOTHRAKI	-30.3	-10.4	-21.7	8.2	23.0	62636855.5753±0.4429	-21.8
LESVOS	-87.3	-3.3	-50.2	18.9	53.5	62636858.6272±0.2005	-52.3
SKYROS	-23.0	-4.0	-13.3	6.9	14.8	62636855.0436±0.4175	-16.4
PSARA	-66.3	-31.7	-53.1	15.9	54.9	62636859.1998±0.6261	-58.0
CHIOS	-67.4	-4.7	-30.6	15.6	34.2	62636856.6575±0.2556	-32.6
SAMOS	-172.0	-24.2	-49.1	37.0	60.7	62636857.3512±0.3347	-39.5
FOURNOI	-43.6	-1.7	-13.7	15.5	19.7	62636854.5884±0.5112	-11.9
IKARIA	-46.7	-1.2	-12.3	14.2	18.3	62636853.8497±0.3960	-4.5
PATMOS	-58.6	-30.0	-41.4	9.1	42.3	62636857.3707±0.4733	-39.7
LEROS	-50.8	-32.1	-41.6	5.8	42.0	62636857.4778±0.3960	-40.8
AGATHONISI	-86.3	-86.2	-86.3	0.1	86.3	62636861.8542±0.7230	-84.5
KALYMNOS	-61.6	-43.8	-52.7	7.0	53.1	62636858.6833±0.4733	-52.8
KOS	-93.7	-63.0	-78.9	8.2	79.3	62636861.6676±0.3473	-82.7
NISYROS	-119.6	-105.7	-112.6	6.8	112.7	62636864.9478±0.6260	-115.5
TILOS	-81.0	-66.5	-73.0	5.4	73.1	62636860.3799±0.5111	-69.8
SYMH	-32.3	-7.1	-23.3	11.1	25.3	62636856.0567±0.5599	-26.6
KARPATOS	-92.6	3.9	-39.1	32.6	50.4	62636855.3250±0.2951	-19.2
KASOS	-4.1	4.6	-0.3	3.9	3.6	62636853.2537±0.5111	1.5
KASTELORIZO	12.4	34.9	22.4	11.2	24.4	62636850.7588±0.6260	26.4
SYRNA	-11.8	-5.2	-8.9	3.1	9.3	62636854.3543±0.6260	-9.5
ANAFI	-19.8	-13.4	-16.8	3.2	17.1	62636854.8360±0.6260	-14.4
ASTYPALAIA	-61.6	-22.5	-31.5	13.6	34.0	62636856.4131±0.4732	-30.1
AMORGOS	-107.7	-92.0	-97.9	5.8	98.0	62636862.9662±0.3959	-95.7
LEROS	-55.3	-47.6	-50.7	3.3	50.8	62636858.3756±0.6261	-49.8
SANTORINI	-37.6	-16.2	-26.8	6.8	27.6	62636856.2425±0.3775	-28.4
IOS	-98.2	-65.7	-77.7	12.3	78.5	62636860.8375±0.4732	-74.4
SIKINOS	-72.0	-64.2	-68.4	3.9	68.5	62636859.9915±0.6260	-65.9
FOLEGANDROS	-63.9	-54.4	-59.7	4.0	59.8	62636859.2275±0.6260	-58.3
IRAKLEIA	-119.5	-112.2	-115.9	5.1	115.9	62636864.4938±0.7229	-110.9
SHINOUSA	-126.9	-126.7	-126.8	0.2	126.8	62636865.8199±0.7229	-124.2
KOUFONISIA	-77.4	-76.9	-77.2	0.4	77.2	62636860.9457±0.7230	-75.5



KIMOLOS	-76.3	-74.4	-75.3	1.3	75.3	62636860.7549±0.7229	-73.5
MILOS	-87.5	-49.8	-62.3	12.1	63.4	62636859.9906±0.4427	-65.9
SIFINOS	-94.2	-76.5	-81.7	6.5	82.0	62636861.6615±0.5112	-82.6
ANTIPAROS	-212.1	-95.4	-137.0	65.2	147.0	62636863.9689±0.7230	-105.7
PAROS	-89.0	-62.4	-79.5	9.5	80.0	62636861.6117±0.4427	-82.1
NAXOS	-86.3	-37.2	-66.7	16.7	68.7	62636860.5701±0.3130	-71.7
SERIFOS	-65.7	-40.1	-54.6	8.8	55.1	62636859.1794±0.5112	-57.8
KYTHNOS	-55.1	-31.2	-43.2	9.8	44.1	62636857.5087±0.5112	-41.1
KEA	-82.1	-53.1	-64.2	9.4	64.8	62636860.2259±0.4427	-68.3
MYKONOS	-49.8	-32.9	-42.5	5.4	42.8	62636857.3144±0.4733	-39.1
DILOS	-53.6	-50.5	-52.1	2.2	52.1	62636858.5551±0.7230	-51.6
SYROS	-126.1	-56.7	-70.0	25.2	73.8	62636860.6171±0.4733	-72.2
TINOS	-30.2	-4.4	-13.8	8.7	16.0	62636855.2779±0.4427	-18.8
ANDROS	-61.4	-17.6	-35.6	15.8	38.7	62636856.4741±0.3615	-30.7
EYVOIA	-107.0	20.7	-49.9	27.7	57.0	62636859.0956±0.1391	-57.0
OTHONOI	-132.6	-113.8	-123.2	13.3	123.6	62636864.9733±0.7231	-115.7
MATHRAKI	-82.1	-82.1	-82.1	----	82.1	62636861.4424±1.2525	-80.4
EREITHOUSA	-80.2	-80.2	-80.2	----	80.2	62636861.2566±1.2525	-78.6
CORFU	-56.1	10.1	-36.1	20.5	41.2	62636856.5538±0.3038	-31.5
PAKSOI	-5.7	-5.7	-5.7	----	5.7	62636853.9563±1.2525	-5.6
ANTIPAKSOI	-14.0	-14.0	-14.0	----	14.0	62636854.7680±1.2524	-13.7
LEUKADA	-39.6	-7.5	-27.9	8.9	29.1	62636856.4445±0.4174	-30.4
KASTOS	-48.5	-48.5	-48.5	----	48.5	62636858.1528±1.2524	-47.5
KALAMOS	-41.0	-41.0	-41.0	----	41.0	62636857.4202±1.2523	-40.2
MEGANHSI	-52.0	-52.0	-52.0	----	52.0	62636858.4997±1.2524	-51.0
MAKRI	-74.1	-74.1	-74.1	----	74.1	62636860.6650±1.2524	-72.6
PYSTROS	-94.5	-94.5	-94.5	----	94.5	62636862.6635±1.2524	-92.6
PRASO	-89.5	-89.5	-89.5	----	89.5	62636862.1710±1.2524	-87.7
ITHAKI	12.7	27.9	23.1	7.0	23.9	62636850.9850±0.6261	24.1
KEFALONIA	-10.9	120.0	74.3	38.9	83.4	62636844.2885±0.2800	91.1
ZAKYNTHOS	-50.9	86.9	47.0	43.5	62.8	62636851.7638±0.3615	16.4

KYTHIRA	5.6	64.5	32.3	22.8	38.9	62636850.6999±0.3775	27.0
ELAFONHSOS	1.4	1.4	1.4	----	1.4	62636853.2621±1.2522	1.4
ANTI KYTHIRA	-32.5	-18.9	-24.6	5.9	25.1	62636855.6170±0.6260	-22.2
SPETSES	-71.4	-71.4	-71.4	----	71.4	62636860.3984±1.2523	-70.0
YDRA	-27.5	-7.3	-16.0	10.4	18.1	62636854.8493±0.7230	-14.5
PLATONHSI	-28.6	-28.6	-28.6	----	28.6	62636856.2058±1.2522	-28.1
PETASI	-130.2	-130.2	-130.2	----	130.2	62636866.1566±1.2522	-127.6
POROS	-42.6	-31.9	-37.2	7.6	37.6	62636857.2858±0.8855	-38.9
SALAMINA	-84.6	-66.3	-72.8	8.3	73.1	62636860.2089±0.6261	-68.1
AIGINA	-85.2	-65.9	-75.1	7.2	75.3	62636860.6964±0.5600	-73.0

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2 **Table A4: The evaluation of the GOCO05s (d/o 280) at the GPS/leveling benchmarks in Greek islands.**

Study Area (Greek Islands)	Geoid Height Residuals ( $N_{GPS/lev.} - N_{model}$ )					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max.	mean	std	rms	$\widehat{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta \widehat{W}_o^{LVD}$ (cm)
GOCO05S (d/o 280)							
CRETE	-112.2	89.4	-25.8	39.1	46.7	62636858.2652±0.1041	-48.7
GAVDOS	38.7	48.3	43.5	6.8	43.8	62636849.1430±0.9191	42.6
RHODES	-112.2	133.4	1.1	64.9	64.7	62636846.7428±0.2230	66.6
THASOS	-56.8	-14.5	-29.0	15.5	32.4	62636857.5789±0.4598	-41.8
LIMNOS	-44.7	-20.3	-33.4	7.7	34.2	62636856.7740±0.3065	-33.7
AG. EUSTRATIOS	-67.0	-54.4	-59.9	5.5	60.1	62636858.7494±0.6502	-53.5
SKIATHOS	-69.7	-27.7	-50.7	13.4	52.3	62636858.5058±0.3921	-51.1
SKOPELOS	-74.6	-35.4	-48.2	14.1	49.9	62636857.7270±0.4598	-43.3
ALONISOS	-32.7	-1.2	-14.6	11.6	18.0	62636854.5782±0.5309	-11.8
KYRA PANAGIA	-42.7	-30.9	-38.6	6.6	39.0	62636857.4139±0.7508	-40.1
SKANTZOURA	-8.3	-1.6	-5.2	2.9	5.8	62636853.9504±0.6502	-5.5
SAMOTHRAKI	-27.3	-6.6	-18.2	8.3	19.8	62636855.2054±0.4598	-18.1
LESVOS	-83.6	0.5	-46.6	19.0	50.2	62636858.2633±0.2082	-48.6
SKYROS	-22.9	-3.3	-12.7	7.0	14.3	62636854.9778±0.4335	-15.8
PSARA	-67.9	-32.9	-54.6	16.1	56.3	62636859.3458±0.6502	-59.5

CHIOS	-69.5	-7.1	-33.2	15.4	36.4	62636856.9758±0.2654	-35.8
SAMOS	-169.5	-21.4	-46.1	37.2	58.5	62636857.0291±0.3475	-36.3
FOURNOI	-40.6	1.9	-10.4	15.7	17.7	62636854.2646±0.5308	-8.6
IKARIA	-43.8	1.9	-9.2	14.3	16.4	62636853.5430±0.4112	-1.4
PATMOS	-56.3	-32.1	-39.7	8.4	40.5	62636857.1805±0.4914	-37.8
LEROS	-50.3	-30.7	-40.1	6.4	40.5	62636857.3134±0.4112	-39.1
AGATHONISI	-81.4	-81.4	-81.4	0.0	81.4	62636861.3752±0.7507	-79.8
KALYMNOS	-63.6	-44.4	-53.9	7.5	54.4	62636858.8121±0.4914	-54.1
KOS	-97.0	-66.0	-81.9	8.2	82.2	62636861.9582±0.3606	-85.6
NISYROS	-122.6	-108.5	-115.1	6.9	115.3	62636865.2205±0.6501	-118.2
TILOS	-82.3	-67.4	-74.0	5.4	74.1	62636860.4861±0.5307	-70.9
SYMH	-37.7	-11.9	-28.3	11.2	30.0	62636856.5532±0.5814	-31.5
KARPATOS	-88.2	2.0	-38.4	30.7	48.6	62636855.3690±0.3064	-19.7
KASOS	-6.7	2.9	-2.3	4.0	4.3	62636853.4436±0.5307	-0.4
KASTELORIZO	17.1	38.8	26.8	11.0	28.4	62636850.3338±0.6500	30.7
SYRNA	-10.5	-2.7	-6.6	3.6	7.3	62636854.0936±0.6501	-6.9
ANAFI	-19.8	-13.2	-16.7	3.3	17.0	62636854.81899±0.650	-14.2
ASTYPALAIA	-64.8	-25.1	-34.0	13.9	36.4	62636856.65769±0.4914	-32.6
AMORGOS	-111.8	-96.3	-102.1	5.8	102.3	62636863.3836±0.4111	-99.8
LEROS	-57.7	-50.2	-53.3	3.3	53.3	62636858.6298±0.6501	-52.3
SANTORINI	-37.7	-15.2	-26.2	7.1	27.0	62636856.1892±0.3920	-27.9
IOS	-100.5	-67.9	-79.9	12.3	80.7	62636861.0503±0.4914	-76.5
SIKINOS	-73.6	-65.8	-70.0	3.9	70.1	62636860.1484±0.6500	-67.5
FOLEGANDROS	-65.2	-55.2	-60.8	4.2	60.9	62636859.3299±0.6500	-59.3
IRAKLEIA	-122.3	-115.1	-118.7	5.1	118.8	62636864.7775±0.7506	-113.8
SHINOUSA	-129.9	-129.9	-129.9	0.0	129.9	62636866.1308±0.7507	-127.3
KOUFONISIA	-80.4	-79.9	-80.2	0.3	80.2	62636861.2439±0.7507	-78.4
KIMOLOS	-78.7	-76.9	-77.8	1.3	77.8	62636860.9999±0.7507	-76.0
MILOS	-90.0	-52.4	-64.9	12.1	65.9	62636860.2399±0.4597	-68.4

SIFINOS	-95.3	-78.3	-83.2	6.3	83.4	62636861.8003±0.5308	-84.0
ANTIPAROS	-212.7	-95.9	-137.8	65.0	147.7	62636864.0459±0.7507	-106.5
PAROS	-90.2	-63.0	-80.0	9.8	80.5	62636861.6745±0.4597	-82.7
NAXOS	-88.1	-37.9	-68.0	17.1	70.0	62636860.6995±0.3250	-73.0
SERIFOS	-66.0	-40.1	-54.9	9.0	55.5	62636859.2205±0.5308	-58.2
KYTHNOS	-53.7	-30.2	-42.0	9.5	42.9	62636857.3947±0.5308	-39.9
KEA	-80.8	-51.6	-62.8	9.5	63.4	62636860.0921±0.4597	-66.9
MYKONOS	-46.2	-29.5	-39.0	5.3	39.3	62636856.9788±0.4914	-35.8
DILOS	-50.4	-47.4	-48.9	2.1	48.9	62636858.2407±0.7507	-48.4
SYROS	-123.5	-53.6	-67.0	25.4	71.0	62636860.3334±0.4914	-69.3
TINOS	-26.9	-0.7	-10.2	8.8	13.1	62636854.9167±0.4597	-15.2
ANDROS	-60.9	-15.7	-34.1	16.4	37.5	62636856.3338±0.3753	-29.3
EYVOIA	-107.2	21.7	-49.4	28.0	56.7	62636859.0565±0.1445	-56.6
OTHONOI	-128.8	-110.1	-119.5	13.2	119.8	62636864.6118±0.7508	-112.1
MATHRAKI	-78.5	-78.5	-78.5	----	78.5	62636861.0964±1.3005	-77.0
EREITHOUSA	-77.1	-77.1	-77.1	----	77.1	62636860.9606±1.3005	-75.6
CORFU	-53.4	9.7	-34.3	19.4	39.1	62636856.4032±0.3154	-30.0
PAKSOI	-7.5	-7.5	-7.5	----	7.5	62636854.1376±1.3005	-7.4
ANTIPAKSOI	-15.9	-15.9	-15.9	----	15.9	62636854.9600±1.3004	-15.6
LEUKADA	-38.1	-7.5	-27.3	8.5	28.5	62636856.3809±0.4334	-29.8
KASTOS	-47.6	-47.6	-47.6	----	47.6	62636858.0617±1.3004	-46.6
KALAMOS	-40.2	-40.2	-40.2	----	40.2	62636857.3388±1.3004	-39.4
MEGANHSI	-51.5	-51.5	-51.5	----	51.5	62636858.4438±1.3004	-50.4
MAKRI	-72.6	-72.6	-72.6	----	72.6	62636860.5101±1.3004	-71.1
PYSTROS	-93.0	-93.0	-93.0	----	93.0	62636862.5136±1.3004	-91.1
PRASO	-88.0	-88.0	-88.0	----	88.0	62636862.0260±1.3004	-86.3
ITHAKI	14.4	29.5	24.7	6.9	25.4	62636850.8334±0.6501	25.7
KEFALONIA	-9.0	120.7	75.0	38.7	84.0	62636844.2050±0.2908	91.9
ZAKYNTHOS	-51.6	85.2	45.6	43.2	61.5	62636851.8779±0.3753	15.2
KYTHIRA	6.3	66.2	33.1	23.4	39.9	62636850.6465±0.3920	27.5
ELAFONHSOS	1.3	1.3	1.3	----	1.3	62636853.2680±1.3001	1.3

ANTIKYTHIRA	-30.8	-17.0	-22.8	6.0	23.4	62636855.4335±0.6500	-20.3
SPETSES	-69.3	-69.3	-69.3	----	69.3	62636860.1917±1.3002	-67.9
YDRA	-25.8	-5.5	-14.2	10.5	16.6	62636854.6770±0.7507	-12.8
PLATONHSI	-26.7	-26.7	-26.7	----	26.7	62636856.0138±1.3002	-26.1
PETASI	-128.2	-128.2	-128.2	----	128.2	62636865.9596±1.3002	-125.6
POROS	-40.8	-30.2	-35.5	7.5	35.9	62636857.1152±0.9194	-37.2
SALAMINA	-84.1	-65.8	-72.2	8.2	72.6	62636860.1526±0.6501	-67.5
AIGINA	-84.1	-64.9	-74.1	7.2	74.4	62636860.6022±0.5815	-72.0

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2 **Table A5:** The evaluation of the DIRR5 (170 d/o as optimal degree plus EGM2008 coefficients) at the  
3 GPS/leveling benchmarks.

Study Area (Greek Islands)	Geoid Height Residuals ( $N_{GPS/lev.} - N_{model}$ )					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max.	mean	std	rms	$\widehat{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta\widehat{W}_o^{LVD}$ (cm)
DIR R5 (d/o 170) +EGM08 (d/o 2190)							
CRETE	-126.3	-29.5	-81.1	18.6	83.2	62636861.0799±0.0309	-76.8
GAVDOS	-83.4	-75.6	-79.5	5.5	79.6	62636861.1943±0.2732	-77.9
RHODES	-126.3	-19.0	-72.5	25.1	76.7	62636857.4729±0.0662	-40.7
THASOS	-68.3	-48.3	-57.3	6.2	57.6	62636859.1000±0.0871	-57.0
LIMNOS	-91.0	-51.4	-75.6	9.2	76.1	62636860.9385±0.0911	-75.4
AG. EUSTRATIOS	-69.0	-58.8	-64.6	4.5	64.7	62636859.1819±0.1932	-57.8
SKIATHOS	-84.7	-56.2	-76.4	10.7	77.1	62636861.0789±0.1165	-76.8
SKOPELOS	-120.1	-83.6	-92.9	12.2	93.6	62636862.1382±0.1367	-87.4
ALONISOS	-102.6	-79.6	-86.9	9.2	87.3	62636862.1158±0.1578	-87.2
KYRA PANAGIA	-101.6	-88.0	-94.2	6.8	94.4	62636863.0072±0.2231	-96.1
SKANTZOURA	-74.3	-62.8	-69.3	4.8	69.4	62636860.2364±0.1932	-68.4
SAMOTHRAKI	-82.5	-52.7	-65.6	8.8	66.2	62636860.4126±0.1367	-70.1
LESVOS	-89.6	-53.3	-74.4	9.1	74.9	62636861.0052±0.0619	-76.1
SKYROS	-87.8	-44.6	-70.9	12.9	72.0	62636860.3355±0.1288	-69.4

PSARA	-66.3	-35.9	-55.6	13.5	56.8	62636859.3382±0.1932	-59.4
CHIOS	-69.4	-21.6	-40.0	12.8	41.9	62636857.9984±0.0789	-46.0
SAMOS	-175.3	-63.6	-84.1	27.8	88.3	62636861.5854±0.1033	-81.9
FOURNOI	-87.9	-52.6	-63.6	13.9	64.9	62636859.6529±0.1577	-62.5
IKARIA	-99.0	-67.1	-78.9	8.5	79.3	62636860.5111±0.1222	-71.1
PATMOS	-81.7	-63.2	-70.7	6.6	70.9	62636860.2889±0.1460	-68.9
LEROS	-82.5	-67.0	-76.0	4.8	76.1	62636860.9394±0.1222	-75.4
AGATHONISI	-111.6	-110.1	-110.8	1.1	110.8	62636864.2417±0.2231	-108.4
KALYMNOS	-71.6	-61.7	-66.6	3.7	66.7	62636859.9566±0.1460	-65.6
KOS	-85.8	-48.4	-65.9	9.4	66.5	62636860.2649±0.1072	-68.6
NISYROS	-100.0	-82.1	-90.2	7.3	90.4	62636862.3220±0.1932	-89.2
TILOS	-74.4	-61.4	-66.7	5.5	66.8	62636859.7501±0.1577	-63.5
SYMH	-45.8	-21.6	-36.0	10.5	37.2	62636857.2707±0.1728	-38.7
KARPATHOS	-86.4	-51.2	-66.1	9.9	66.8	62636859.6516±0.0911	-62.5
KASOS	-73.6	-64.8	-69.9	3.7	70.0	62636860.0641±0.1577	-66.6
KASTELORIZO	-92.2	-76.8	-84.3	7.2	84.5	62636861.1487±0.1932	-77.5
SYRNA	-65.7	-52.3	-61.2	6.0	61.4	62636859.4866±0.1932	-60.9
ANAFI	-38.7	-36.5	-37.5	1.1	37.5	62636857.0702±0.1932	-36.7
ASTYPALAIA	-80.1	-51.1	-68.3	9.6	68.8	62636860.1451±0.1460	-67.5
AMORGOS	-74.2	-60.0	-66.0	5.5	66.2	62636859.8540±0.1222	-64.5
LEROS	-56.1	-42.2	-47.3	6.2	47.6	62636857.9140±0.1932	-45.1
SANTORINI	-44.8	-28.4	-37.8	4.6	38.1	62636857.1714±0.1165	-37.7
IOS	-78.8	-54.4	-63.3	9.6	63.9	62636859.7526±0.1460	-63.5
SIKINOS	-61.8	-57.6	-59.9	1.7	59.9	62636859.1964±0.1932	-58.0
FOLEGANDROS	-72.5	-66.6	-69.4	2.6	69.4	62636860.1667±0.1932	-67.7
IRAKLEIA	-83.6	-79.5	-81.6	2.9	81.6	62636861.2458±0.2231	-78.5
SHINOUSA	-99.0	-94.4	-96.7	3.2	96.7	62636862.7751±0.2231	-93.8
KOUFONISIA	-59.4	-55.8	-57.6	2.5	57.6	62636858.9498±0.2231	-55.5
KIMOLOS	-72.5	-67.8	-70.1	3.3	70.2	62636860.3321±0.2231	-69.3
MILOS	-99.7	-66.1	-74.6	10.7	75.3	62636861.2541±0.1366	-78.5
SIFINOS	-66.1	-47.3	-57.8	6.2	58.1	62636859.2420±0.1577	-58.4

ANTIPAROS	-190.0	-76.4	-114.3	65.6	126.3	62636861.8541±0.2231	-84.5
PAROS	-73.7	-54.4	-67.2	6.7	67.5	62636860.2641±0.1366	-68.6
NAXOS	-99.7	-62.6	-75.8	9.9	76.4	62636860.6585±0.0966	-72.6
SERIFOS	-85.4	-66.7	-78.4	6.3	78.6	62636861.1390±0.1577	-77.4
KYTHNOS	-75.4	-62.8	-70.0	5.0	70.1	62636860.1535±0.1577	-67.5
KEA	-104.2	-89.5	-95.1	4.5	95.1	62636863.0004±0.1366	-96.0
MYKONOS	-95.3	-75.1	-86.0	6.9	86.2	62636861.5354±0.1460	-81.4
DILOS	-85.2	-78.4	-81.8	4.9	81.9	62636861.5372±0.2231	-81.4
SYROS	-142.8	-78.1	-93.6	22.3	95.8	62636862.8845±0.1460	-94.8
TINOS	-86.0	-71.3	-78.0	5.5	78.1	62636861.4128±0.1366	-80.1
ANDROS	-103.1	-76.1	-89.3	8.1	89.7	62636861.8161±0.1115	-84.2
EYVOIA	-105.4	-39.6	-71.4	11.5	72.3	62636859.9132±0.0429	-65.1
OTHONOI	-107.7	-104.6	-106.1	2.2	106.1	62636863.8819±0.2231	-104.8
MATHRAKI	-97.2	-97.2	-97.2	----	97.2	62636862.9233±0.3865	-95.2
EREITHOUSA	-105.9	-105.9	-105.9	----	105.9	62636863.7794±0.3865	-103.8
CORFU	-102.3	-46.2	-85.2	16.7	86.8	62636861.3689±0.0937	-79.7
PAKSOI	-70.3	-70.3	-70.3	----	70.3	62636860.2925±0.3865	-68.9
ANTIPAKSOI	-72.2	-72.2	-72.2	----	72.2	62636860.4728±0.3865	-70.7
LEUKADA	-99.9	-74.9	-88.1	9.8	88.5	62636862.0901±0.1288	-86.9
KASTOS	-52.0	-52.0	-52.0	----	52.0	62636858.4998±0.3865	-51.0
KALAMOS	-52.0	-52.0	-52.0	----	52.0	62636858.4982±0.3864	-51.0
MEGANHSI	-87.4	-87.4	-87.4	----	87.4	62636861.9661±0.3865	-85.7
MAKRI	-57.2	-57.2	-57.2	----	57.2	62636859.0087±0.3865	-56.1
PYSTROS	-78.7	-78.7	-78.7	----	78.7	62636861.1131±0.3865	-77.1
PRASO	-81.9	-81.9	-81.9	----	81.9	62636861.4242±0.3865	-80.2
ITHAKI	-76.6	-54.0	-62.1	10.2	62.7	62636859.1917±0.1932	-57.9
KEFALONIA	-83.6	-42.6	-64.7	9.6	65.4	62636859.3379±0.0864	-59.4
ZAKYNTHOS	-90.8	-67.3	-77.0	5.9	77.2	62636860.9146±0.1115	-75.1
KYTHIRA	-60.6	-32.5	-48.4	8.9	49.1	62636857.8795±0.1165	-44.8
ELAFONHSOS	-30.5	-30.5	-30.5	----	30.5	62636856.3888±0.3864	-29.9
ANTI KYTHIRA	-73.2	-69.9	-71.5	1.7	71.6	62636860.3722±0.1932	-69.7

SPETSES	-62.2	-62.2	-62.2	----	62.2	62636859.4920±0.3864	-60.9
YDRA	-81.5	-62.0	-71.1	9.8	71.6	62636860.2413±0.2231	-68.4
PLATONHSI	-81.4	-81.4	-81.4	----	81.4	62636861.3777±0.3864	-79.8
PETASI	-183.8	-183.8	-183.8	----	183.8	62636871.4116±0.3864	-180.1
POROS	-74.1	-66.1	-70.1	5.7	70.2	62636860.4518±0.2732	-70.5
SALAMINA	-63.8	-52.1	-57.9	5.6	58.1	62636858.7371±0.1932	-53.4
AIGINA	-68.1	-53.3	-57.9	6.1	58.2	62636858.8284±0.1728	-54.3

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2 **Table A5:** The evaluation of the TIMR5 (170 d/o as optimal degree plus EGM2008 coefficients) at the  
3 GPS/leveling benchmarks.

Study Area (Greek Islands)	Geoid Height Residuals ( $N_{GPS/lev.} - N_{model}$ )					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max	mean	std	rms	$\widehat{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta\widehat{W}_o^{LVD}$ (cm)
TIM R5 (d/o 170) +EGM08 (d/o 2190)							
CRETE	-124.8	-31.0	-81.4	18.0	83.4	62636861.1832±0.032 2	-77.8
GAVDOS	-82.5	-74.8	-78.6	5.5	78.7	62636861.1076±0.284 3	-77.1
RHODES	-124.8	-19.0	-72.6	24.4	76.6	62636857.5704±0.069 0	-41.7
THASOS	-68.4	-48.6	-57.5	6.2	57.8	62636859.1287±0.142 2	-57.3
LIMNOS	-91.4	-52.1	-76.0	9.2	76.5	62636860.9887±0.094 8	-75.9
AG. EUSTRATIOS	-69.3	-59.1	-64.9	4.5	65.1	62636859.2124±0.201 1	-58.1
SKIATHOS	-84.6	-56.2	-76.2	10.6	76.8	62636861.0498±0.121 3	-76.5



SKOPELOS	-119.4	-82.9	-92.2	12.2	92.9	62636862.0628±0.142	-86.6
						2	
ALONISOS	-101.7	-78.7	-85.9	9.2	86.3	62636862.0249±0.164	-86.2
						2	
KYRA PANAGIA	-100.5	-87.0	-93.1	6.8	93.3	62636862.9018±0.232	-95.0
						3	
SKANTZOURA	-73.4	-62.0	-68.4	4.8	68.5	62636860.1552±0.201	-67.6
						1	
SAMOTHRAKI	-83.4	-53.4	-66.5	8.8	67.0	62636860.4947±0.142	-70.9
						2	
LESVOS	-90.7	-54.8	-75.6	9.1	76.1	62636861.1291±0.064	-77.3
						4	
SKYROS	-87.4	-44.6	-70.7	12.8	71.8	62636860.3214±0.134	-69.2
						1	
PSARA	-67.5	-37.2	-56.8	13.5	58.0	62636859.4581±0.201	-60.6
						1	
CHIOS	-70.0	-22.6	-40.7	12.7	42.5	62636858.0401±0.082	-46.4
						1	
SAMOS	-174.3	-62.5	-82.7	27.9	87.0	62636861.4349±0.107	-80.3
						5	
FOURNOI	-87.7	-51.7	-63.0	14.2	64.4	62636859.6016±0.164	-62.0
						2	
IKARIA	-99.6	-67.0	-79.2	8.6	79.6	62636860.5164±0.127	-71.2
						2	
PATMOS	-80.9	-62.3	-69.8	6.6	70.1	62636860.2047±0.152	-68.0
						0	
LEROS	-81.0	-65.4	-74.5	4.8	74.6	62636860.7954±0.127	-74.0
						2	
AGATHONISI	-109.9	-108.4	-109.2	1.1	109.2	62636864.0788±0.232	-106.8
						2	
KALYMNOS	-69.8	-60.0	-64.9	3.7	64.9	62636859.7836±0.152	-63.8
						0	

KOS	-84.2	-46.7	-64.1	9.5	64.7	62636860.0876±0.111 5	-66.9
NISYROS	-97.8	-80.1	-88.2	7.3	88.4	62636862.1212±0.201 1	-87.2
TILOS	-72.5	-59.6	-64.8	5.5	65.0	62636859.5725±0.164 2	-61.7
SYMH	-46.2	-21.8	-36.2	10.6	37.4	62636857.2927±0.179 8	-38.9
KARPATOS	-84.1	-49.2	-63.9	9.8	64.6	62636859.4409±0.094 8	-60.4
KASOS	-71.5	-62.8	-67.9	3.7	68.0	62636859.8679±0.164 2	-64.7
KASTELORIZO	-91.9	-76.4	-84.0	7.2	84.2	62636861.1155±0.201 1	-77.2
SYRNA	-63.8	-50.8	-59.3	5.8	59.5	62636859.2948±0.201 1	-58.9
ANAFI	-40.1	-38.0	-39.0	1.1	39.0	62636857.2096±0.201 1	-38.1
ASTYPALAI	-79.5	-50.4	-67.7	9.7	68.3	62636860.0944±0.152 0	-66.9
AMORGOS	-75.9	-61.4	-67.4	5.6	67.7	62636859.9946±0.127 2	-65.9
LEROS	-55.5	-41.8	-46.8	6.1	47.1	62636857.8667±0.201 1	-44.7
SANTORINI	-46.5	-30.2	-39.7	4.6	39.9	62636857.3516±0.121 3	-39.5
IOS	-80.8	-56.4	-65.3	9.6	65.9	62636859.9457±0.152 0	-65.5
SIKINOS	-63.5	-59.4	-61.6	1.7	61.6	62636859.3635±0.201 1	-59.6
FOLEGANDROS	-73.5	-67.7	-70.4	2.6	70.4	62636860.2664±0.201 1	-68.7

IRAKLEIA	-85.7	-81.7	-83.7	2.9	83.7	62636861.4551±0.232 2	-80.6
SHINOUSA	-101.1	-96.6	-98.8	3.2	98.9	62636862.9831±0.232 2	-95.8
KOUFONISIA	-61.4	-57.9	-59.6	2.5	59.7	62636859.1542±0.232 2	-57.5
KIMOLOS	-72.4	-67.8	-70.1	3.2	70.2	62636860.3305±0.232 2	-69.3
MILOS	-99.4	-65.8	-74.2	10.8	74.9	62636861.2244±0.142 2	-78.2
SIFINOS	-66.5	-47.8	-58.4	6.2	58.7	62636859.2971±0.164 2	-59.0
ANTIPAROS	-191.7	-78.0	-116.0	65.5	127.8	62636862.0183±0.232 2	-86.2
PAROS	-75.6	-56.2	-69.1	6.7	69.4	62636860.4423±0.142 2	-70.4
NAXOS	-101.8	-64.7	-77.9	9.8	78.5	62636860.8641±0.100 5	-74.6
SERIFOS	-85.2	-66.7	-78.3	6.3	78.5	62636861.1303±0.164 2	-77.3
KYTHNOS	-75.0	-62.4	-69.6	5.0	69.7	62636860.1157±0.164 2	-67.2
KEA	-103.4	-88.8	-94.3	4.5	94.4	62636862.9245±0.142 2	-95.2
MYKONOS	-96.9	-76.8	-87.7	6.8	87.9	62636861.7056±0.152 0	-83.1
DILOS	-86.9	-80.1	-83.5	4.8	83.6	62636861.7044±0.232 2	-83.0
SYROS	-143.8	-79.0	-94.6	22.3	96.8	62636862.9856±0.152 0	-95.9
TINOS	-87.4	-72.7	-79.2	5.4	79.3	62636861.5424±0.142 2	-81.4

ANDROS	-103.3	-76.4	-89.7	8.1	90.0	62636861.8432±0.116 1	-84.4
EYVOIA	-104.2	-38.6	-70.6	11.6	71.6	62636859.8726±0.044 7	-64.7
OTHONOI	-107.7	-104.7	-106.2	2.1	106.2	62636863.8869±0.232 3	-104.9
MATHRAKI	-97.1	-97.1	-97.1	----	97.1	62636862.9164±0.402 3	-95.2
EREITHOUSA	-105.3	-105.3	-105.3	----	105.3	62636863.7206±0.402 3	-103.2
CORFU	-101.7	-45.7	-84.6	16.7	86.1	62636861.2994±0.097 6	-79.0
PAKSOI	-69.9	-69.9	-69.9	----	69.9	62636860.2474±0.402 3	-68.5
ANTIPAKSOI	-71.7	-71.7	-71.7	----	71.7	62636860.4287±0.402 3	-70.3
LEUKADA	-99.1	-74.2	-87.2	9.8	87.7	62636862.0051±0.134 1	-86.1
KASTOS	-51.5	-51.5	-51.5	----	51.5	62636858.4478±0.402 3	-50.5
KALAMOS	-51.5	-51.5	-51.5	----	51.5	62636858.4452±0.402 2	-50.5
MEGANHSI	-86.7	-86.7	-86.7	----	86.7	62636861.9014±0.402 3	-85.0
MAKRI	-56.5	-56.5	-56.5	----	56.5	62636858.9362±0.402 3	-55.4
PYSTROS	-78.1	-78.1	-78.1	----	78.1	62636861.0514±0.402 3	-76.5
PRASO	-81.2	-81.2	-81.2	----	81.2	62636861.3566±0.402 3	-79.6
ITHAKI	-75.3	-52.8	-60.8	10.2	61.5	62636859.0689±0.201 1	-56.7

KEFALONIA	-82.4	-41.1	-63.2	9.7	63.9	62636859.1947±0.089 9	-57.9
ZAKYNTHOS	-90.0	-66.9	-76.3	5.8	76.5	62636860.8691±0.116 1	-74.7
KYTHIRA	-60.3	-31.9	-48.0	8.9	48.7	62636857.8328±0.121 3	-44.3
ELAFONHSOS	-30.5	-30.5	-30.5	----	30.5	62636856.3898±0.402 2	-29.9
ANTIKYTHIRA	-71.6	-68.3	-70.0	1.7	70.0	62636860.2166±0.201 1	-68.2
SPETSES	-62.1	-62.1	-62.1	----	62.1	62636859.4881±0.402 2	-60.9
YDRA	-80.5	-61.1	-70.2	9.8	70.7	62636860.1564±0.232 2	-67.6
PLATONHSI	-80.8	-80.8	-80.8	----	80.8	62636861.3199±0.402 2	-79.2
PETASI	-183.2	-183.2	-183.2	----	183.2	62636871.3518±0.402 2	-179.5
POROS	-73.2	-65.1	-69.1	5.7	69.2	62636860.3563±0.284 4	-69.6
SALAMINA	-62.4	-50.7	-56.5	5.6	56.7	62636858.6001±0.201 1	-52.0
AIGINA	-66.9	-52.0	-56.7	6.1	56.9	62636858.7049±0.179 9	-53.0

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2 **Table A6:** The evaluation of the GOCO05s (170 d/o as optimal degree plus EGM2008 coefficients) at the  
3 GPS/leveling benchmarks.

Study Area (Greek Islands)	Geoid Height Residuals ( $N_{GPS/lev.} - N_{model}$ )					Gravity Potential and offsets relative to $W_o = 62636853.4000 \text{ m}^2/\text{s}^2$	
	min	max	mean	std	rms	$\widehat{W}_o^{LVD}$ ( $\text{m}^2/\text{s}^2$ )	$\approx \delta\widehat{W}_o^{LVD}$ (cm)
GOCO05S (d/o 170) +EGM08 (d/o 2190)							

CRETE	-125.2	-31.7	-82.1	18.0	84.0	62636861.2682±0.0312	-78.7
GAVDOS	-82.3	-74.6	-78.5	5.5	78.5	62636861.0890±0.2756	-76.9
RHODES	-125.2	-18.5	-72.7	24.7	76.8	62636857.5066±0.0669	-41.1
THASOS	-67.3	-47.6	-56.4	6.2	56.7	62636859.0257±0.1379	-56.3
LIMNOS	-90.9	-51.7	-75.4	9.1	75.9	62636860.9246±0.0919	-75.2
AG. EUSTRATIOS	-69.4	-59.2	-65.0	4.5	65.1	62636859.2163±0.1950	-58.2
SKIATHOS	-83.7	-55.5	-75.4	10.6	76.0	62636860.9748±0.1176	-75.7
SKOPELOS	-118.6	-82.1	-91.5	12.2	92.2	62636861.9921±0.1378	-85.9
ALONISOS	-101.2	-78.1	-85.4	9.2	85.8	62636861.9726±0.1592	-85.7
KYRA PANAGIA	-100.3	-86.7	-92.9	6.9	93.1	62636862.8803±0.2251	-94.8
SKANTZOURA	-72.9	-61.4	-67.8	4.8	67.9	62636860.0935±0.1950	-66.9
SAMOTHRAKI	-81.4	-51.6	-64.5	8.8	65.1	62636860.3028±0.1379	-69.0
LESVOS	-90.1	-54.2	-75.0	9.1	75.5	62636861.0694±0.0624	-76.7
SKYROS	-86.8	-43.9	-70.1	12.8	71.1	62636860.2641±0.1300	-68.6
PSARA	-66.9	-36.5	-56.1	13.5	57.3	62636859.3913±0.1949	-59.9
CHIOS	-69.1	-21.7	-39.9	12.7	41.8	62636857.9622±0.0796	-45.6
SAMOS	-174.3	-62.6	-82.7	27.9	87.0	62636861.4416±0.1042	-80.4
FOURNOI	-87.8	-51.9	-63.2	14.2	64.5	62636859.6153±0.1592	-62.2
IKARIA	-99.7	-67.2	-79.3	8.6	79.7	62636860.5301±0.1233	-71.3
PATMOS	-81.0	-62.4	-69.9	6.6	70.2	62636860.2184±0.1473	-68.2
LEROS	-81.0	-65.4	-74.6	4.8	74.7	62636860.8059±0.1233	-74.1
AGATHONISI	-110.2	-108.7	-109.5	1.1	109.5	62636864.1108±0.2251	-107.1
KALYMNOS	-69.8	-60.0	-64.7	3.7	64.8	62636859.7708±0.1473	-63.7
KOS	-84.1	-46.5	-63.8	9.5	64.4	62636860.0595±0.1081	-66.6
NISYROS	-97.0	-79.4	-87.4	7.3	87.6	62636862.0503±0.1949	-86.5
TILOS	-71.7	-58.8	-64.0	5.5	64.2	62636859.4923±0.1591	-60.9
SYMH	-45.8	-21.4	-35.7	10.6	37.0	62636857.2487±0.1743	-38.5
KARPATOS	-83.8	-49.4	-64.0	9.7	64.7	62636859.4656±0.0919	-60.7
KASOS	-72.1	-63.3	-68.5	3.6	68.6	62636859.9275±0.1591	-65.3
KASTELORIZO	-91.2	-75.8	-83.3	7.2	83.5	62636861.0488±0.1949	-76.5
SYRNA	-62.7	-49.7	-58.2	5.8	58.4	62636859.1852±0.1949	-57.9

ANAFI	-39.2	-37.1	-38.0	1.1	38.1	62636857.1205±0.1949	-37.2
ASTYPALAIA	-78.5	-49.3	-66.7	9.7	67.2	62636859.9883±0.1473	-65.9
AMORGOS	-75.3	-60.8	-66.8	5.6	67.1	62636859.9356±0.1233	-65.4
LEROS	-55.1	-41.4	-46.4	6.1	46.7	62636857.8306±0.1949	-44.3
SANTORINI	-45.9	-29.4	-38.9	4.6	39.2	62636857.2814±0.1175	-38.8
IOS	-80.4	-55.9	-64.8	9.6	65.4	62636859.8996±0.1473	-65.0
SIKINOS	-63.1	-58.9	-61.1	1.7	61.2	62636859.3200±0.1949	-59.2
FOLEGANDROS	-73.1	-67.2	-70.0	2.6	70.0	62636860.2255±0.1949	-68.3
IRAKLEIA	-85.3	-81.3	-83.3	2.9	83.3	62636861.4183±0.2251	-80.2
SHINOUSA	-100.7	-96.1	-98.4	3.3	98.5	62636862.9423±0.2251	-95.4
KOUFONISIA	-61.1	-57.5	-59.3	2.5	59.3	62636859.1216±0.2251	-57.2
KIMOLOS	-72.2	-67.6	-69.9	3.2	69.9	62636860.3081±0.2251	-69.1
MILOS	-99.1	-65.5	-73.9	10.8	74.6	62636861.1929±0.1378	-77.9
SIFINOS	-66.6	-47.8	-58.4	6.3	58.7	62636859.2983±0.1591	-59.0
ANTIPAROS	-191.7	-78.0	-116.0	65.6	127.8	62636862.0203±0.2251	-86.2
PAROS	-75.5	-56.2	-69.1	6.7	69.4	62636860.4456±0.1378	-70.5
NAXOS	-101.7	-64.5	-77.8	9.9	78.4	62636860.8562±0.0975	-74.6
SERIFOS	-85.4	-66.9	-78.5	6.3	78.7	62636861.1453±0.1591	-77.5
KYTHNOS	-75.2	-62.5	-69.8	5.0	69.9	62636860.1359±0.1592	-67.4
KEA	-103.3	-88.9	-94.4	4.5	94.4	62636862.9267±0.1378	-95.3
MYKONOS	-97.3	-77.2	-88.0	6.9	88.3	62636861.7389±0.1473	-83.4
DILOS	-87.3	-80.4	-83.9	4.9	83.9	62636861.7394±0.2251	-83.4
SYROS	-144.1	-79.4	-94.9	22.3	97.2	62636863.0221±0.1473	-96.2
TINOS	-87.8	-73.1	-79.5	5.4	79.7	62636861.5768±0.1378	-81.8
ANDROS	-103.2	-76.5	-89.6	8.0	90.0	62636861.8406±0.1125	-84.4
EYVOIA	-103.3	-37.4	-69.6	11.7	70.5	62636859.7666±0.0433	-63.7
OTHONOI	-107.4	-104.5	-105.9	2.1	106.0	62636863.8615±0.2251	-104.6
MATHRAKI	-96.8	-96.8	-96.8	----	96.8	62636862.8909±0.3899	-94.9
EREITHOUSA	-105.0	-105.0	-105.0	----	105.0	62636863.6941±0.3899	-102.9
CORFU	-101.5	-45.2	-84.2	16.8	85.8	62636861.2638±0.0946	-78.6
PAKSOI	-69.3	-69.3	-69.3	----	69.3	62636860.1877±0.3899	-67.9

ANTIPAKSOI	-71.1	-71.1	-71.1	----	71.1	62636860.3670±0.3899	-69.7
LEUKADA	-98.5	-73.6	-86.6	9.8	87.1	62636861.9434±0.1300	-85.4
KASTOS	-50.9	-50.9	-50.9	----	50.9	62636858.3929±0.3899	-49.9
KALAMOS	-50.9	-50.9	-50.9	----	50.9	62636858.3884±0.3899	-49.9
MEGANHSI	-86.1	-86.1	-86.1	----	86.1	62636861.8416±0.3899	-84.4
MAKRI	-56.1	-56.1	-56.1	----	56.1	62636858.9019±0.3899	-55.0
PYSTROS	-77.6	-77.6	-77.6	----	77.6	62636861.0073±0.3899	-76.1
PRASO	-80.7	-80.7	-80.7	----	80.7	62636861.3105±0.3899	-79.1
ITHAKI	-74.8	-52.4	-60.4	10.2	61.1	62636859.0302±0.1949	-56.3
KEFALONIA	-82.2	-40.8	-63.0	9.7	63.7	62636859.1679±0.0872	-57.7
ZAKYNTHOS	-90.0	-66.9	-76.2	5.8	76.4	62636860.8689±0.1125	-74.7
KYTHIRA	-59.9	-31.3	-47.5	9.0	48.3	62636857.7851±0.1175	-43.9
ELAFONHSOS	-29.9	-29.9	-29.9	----	29.9	62636856.3319±0.3898	-29.3
ANTI KYTHIRA	-71.7	-68.4	-70.1	1.7	70.1	62636860.2273±0.1949	-68.3
SPETSES	-61.8	-61.8	-61.8	----	61.8	62636859.4538±0.3899	-60.5
YDRA	-80.3	-60.9	-70.0	9.8	70.5	62636860.1323±0.2251	-67.3
PLATONHSI	-80.5	-80.5	-80.5	----	80.5	62636861.2914±0.3899	-78.9
PETASI	-182.9	-182.9	-182.9	----	182.9	62636871.3234±0.3898	-179.2
POROS	-72.9	-64.8	-68.8	5.7	68.9	62636860.3237±0.2757	-69.2
SALAMINA	-61.6	-49.9	-55.7	5.5	56.0	62636858.5262±0.1949	-51.3
AIGINA	-66.4	-51.5	-56.1	6.1	56.4	62636858.6510±0.1744	-52.5