



ROAD AND TRANSPORTATION MASTER PLAN

WEST BANK AND GAZA STRIP

TA 2012013 PS 00 F10

Annex 8 – Maritime Transport: Study Maps and Costs Analysis

SEPTEMBER 30, 2016





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1. Maritime Transport Study Maps

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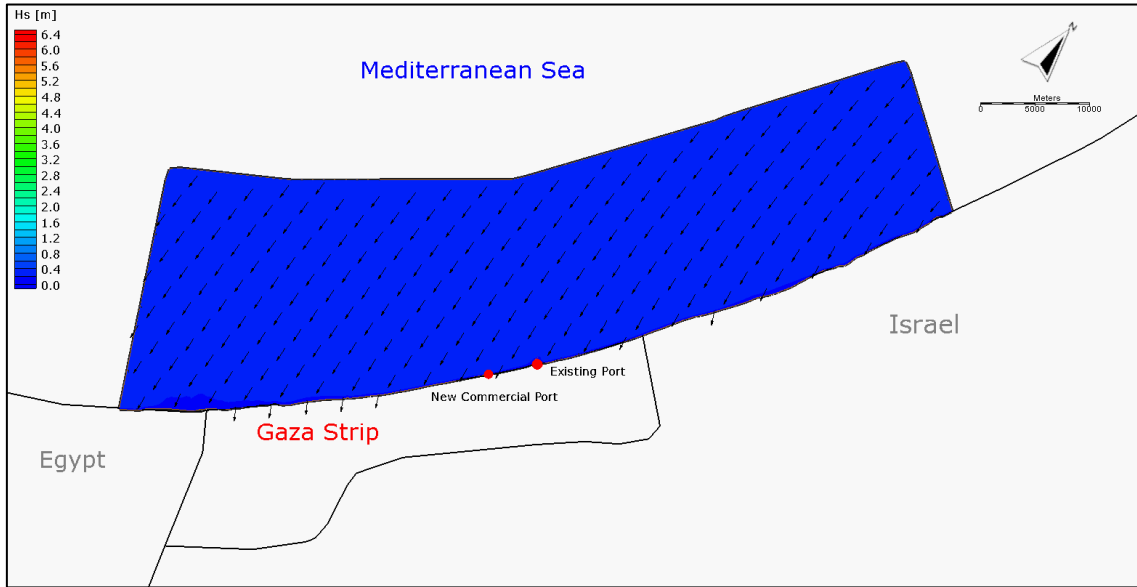


Figure 2. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=0.75m$, peak period $T_p=3.7s$, and wave direction $Dir=0^\circ N$.

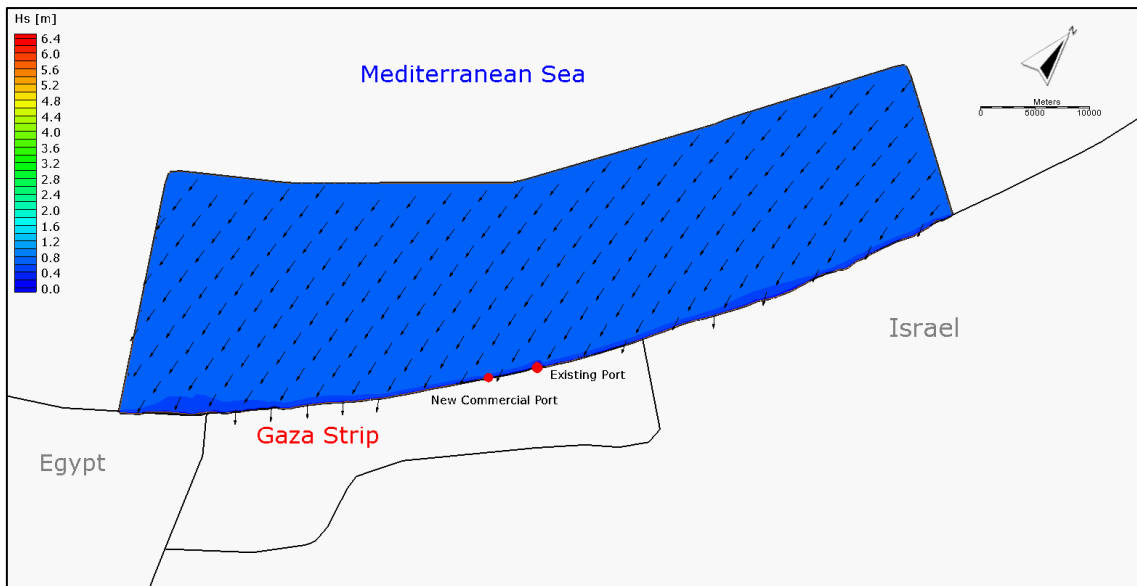


Figure 3. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3m$, peak period $T_p = 4.8s$, and wave direction $Dir = 0^\circ N$.

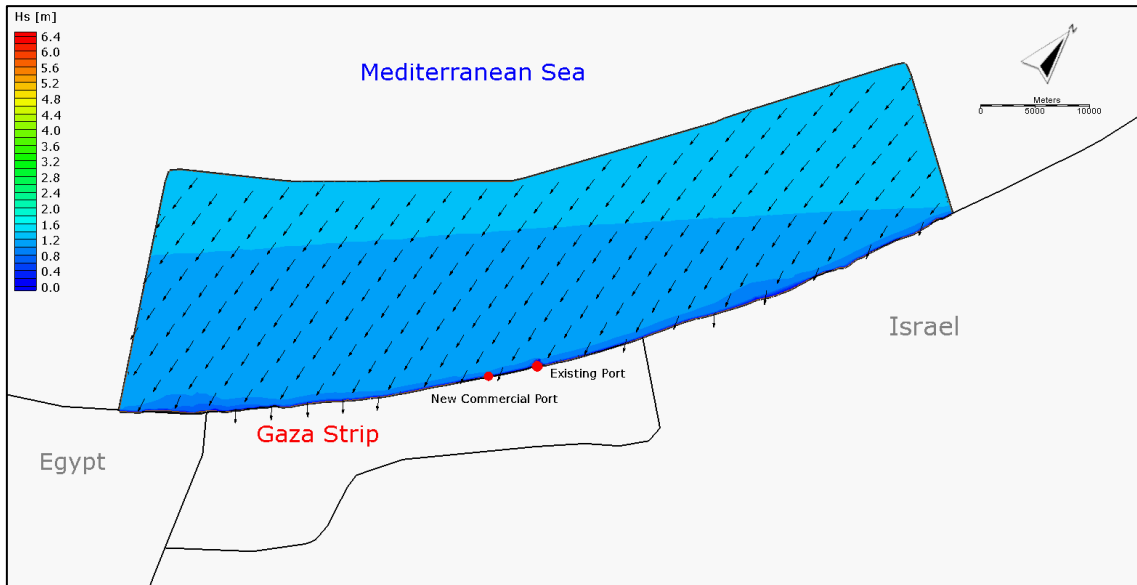


Figure 4. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8m$, peak period $T_p = 5.6s$, and wave direction $Dir = 0^\circ N$.

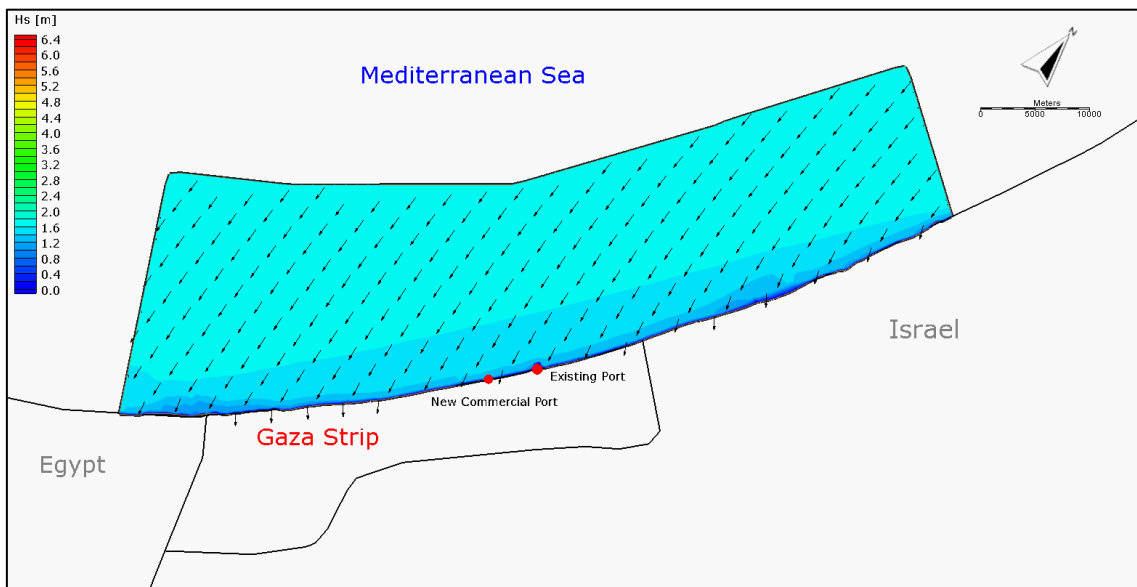


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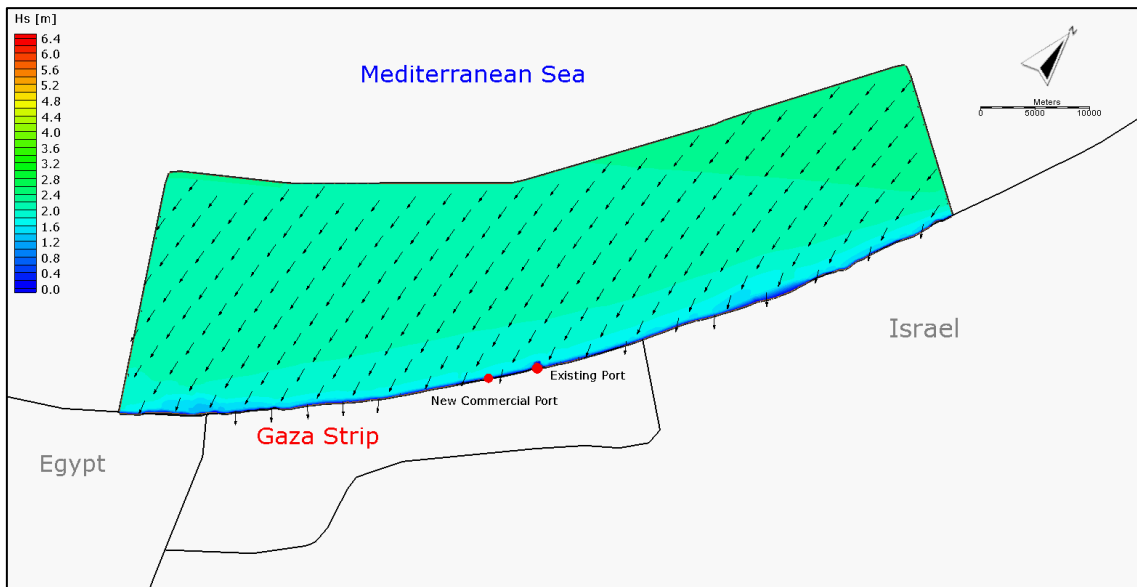


Figure 6. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8\text{m}$, peak period $T_p = 7.1\text{s}$, and wave direction $Dir = 0^\circ\text{N}$.

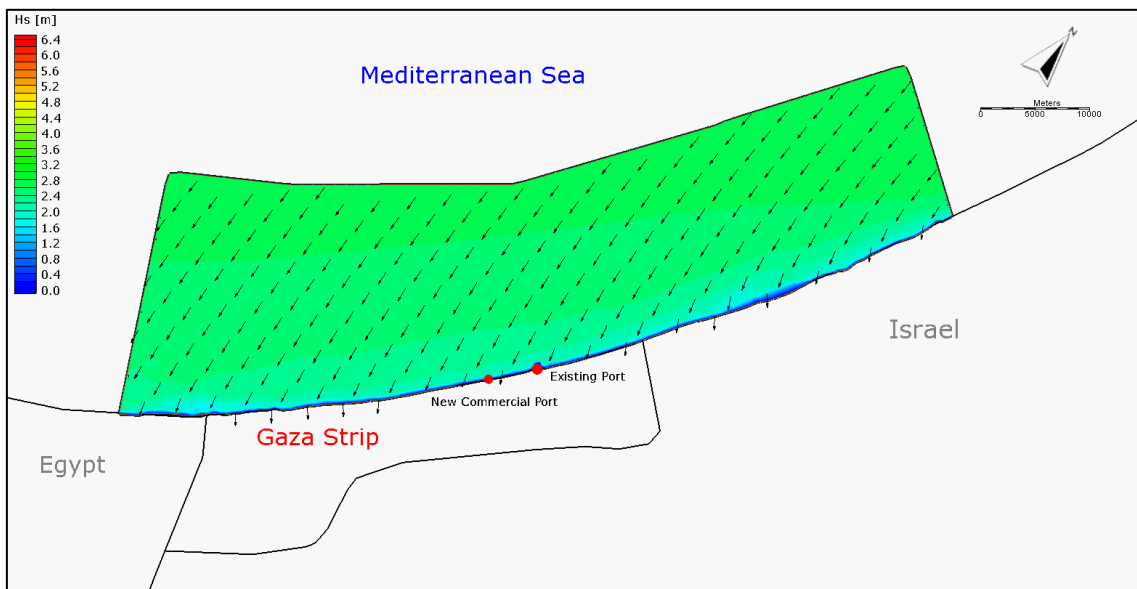


Figure 7. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir = 250^\circ N$.

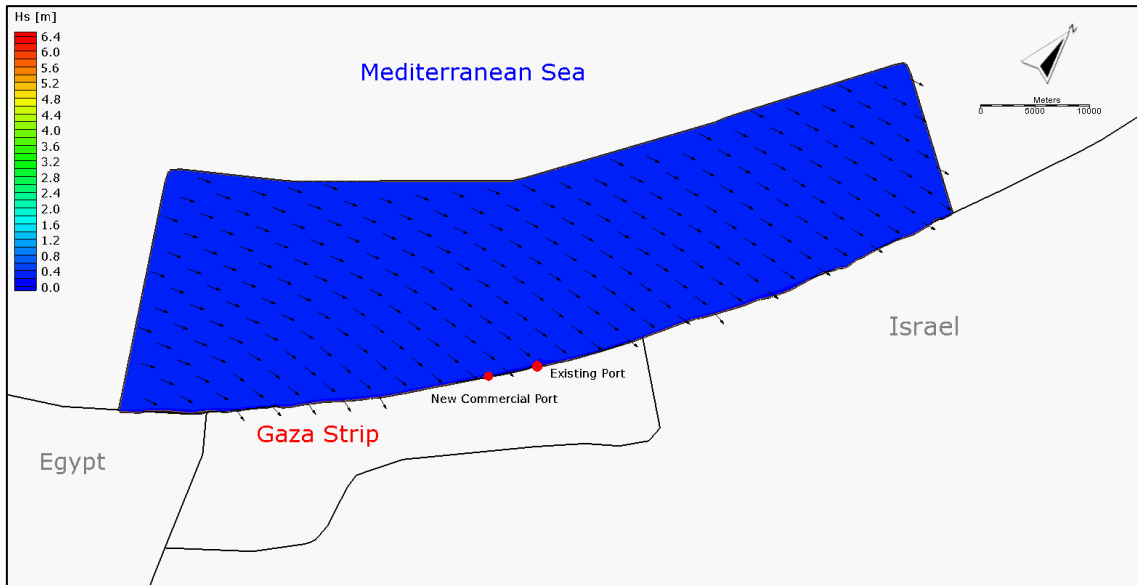


Figure 8. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75m$, peak period $T_p = 3.7s$, and wave direction $Dir = 250^\circ N$.

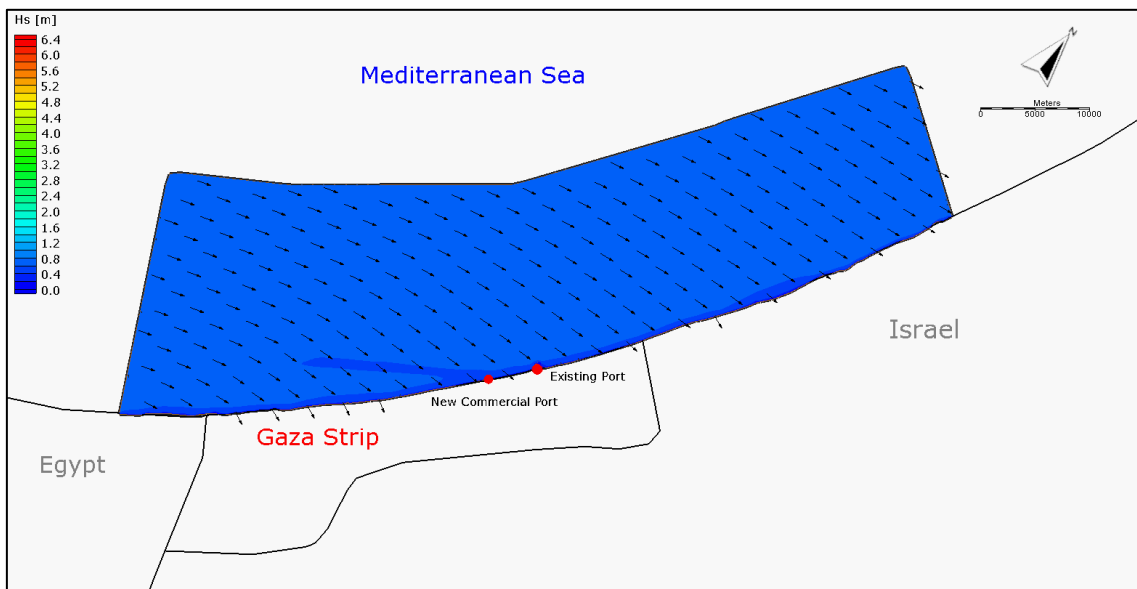


Figure 9. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 250^\circ\text{N}$.

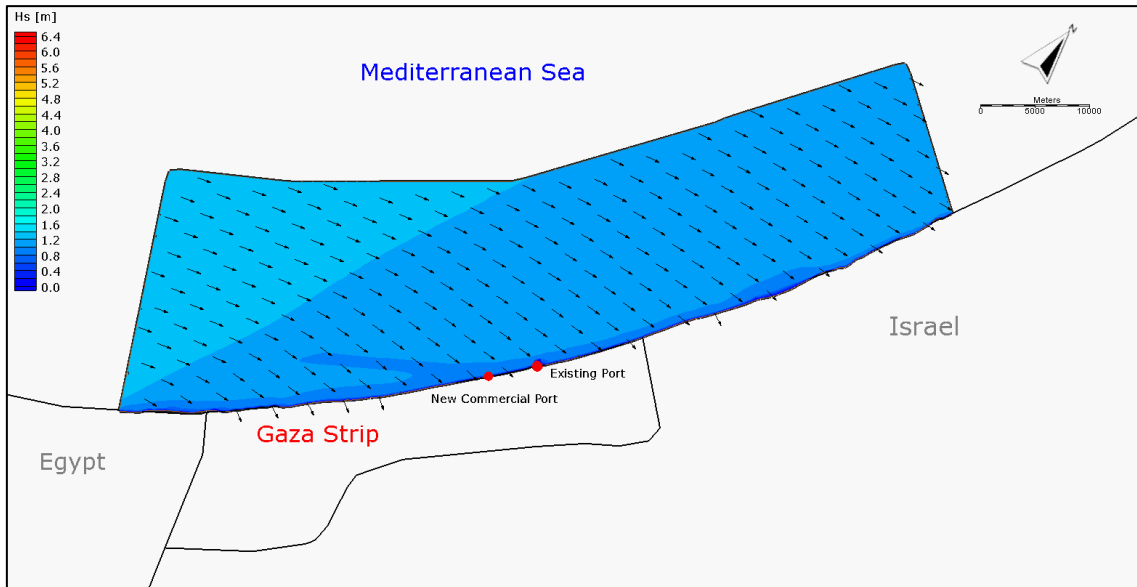


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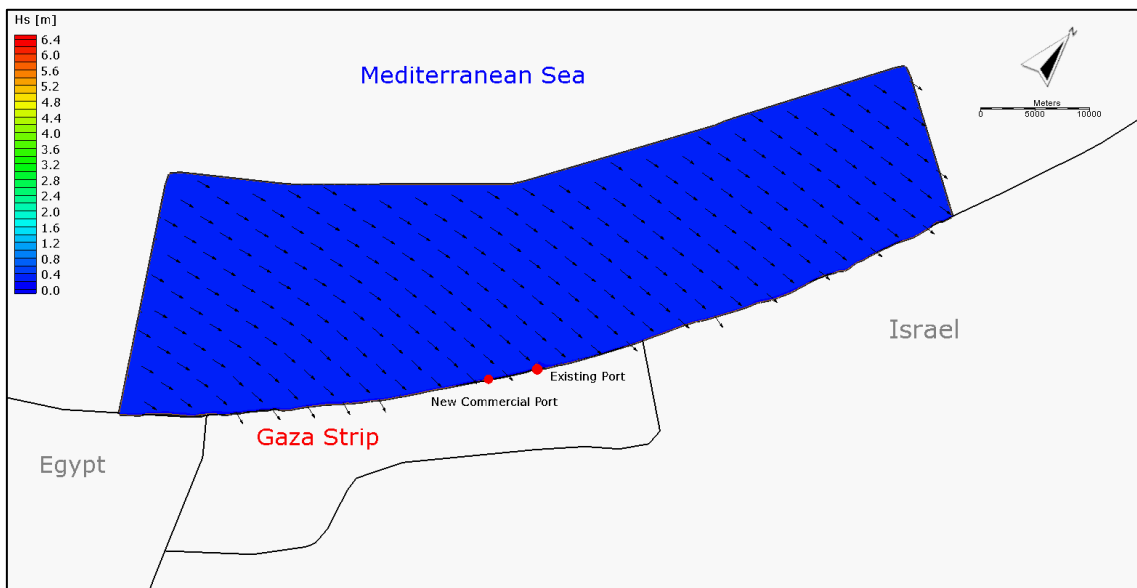


Figure 11. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75\text{m}$, peak period $T_p = 3.7\text{s}$, and wave direction $Dir = 260^\circ\text{N}$

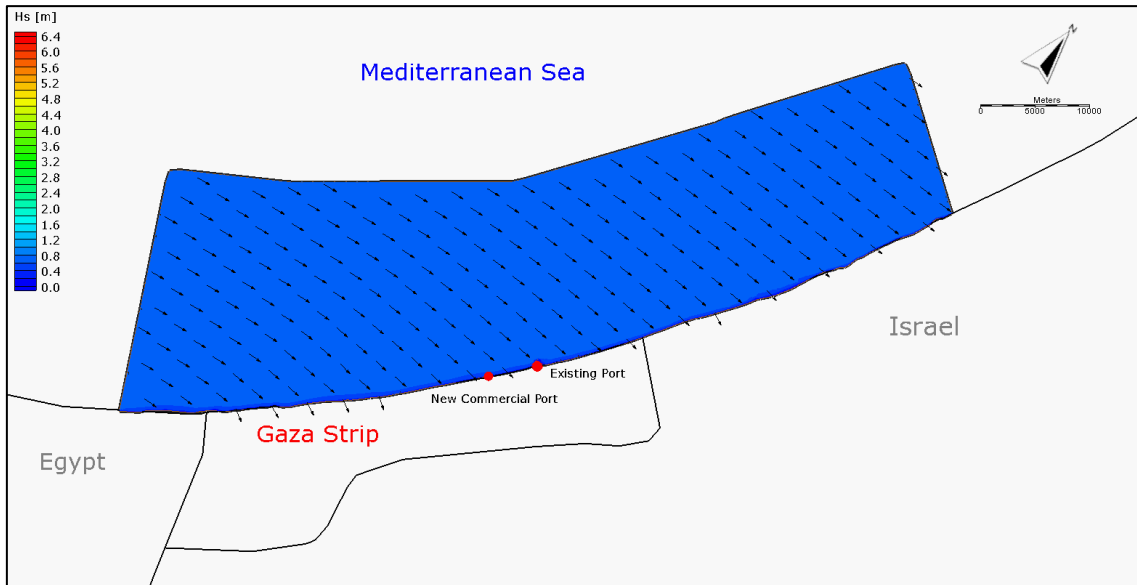


Figure 12. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 260^\circ\text{N}$.

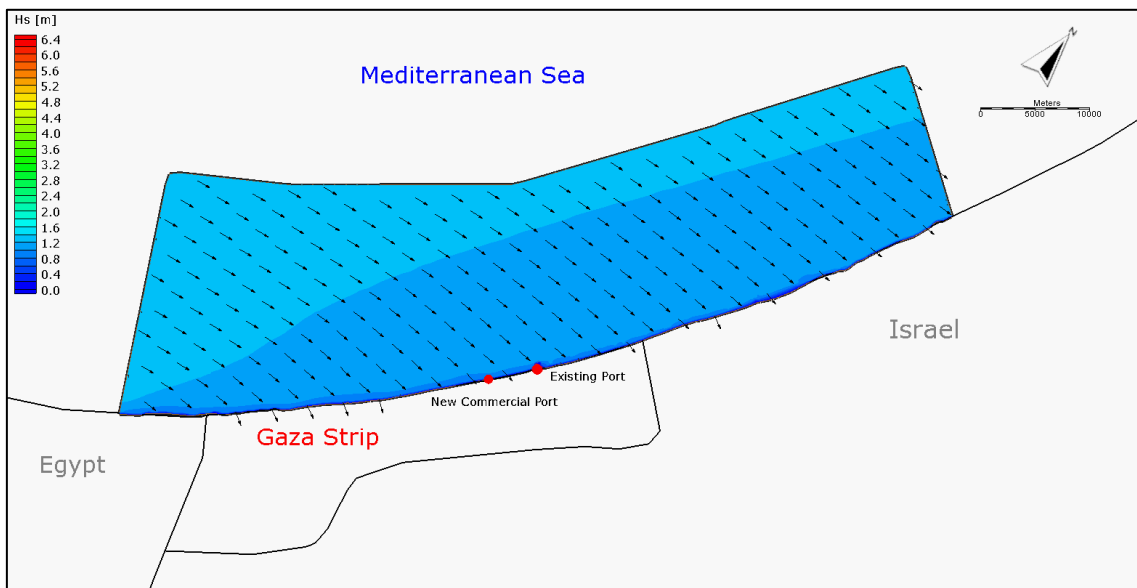


Figure 13. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 260^\circ\text{N}$.

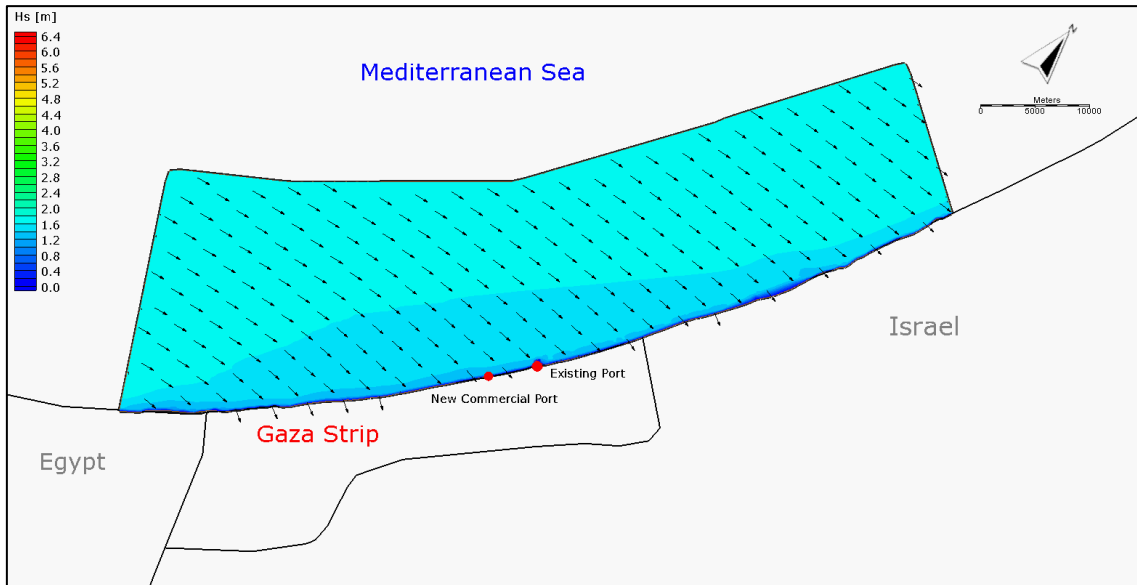


Figure 14. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 260^\circ\text{N}$.

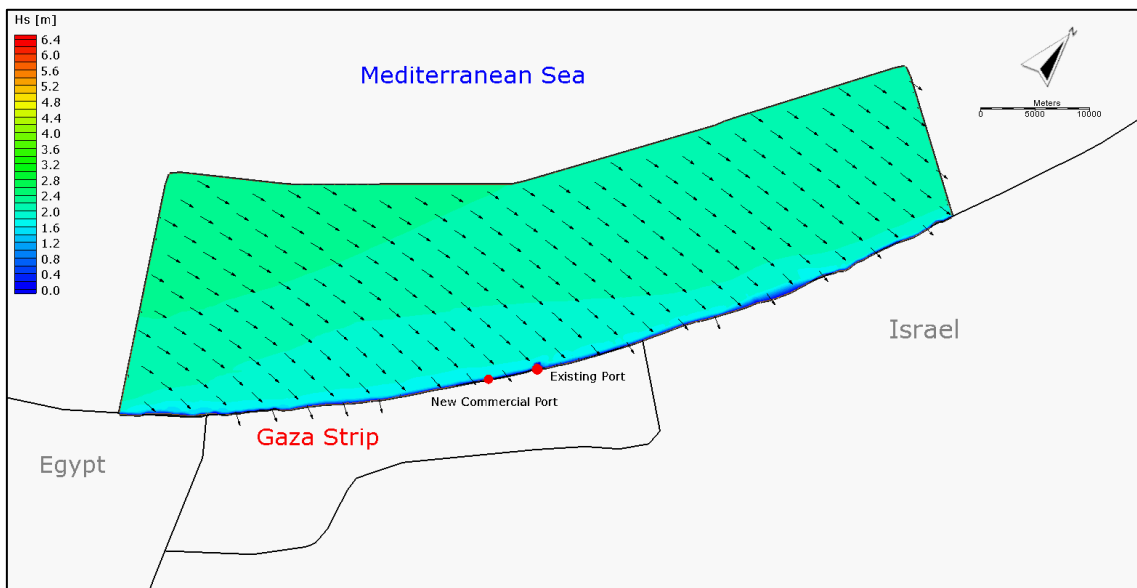


Figure 15. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir = 270^\circ N$.

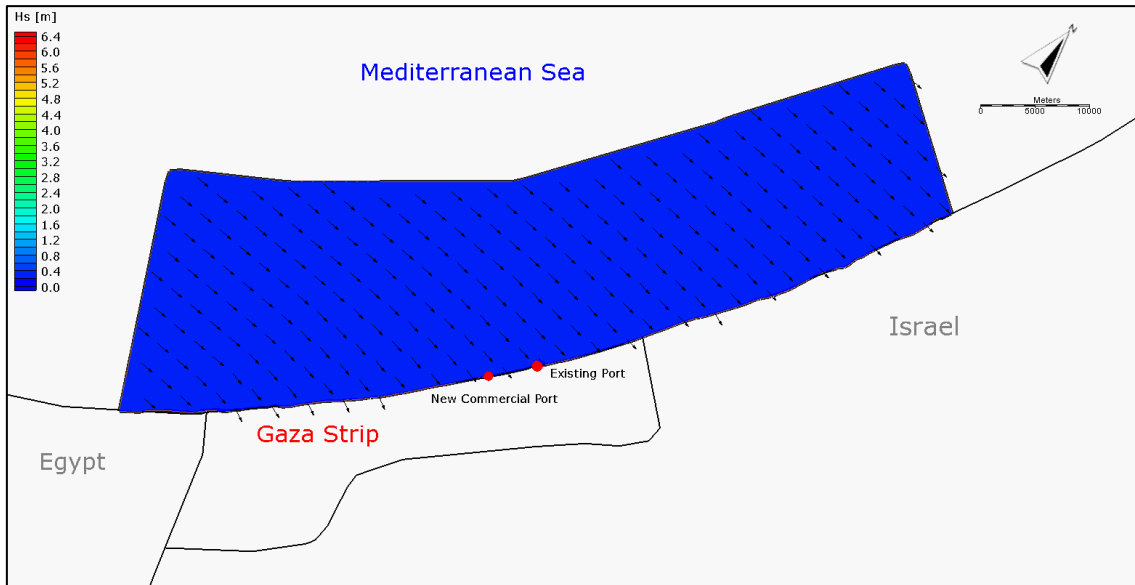


Figure 16. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75m$, peak period $T_p = 3.7s$, and wave direction $Dir = 270^\circ N$.

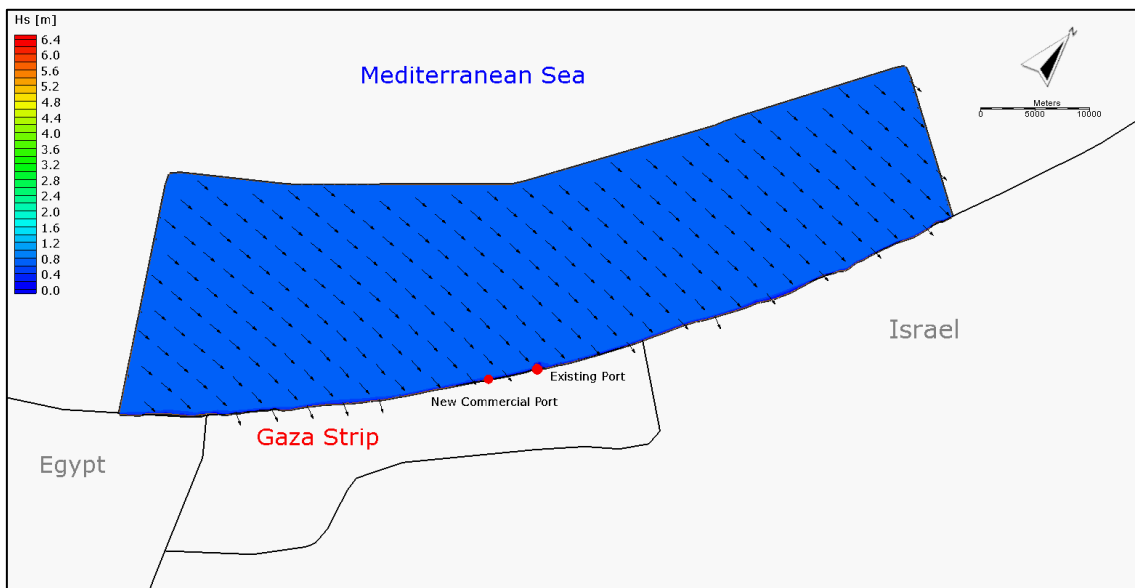


Figure 17. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 270^\circ\text{N}$.

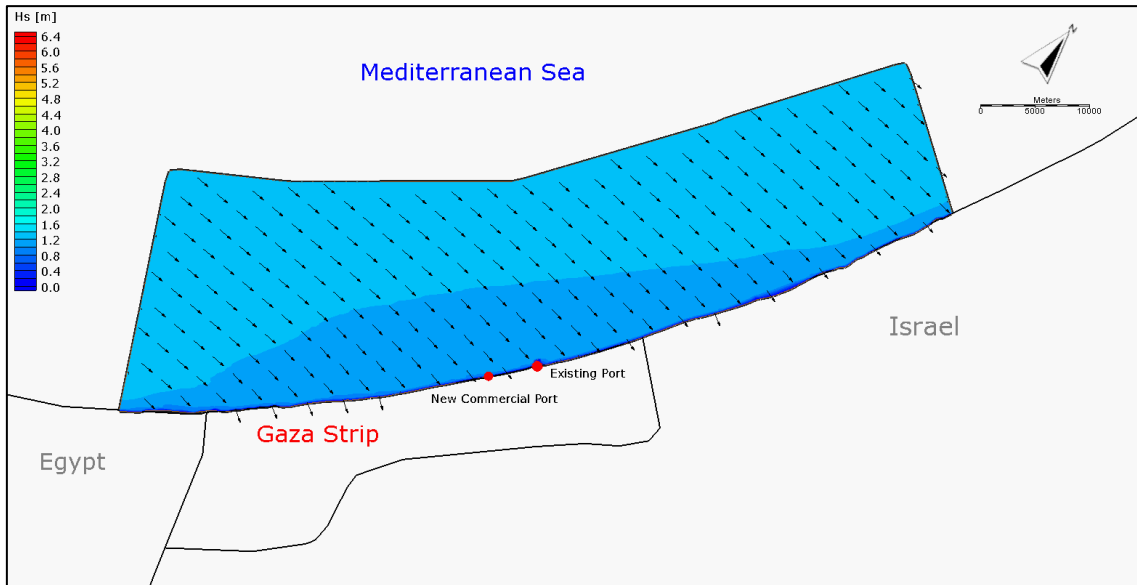


Figure 18. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 270^\circ\text{N}$.

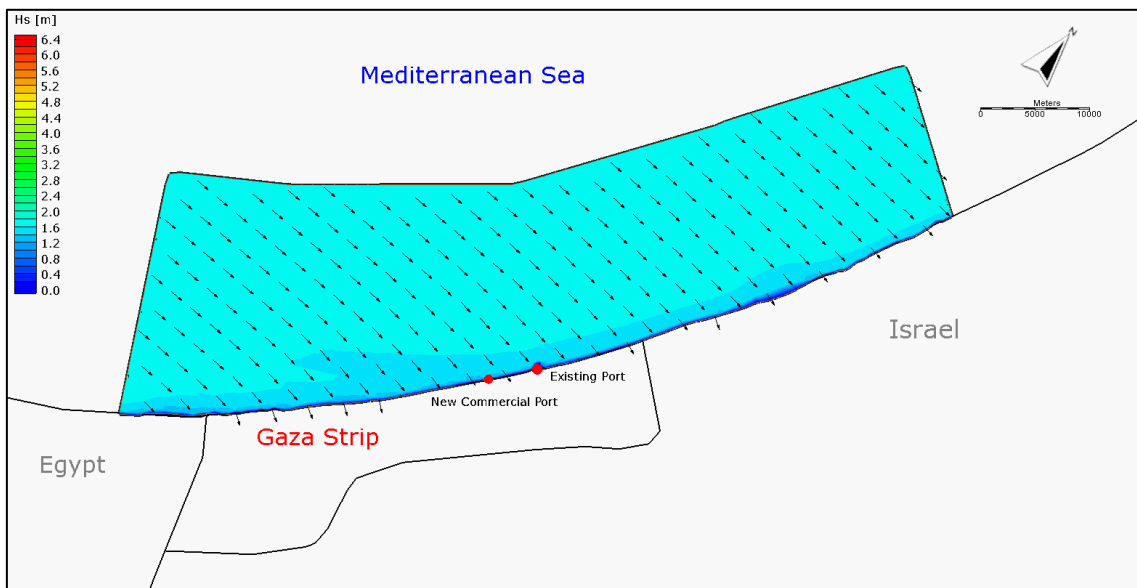


Figure 19. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=2.3\text{m}$, peak period $T_p=6.4\text{s}$, and wave direction $Dir=270^\circ\text{N}$.

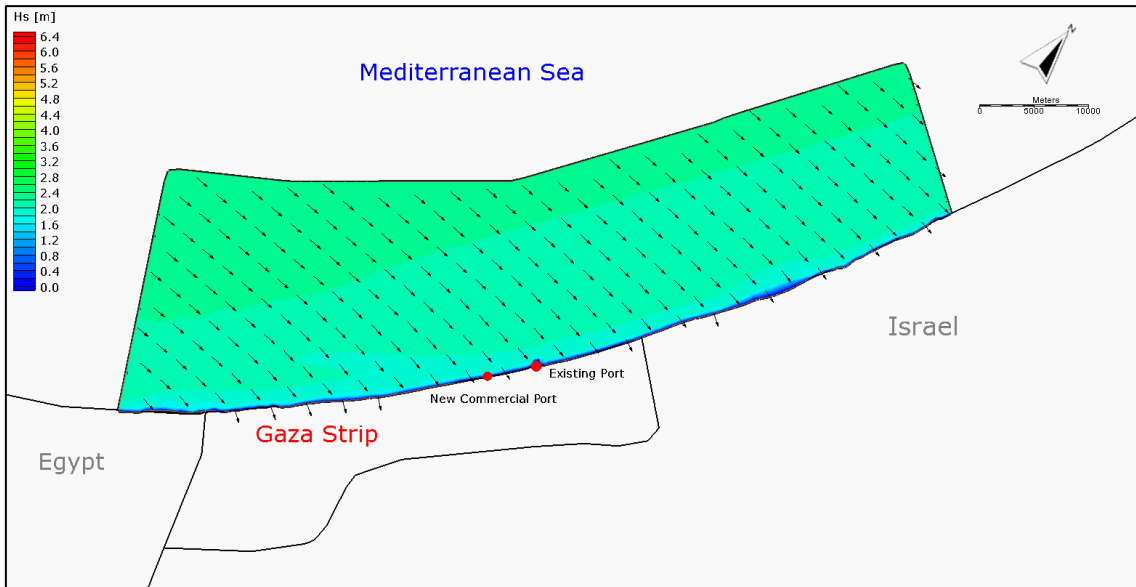


Figure 20. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=3.3\text{m}$, peak period $T_p=7.7\text{s}$, and wave direction $Dir=270^\circ\text{N}$.

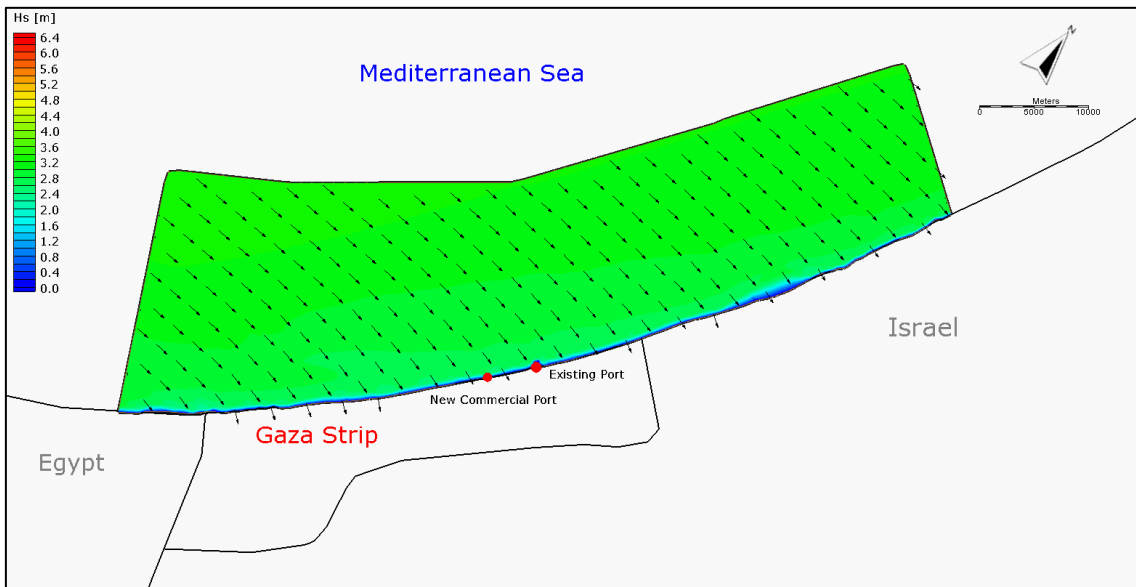


Figure 21. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir = 280^\circ N$.

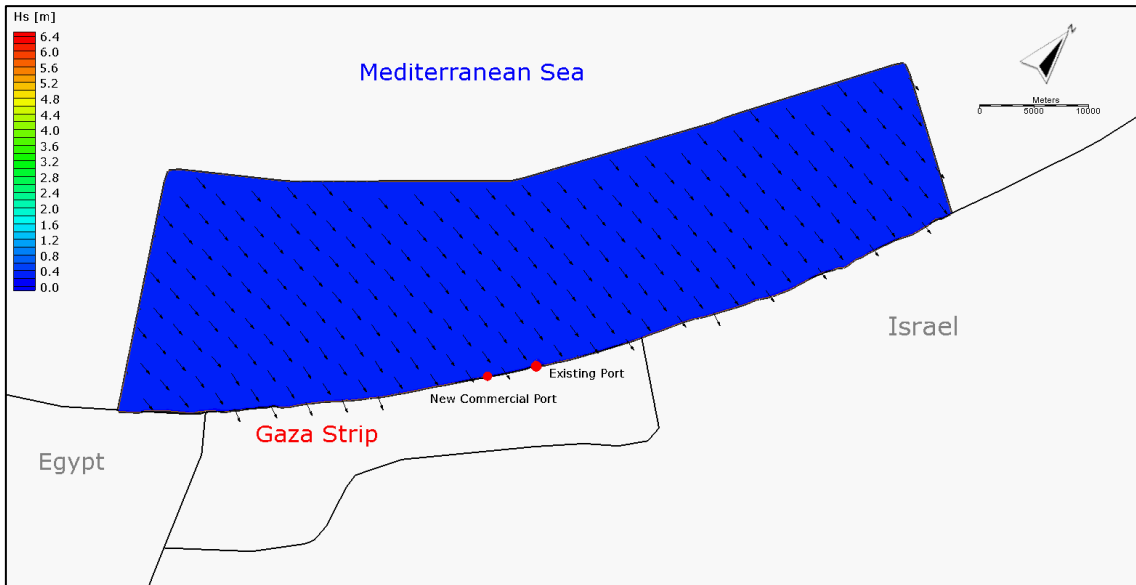


Figure 22. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75m$, peak period $T_p = 3.7s$, and wave direction $Dir = 280^\circ N$.

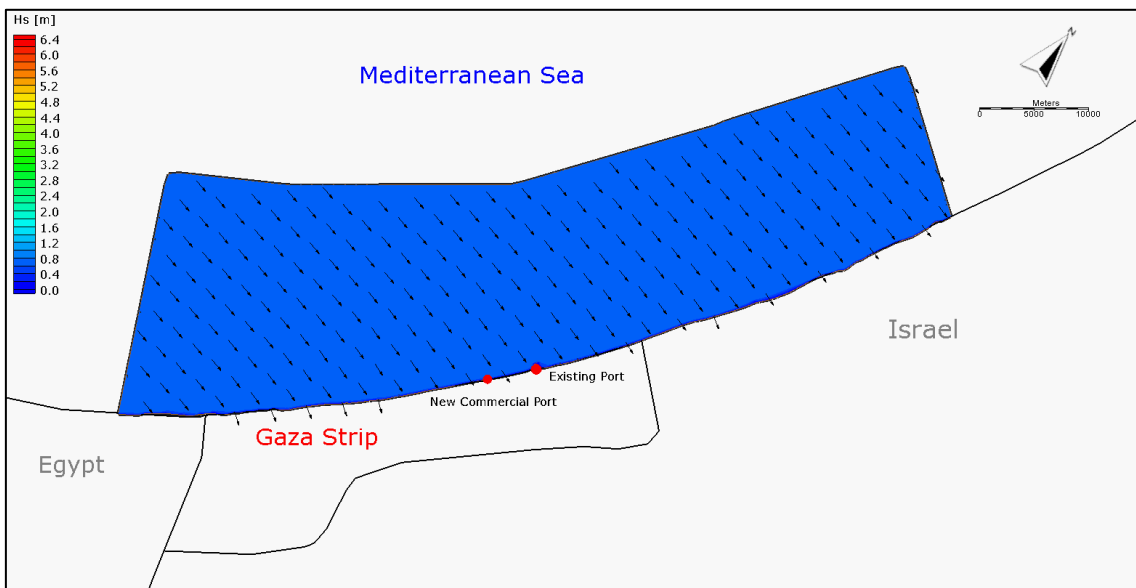


Figure 23. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3m$, peak period $T_p = 4.8s$, and wave direction $Dir = 280^\circ N$.

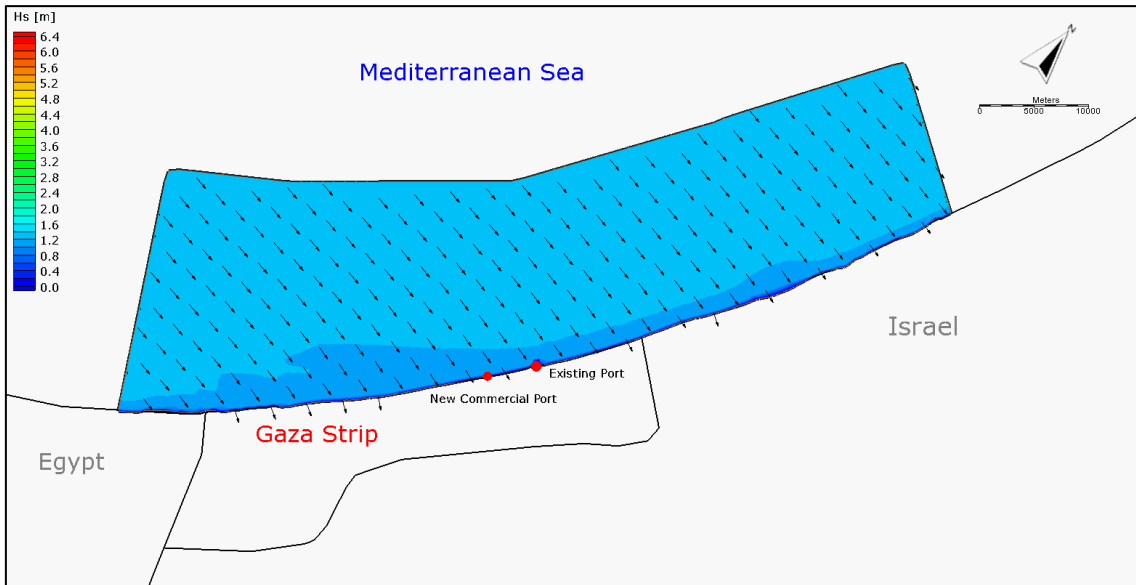


Figure 24. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8m$, peak period $T_p = 5.6s$, and wave direction $Dir = 280^\circ N$.

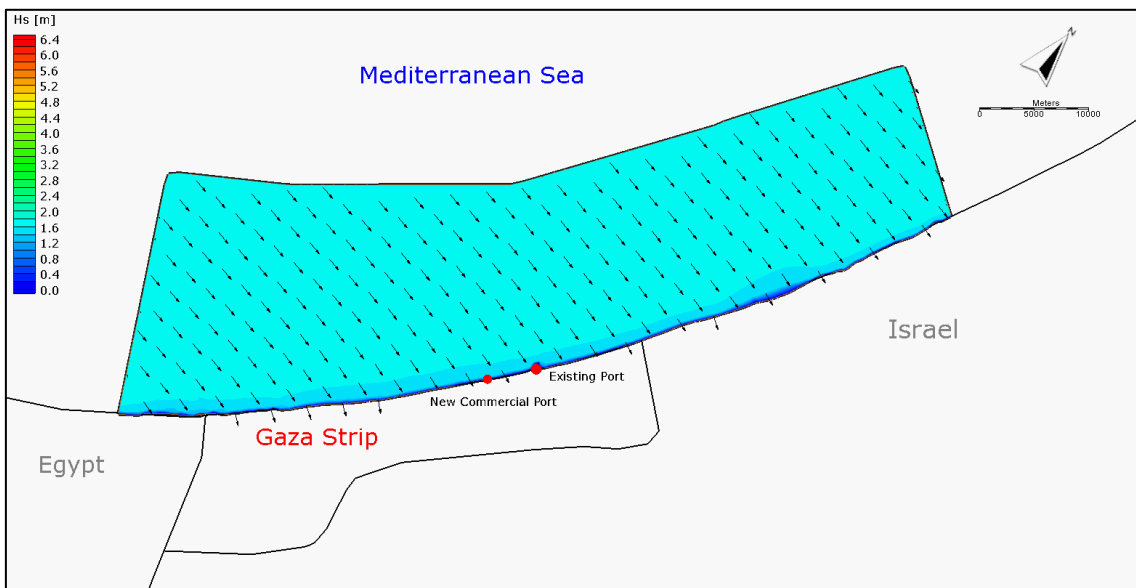


Figure 25. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 280^\circ\text{N}$.

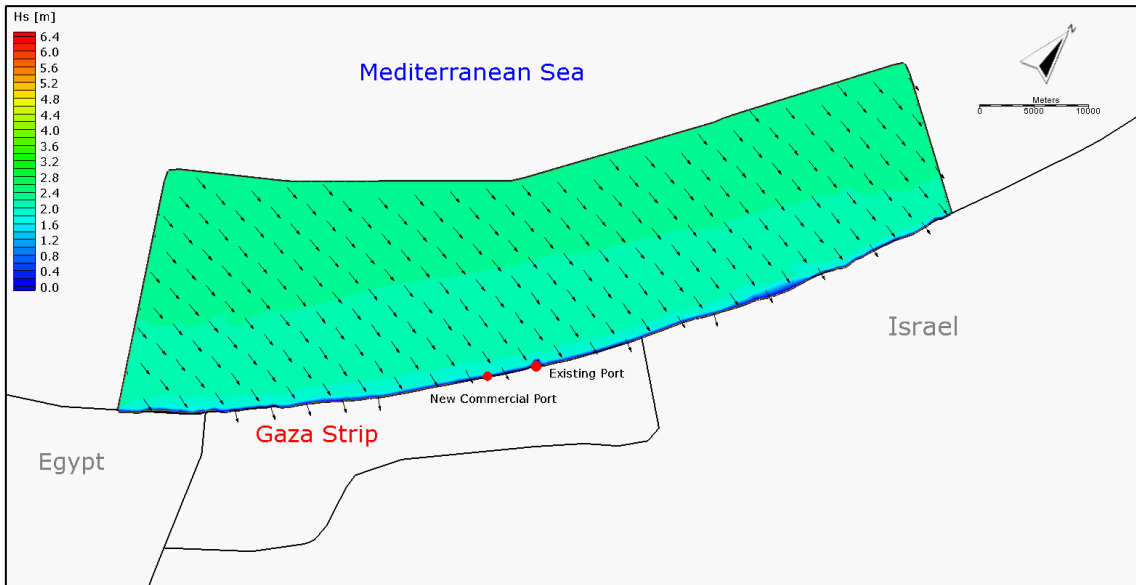


Figure 26. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8\text{m}$, peak period $T_p = 7.1\text{s}$, and wave direction $Dir = 280^\circ\text{N}$.

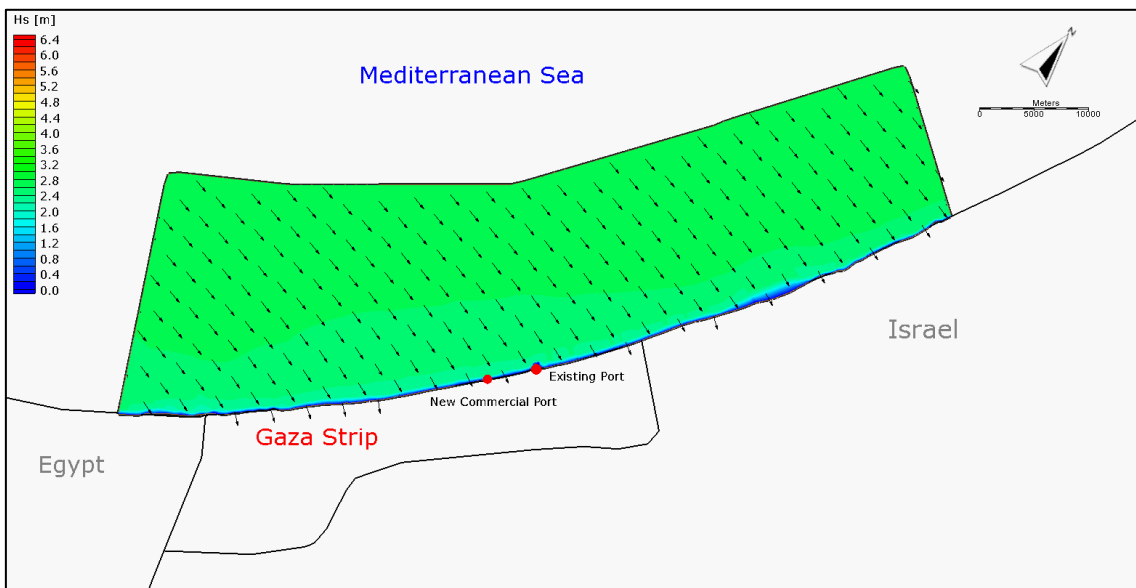


Figure 27. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.3m$, peak period $T_p = 7.7s$, and wave direction $Dir = 280^\circ N$.

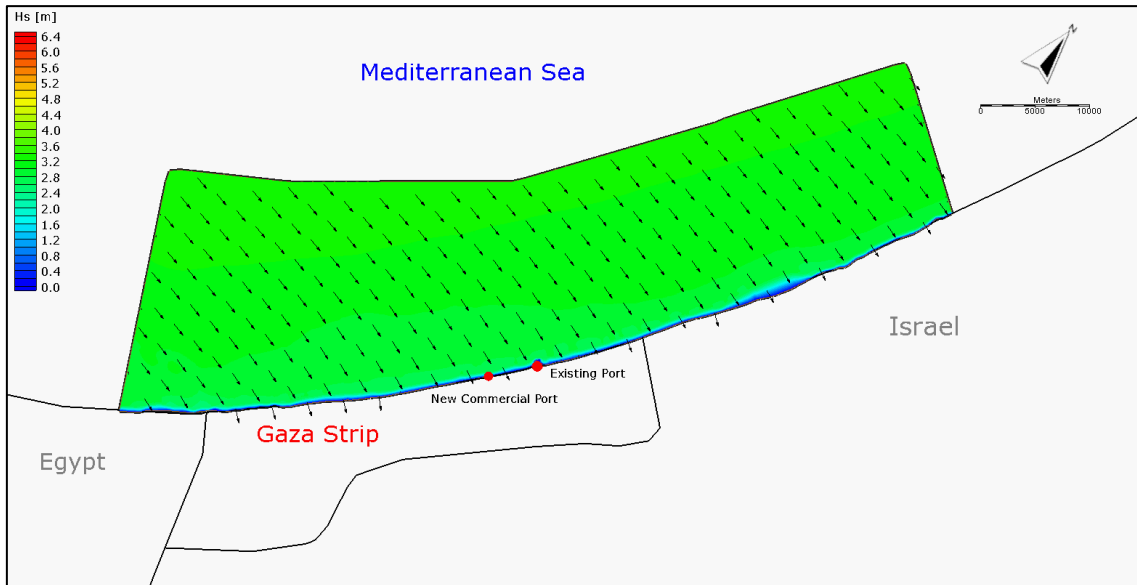


Figure 28. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8m$, peak period $T_p = 8.3s$, and wave direction $Dir = 280^\circ N$.

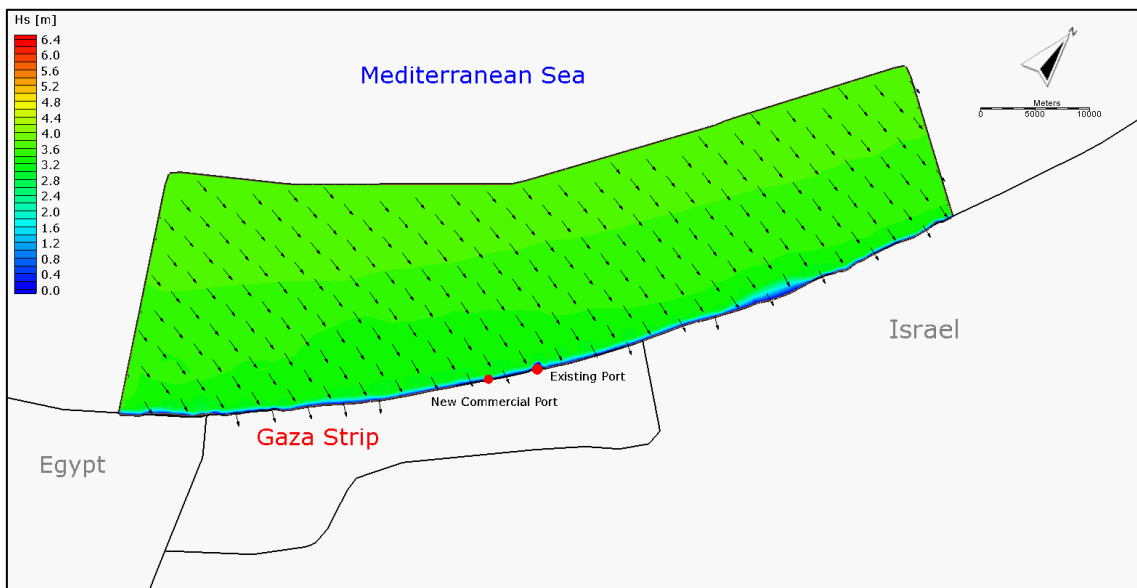


Figure 29. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=4.5m$, peak period $T_p = 9s$, and wave direction $Dir=280^\circ N$.

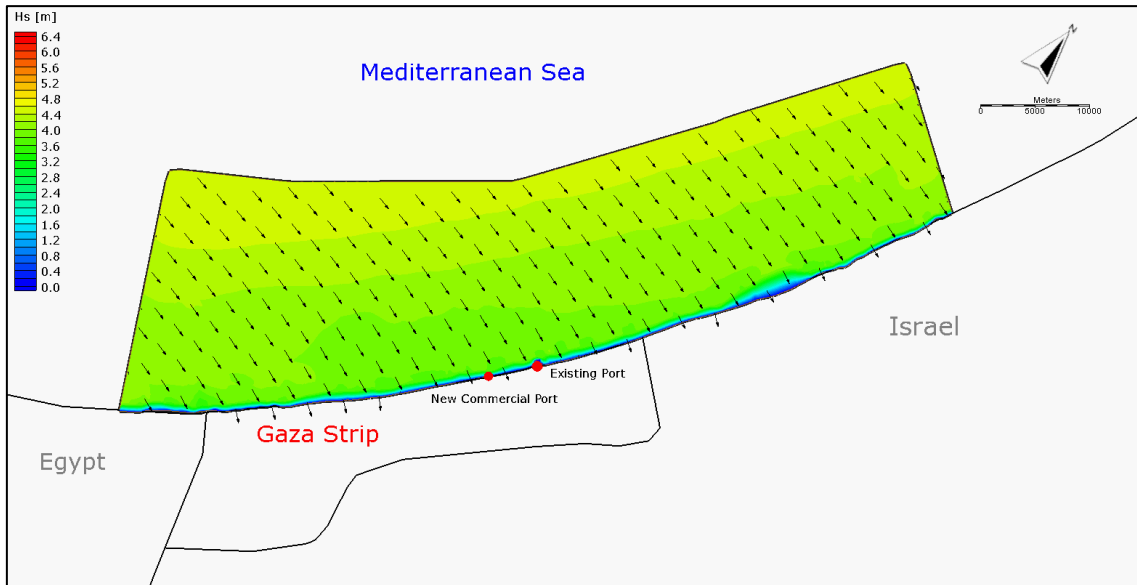


Figure 30. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir=290^\circ N$.

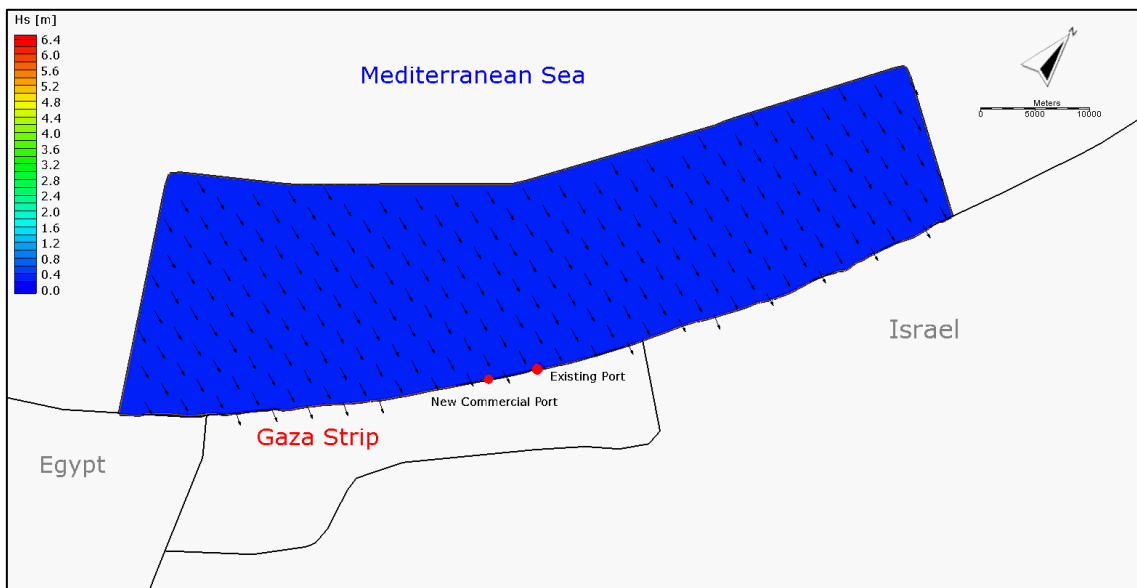


Figure 31. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75\text{m}$, peak period $T_p = 3.7\text{s}$, and wave direction $Dir = 290^\circ\text{N}$.

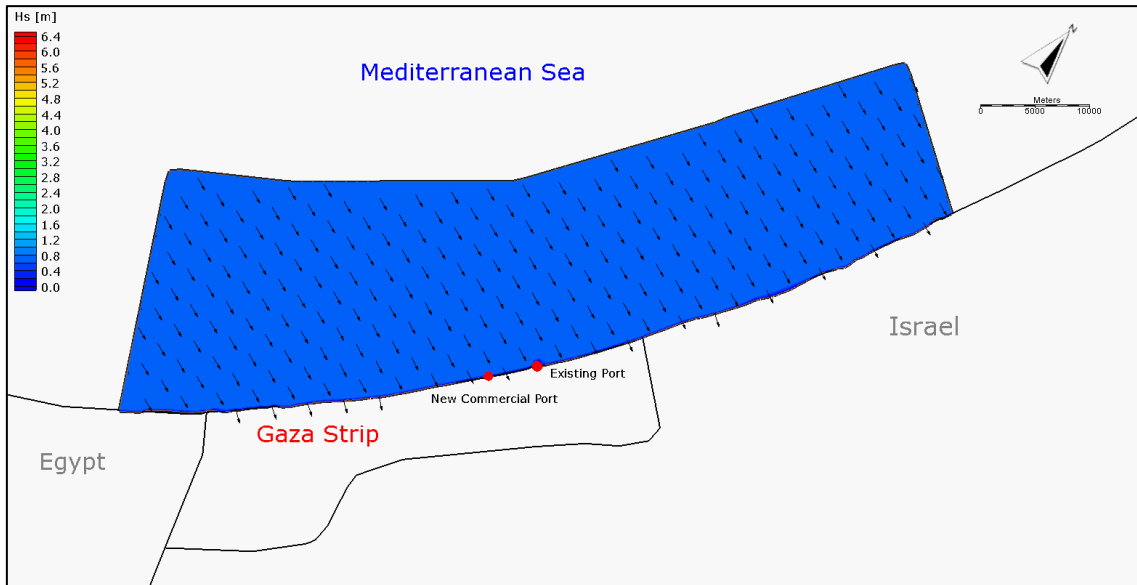


Figure 32. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 290^\circ\text{N}$.

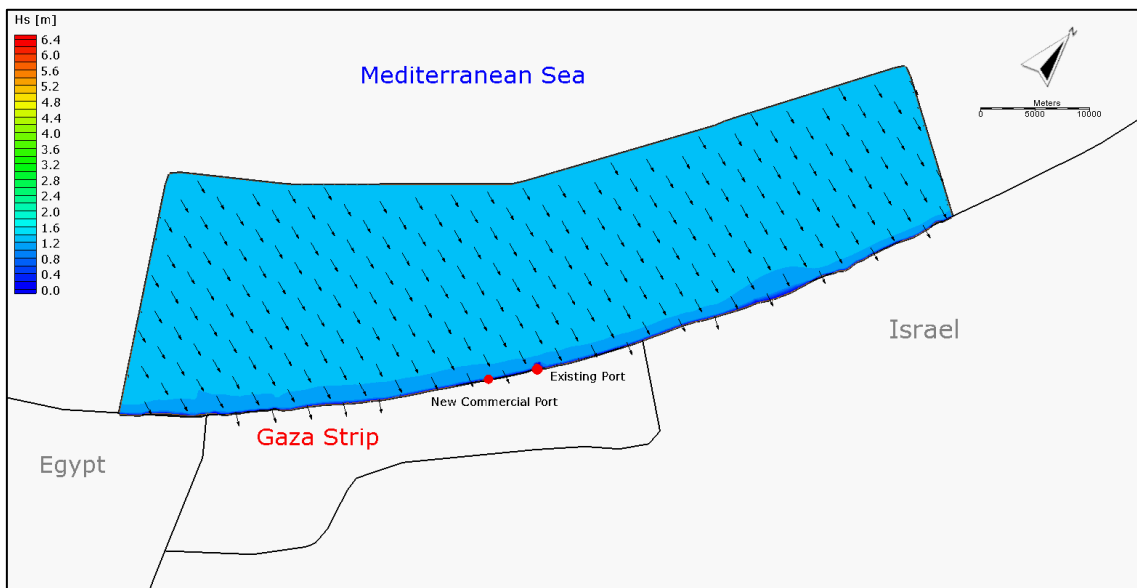


Figure 33. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8m$, peak period $T_p = 5.6s$, and wave direction $Dir = 290^\circ N$.

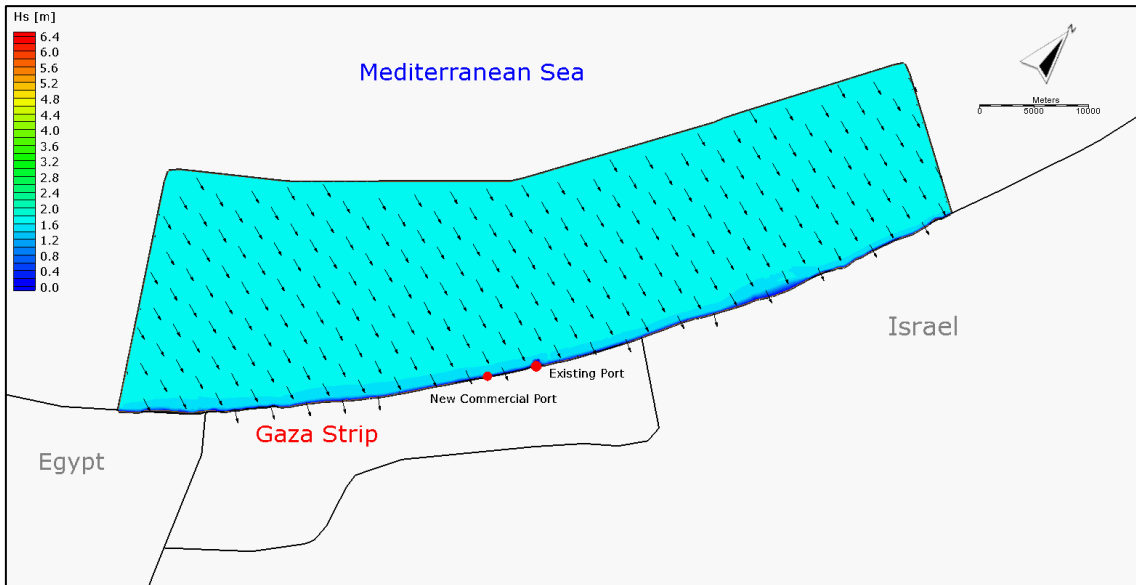


Figure 34. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3m$, peak period $T_p = 6.4s$, and wave direction $Dir = 290^\circ N$.

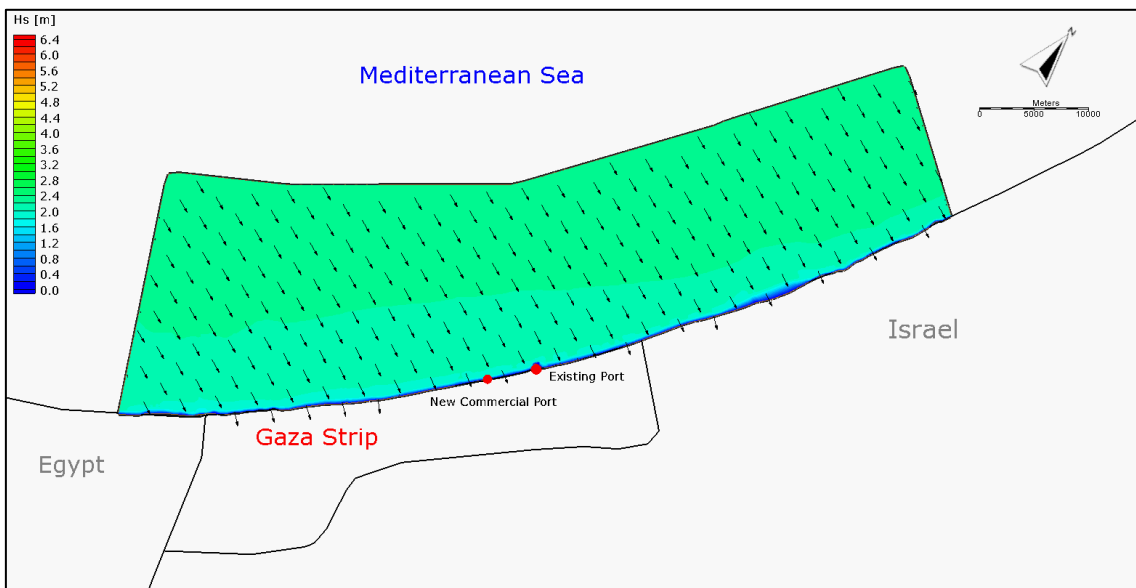


Figure 35. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=2.8m$, peak period $T_p = 7.1s$, and wave direction $Dir=290^\circ N$.

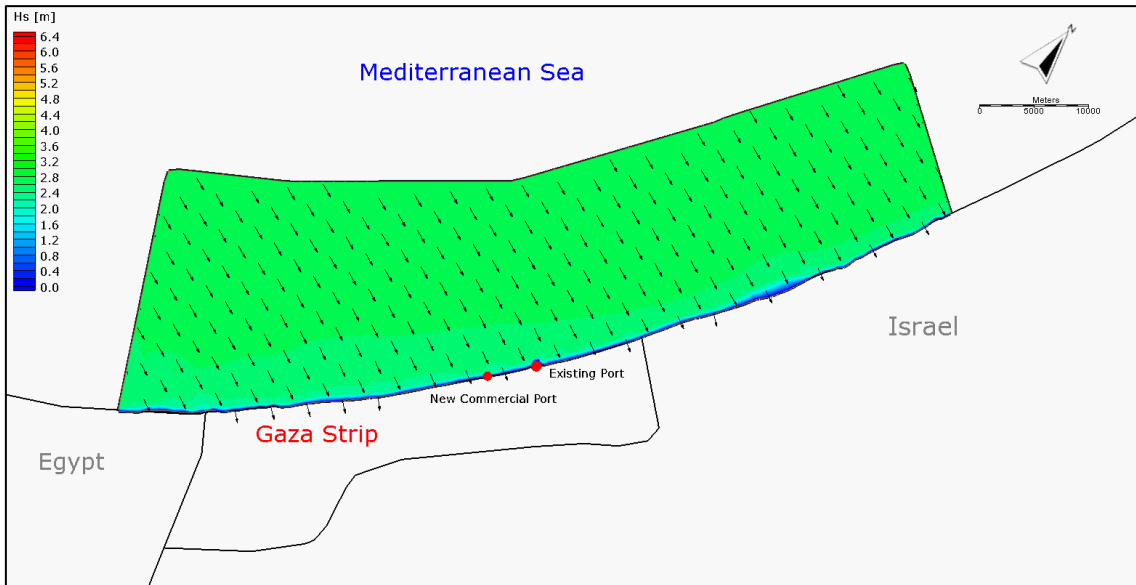


Figure 36. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=3.3m$, peak period $T_p = 7.7s$, and wave direction $Dir=290^\circ N$.

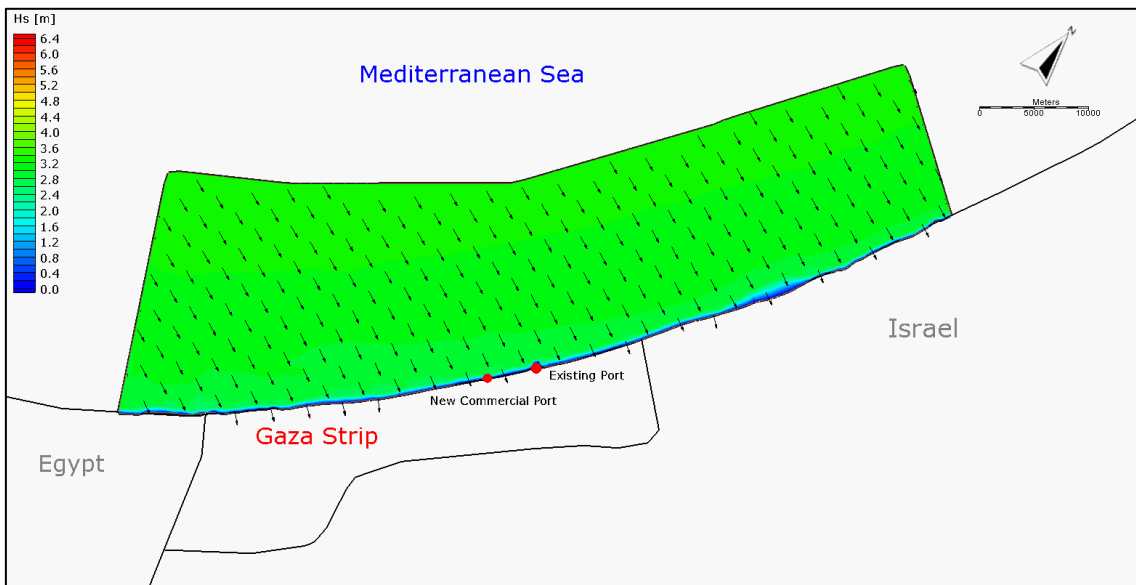


Figure 37. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8\text{m}$, peak period $T_p = 8.3\text{s}$, and wave direction $Dir = 290^\circ\text{N}$.

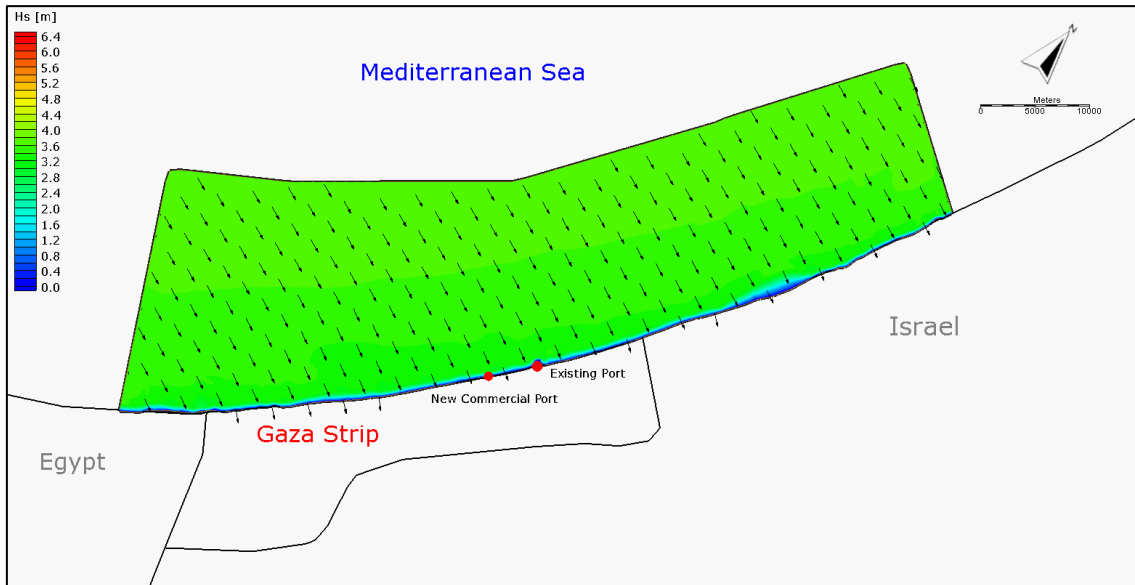


Figure 38. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 4.5\text{m}$, peak period $T_p = 9\text{s}$, and wave direction $Dir = 290^\circ\text{N}$.

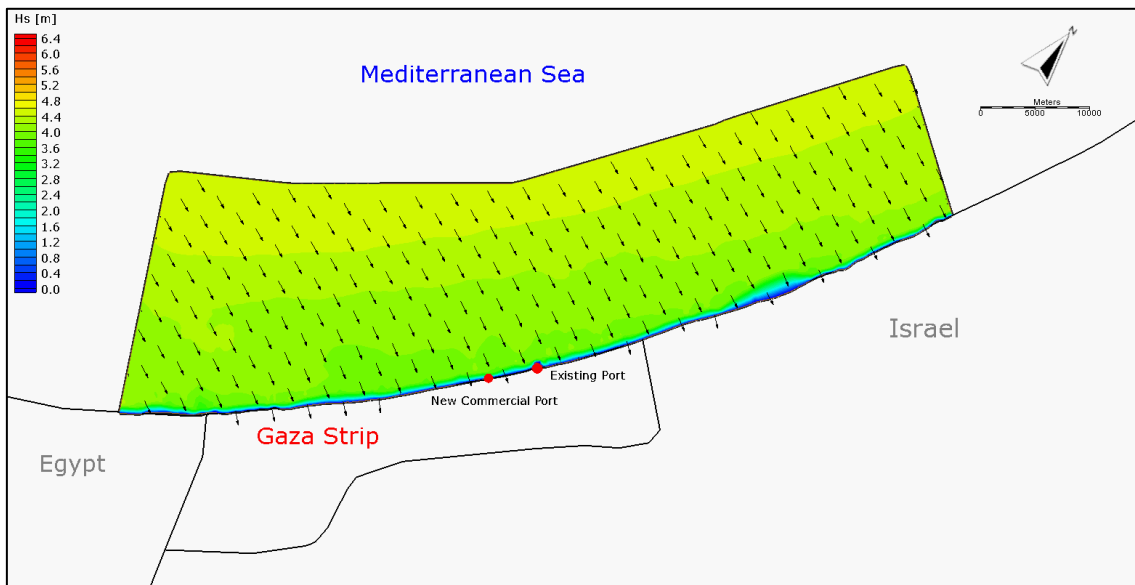


Figure 39. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 5.5m$, peak period $T_p = 10s$, and wave direction $Dir = 290^\circ N$.

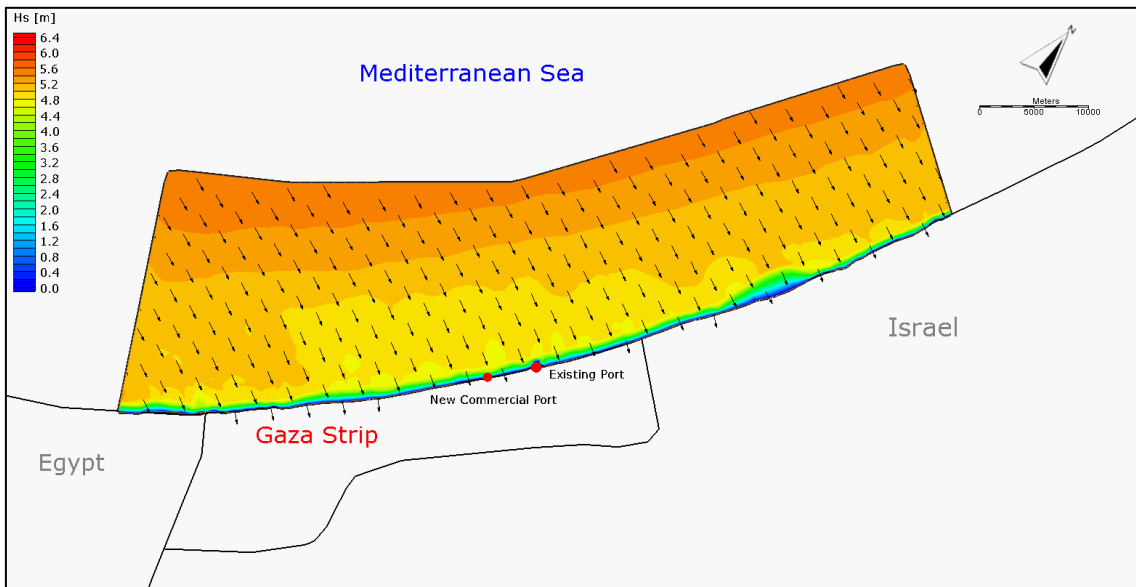


Figure 40. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir = 300^\circ N$.

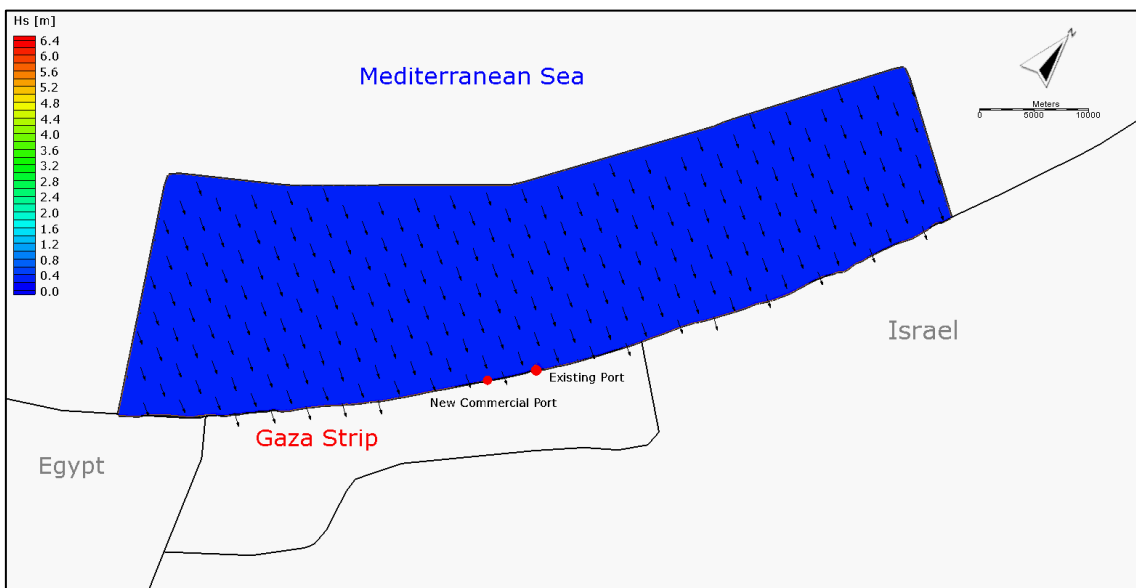


Figure 41. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75\text{m}$, peak period $T_p = 3.7\text{s}$, and wave direction $Dir = 300^\circ\text{N}$.

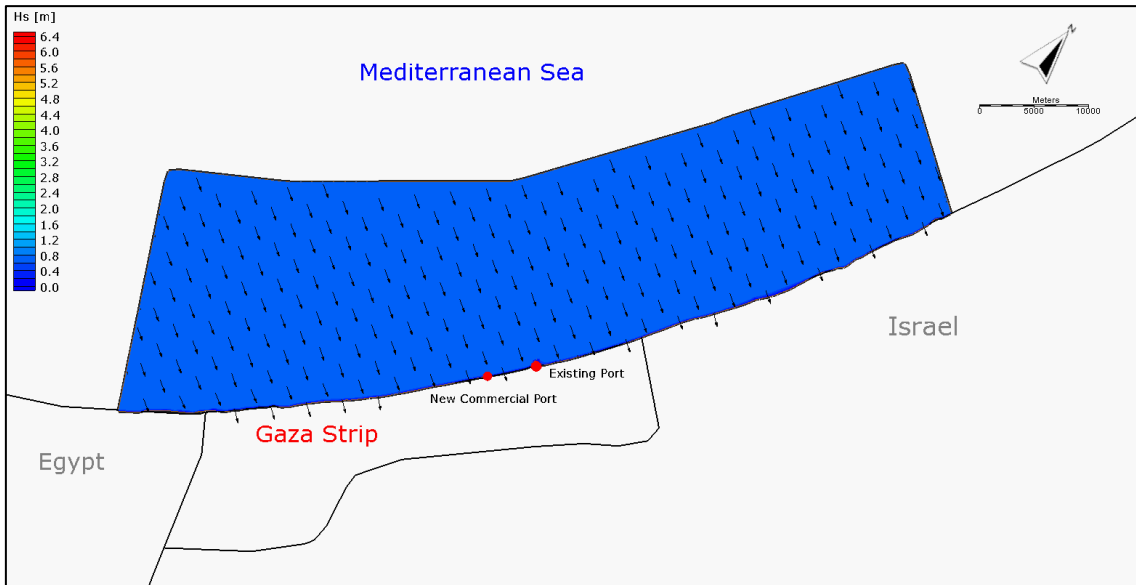


Figure 42. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 300^\circ\text{N}$.

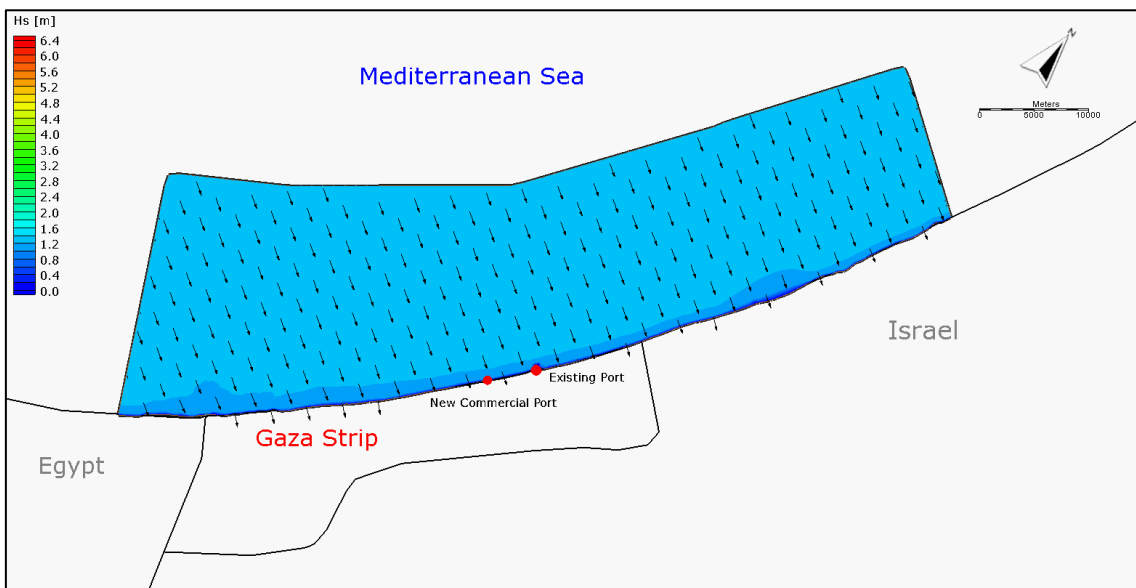


Figure 43. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 300^\circ\text{N}$.

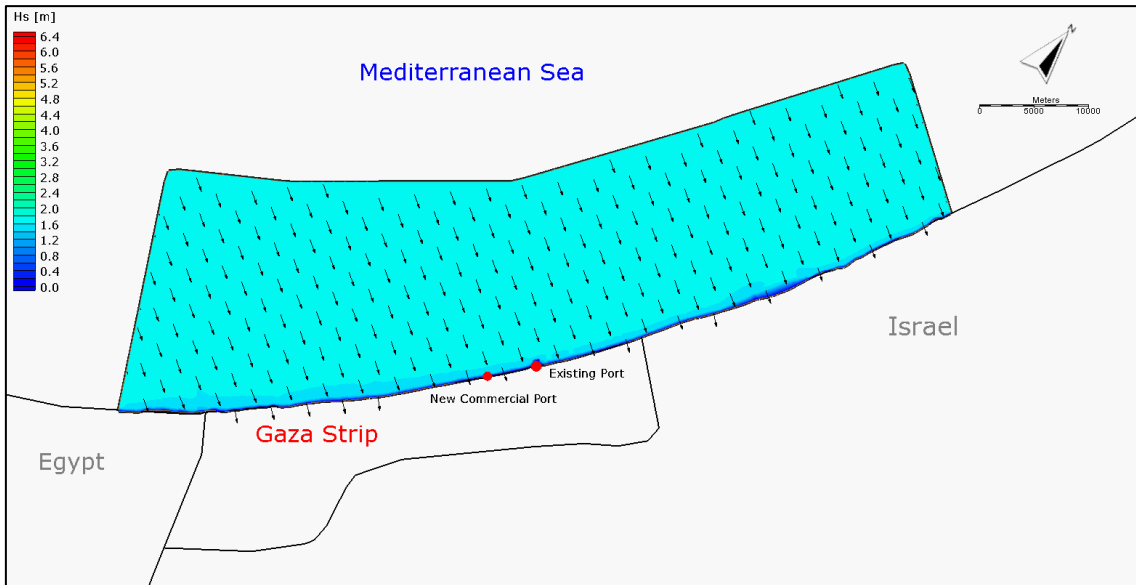


Figure 44. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 300^\circ\text{N}$.

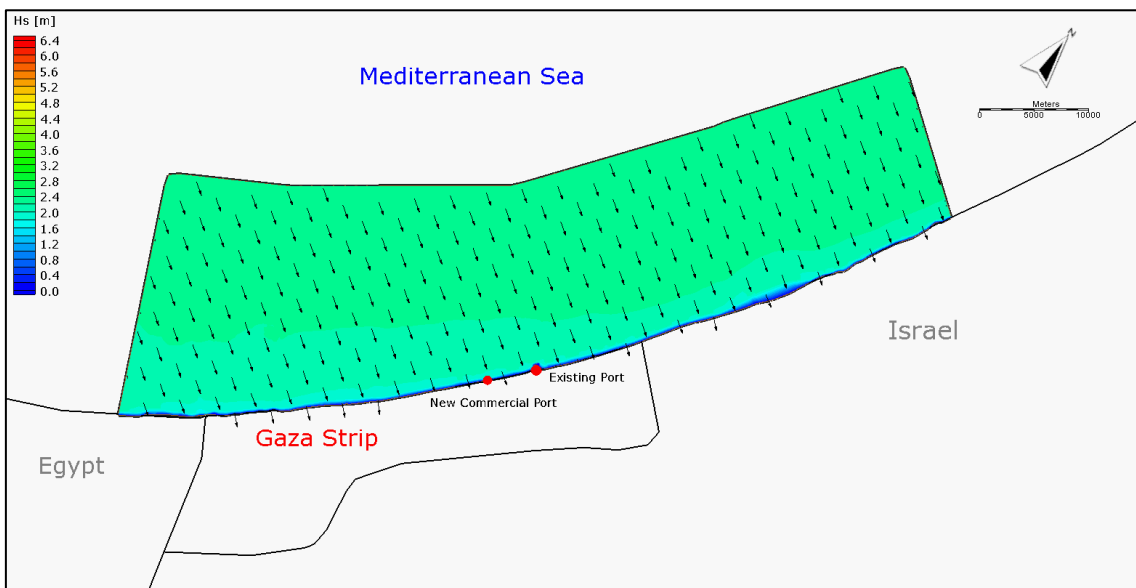


Figure 45. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=2.8\text{m}$, peak period $T_p=7.1\text{s}$, and wave direction $Dir=300^\circ\text{N}$.

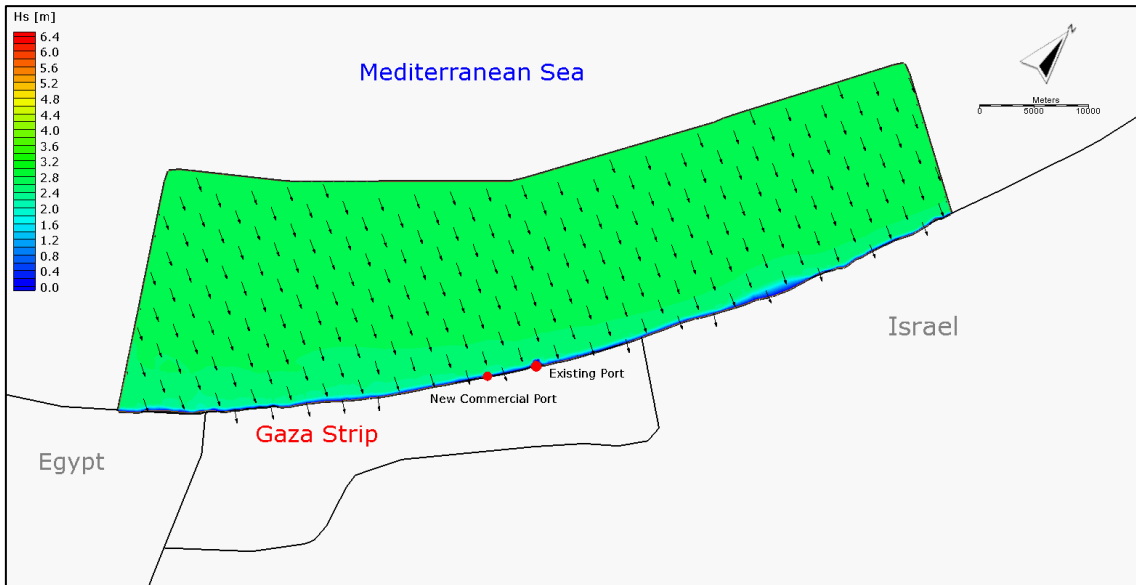


Figure 46. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=3.3\text{m}$, peak period $T_p=7.7\text{s}$, and wave direction $Dir=300^\circ\text{N}$.

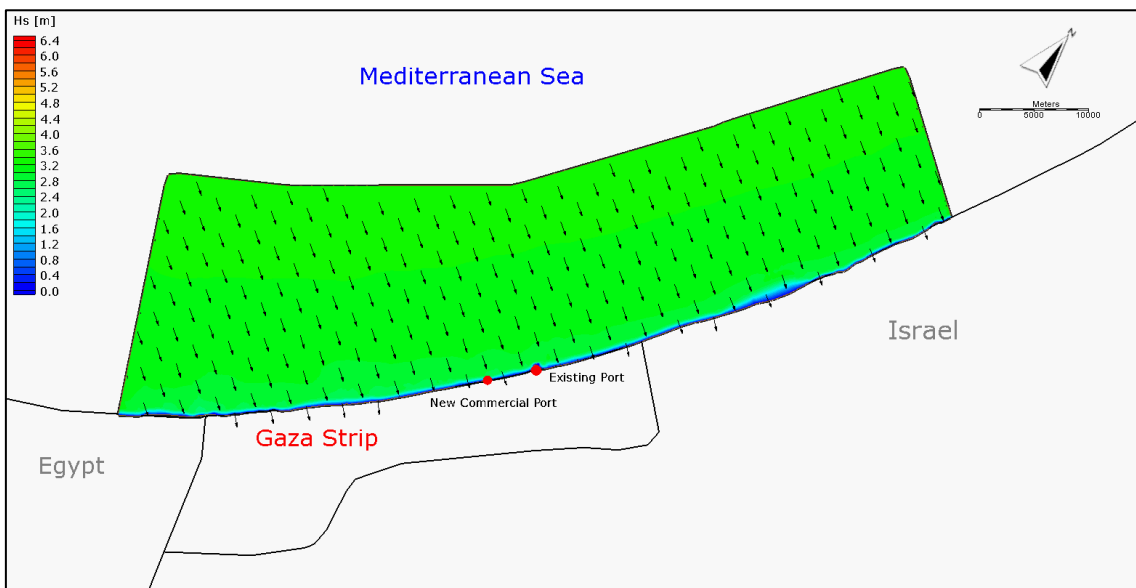


Figure 47. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8\text{m}$, peak period $T_p = 8.3\text{s}$, and wave direction $Dir = 300^\circ\text{N}$.

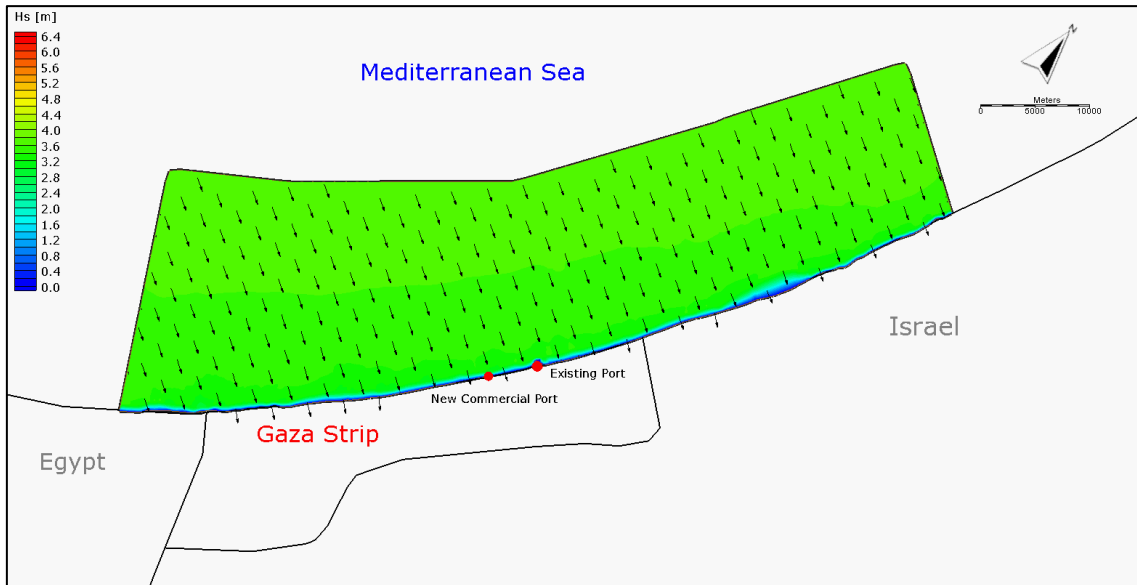


Figure 48. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 4.5\text{m}$, peak period $T_p = 9\text{s}$, and wave direction $Dir = 300^\circ\text{N}$.

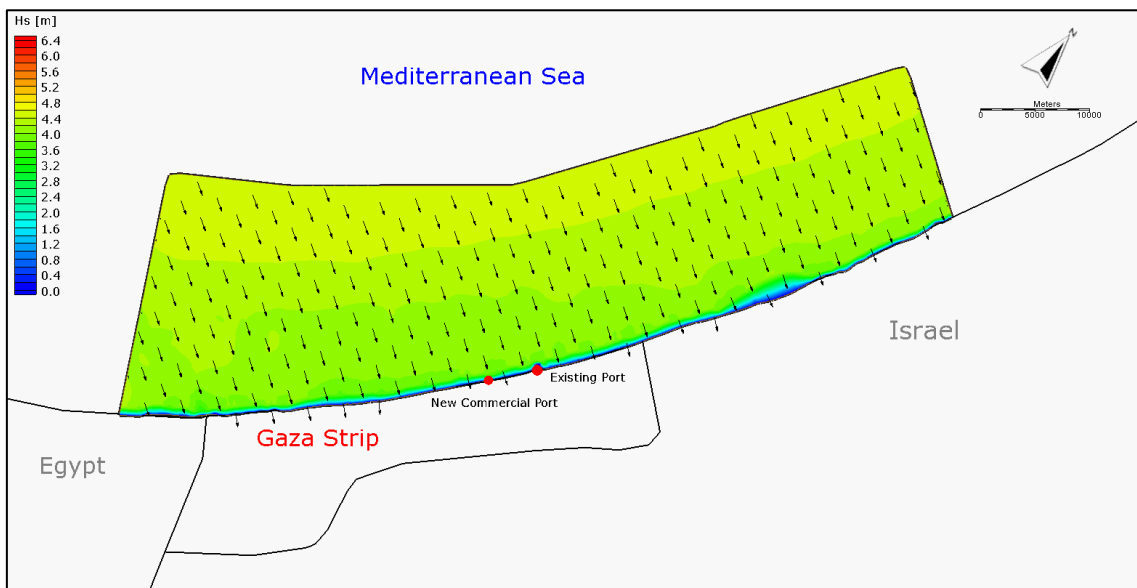


Figure 49. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 5.5m$, peak period $T_p = 10s$, and wave direction $Dir = 300^\circ N$.

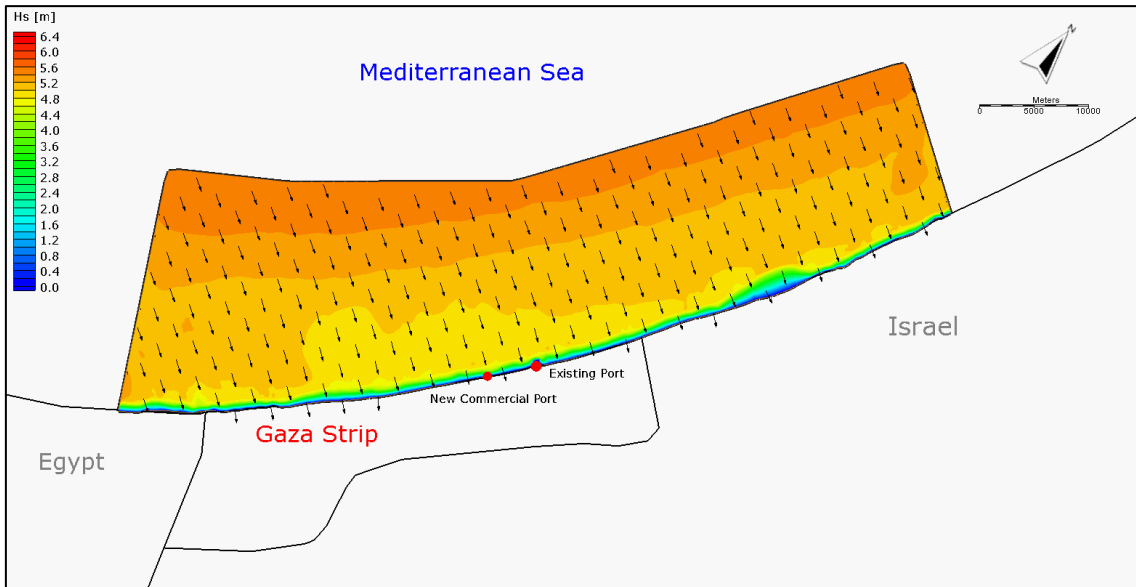


Figure 50. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 6.5m$, peak period $T_p = 11s$, and wave direction $Dir = 300^\circ N$.

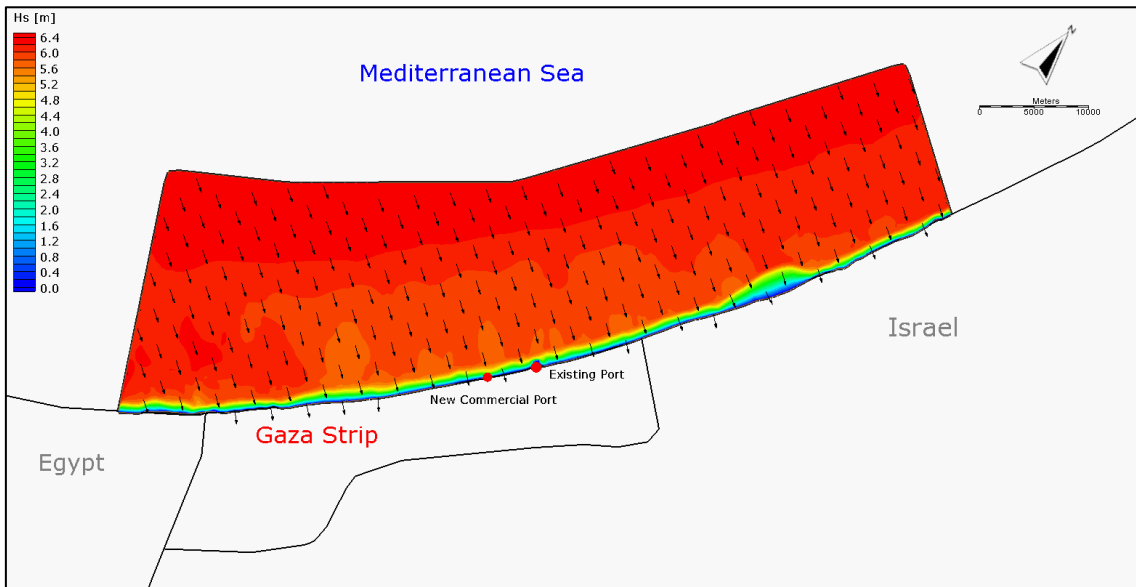


Figure 51. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir = 310^\circ N$.

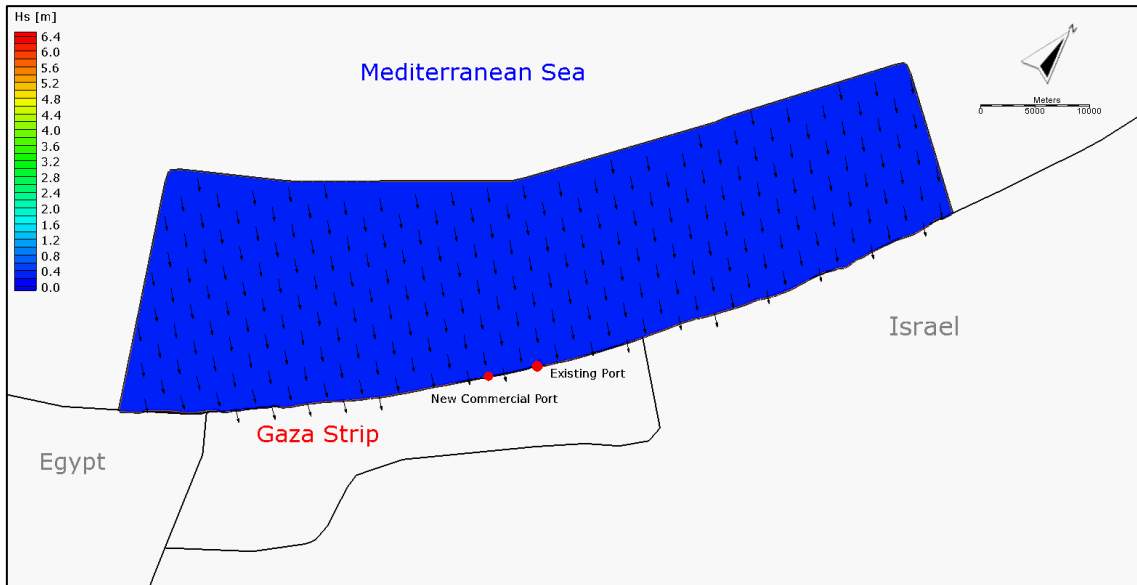


Figure 52. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75m$, peak period $T_p = 3.7s$, and wave direction $Dir = 310^\circ N$.

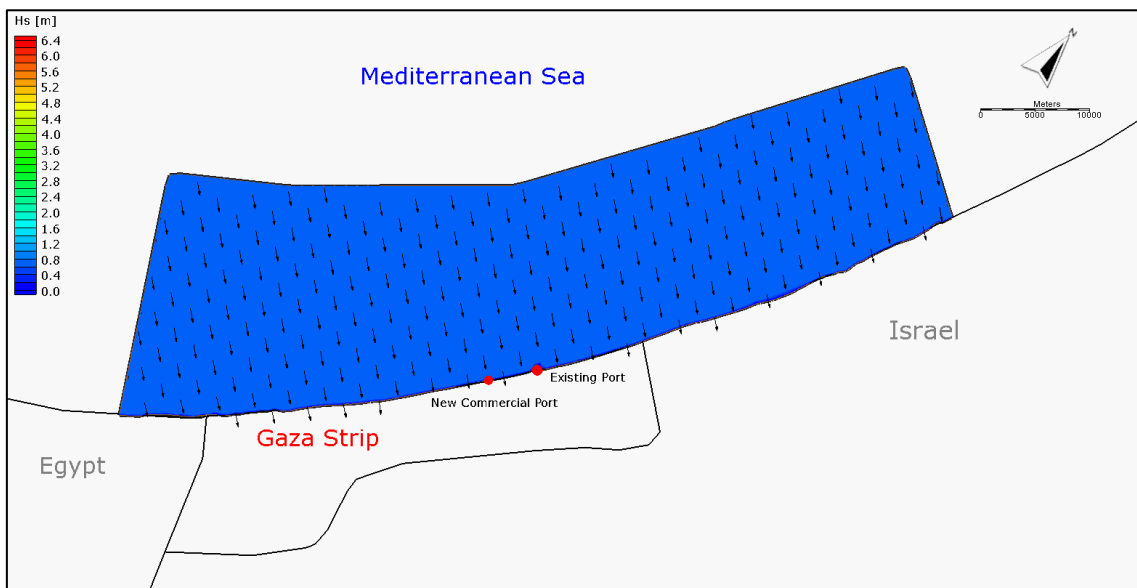


Figure 53. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 310^\circ\text{N}$.

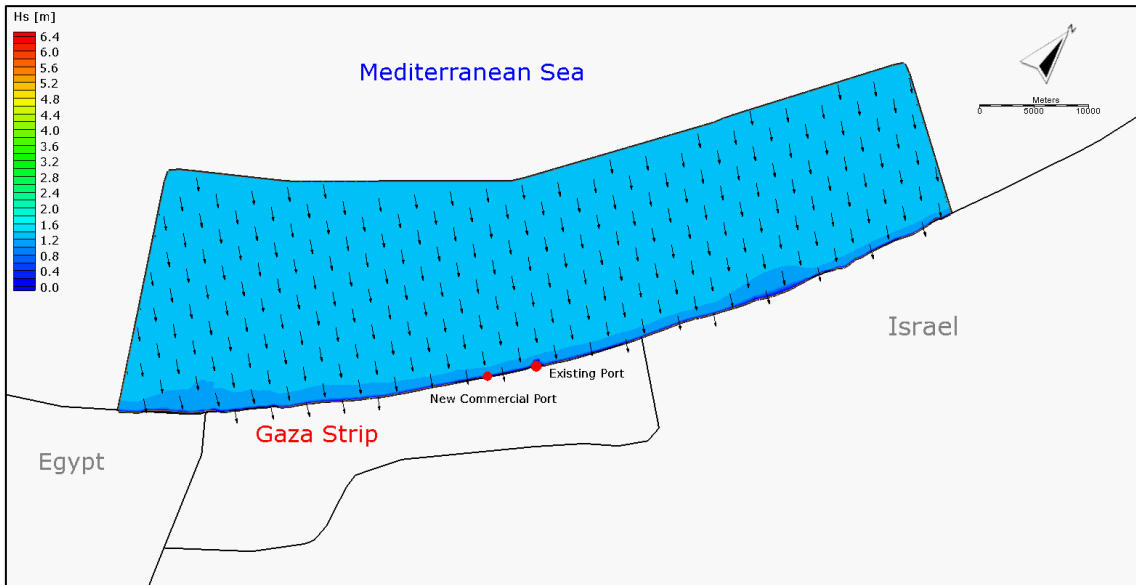


Figure 54. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 310^\circ\text{N}$.

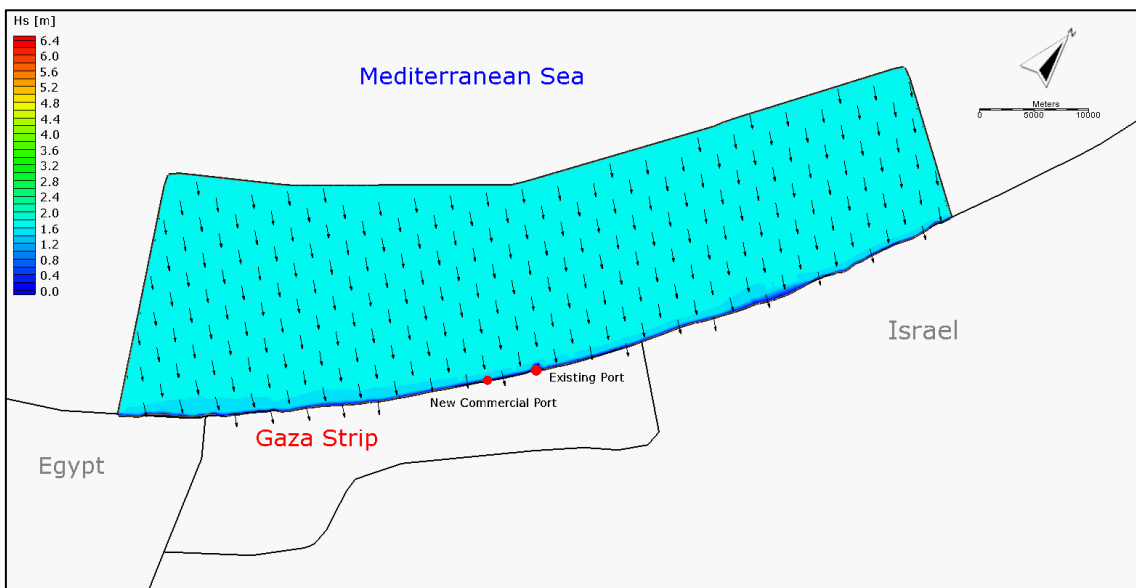


Figure 55. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 310^\circ\text{N}$.

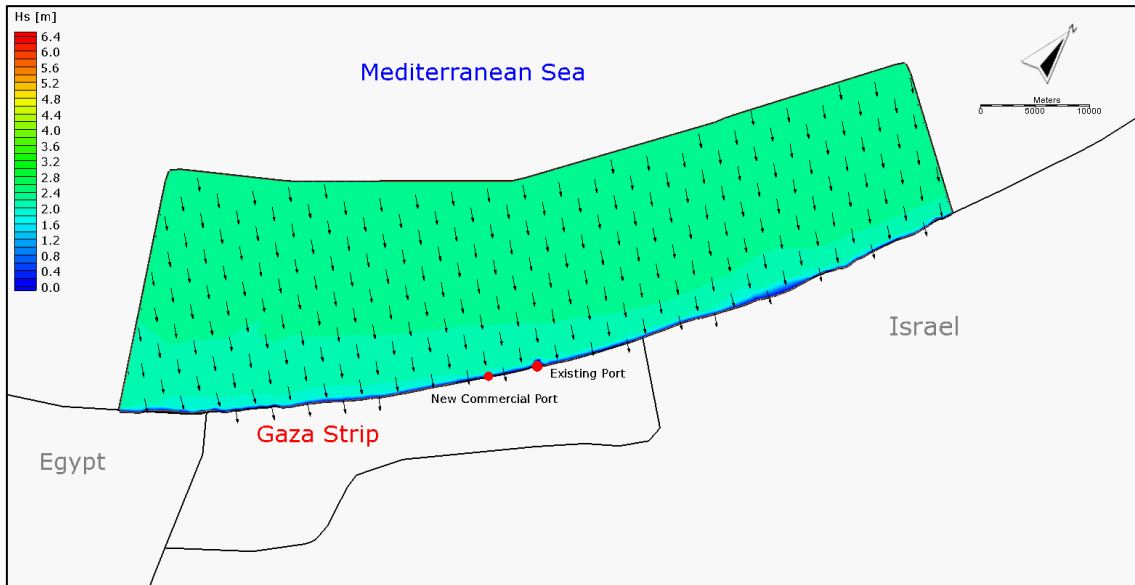


Figure 56. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8\text{m}$, peak period $T_p = 7.1\text{s}$, and wave direction $Dir = 310^\circ\text{N}$.

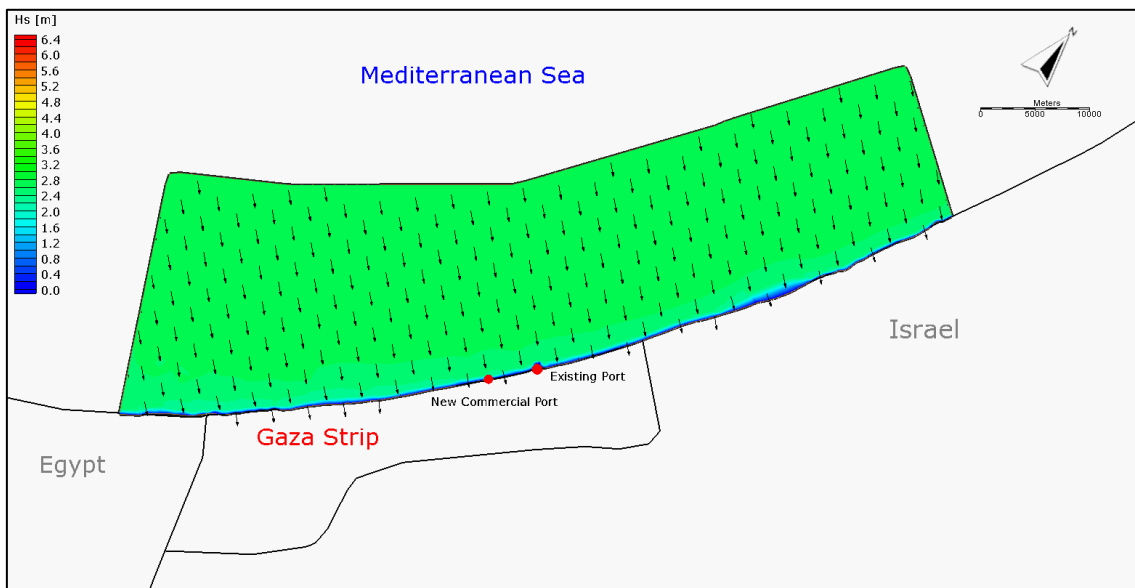


Figure 57. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.3\text{m}$, peak period $T_p = 7.7\text{s}$, and wave direction $Dir = 310^\circ\text{N}$.

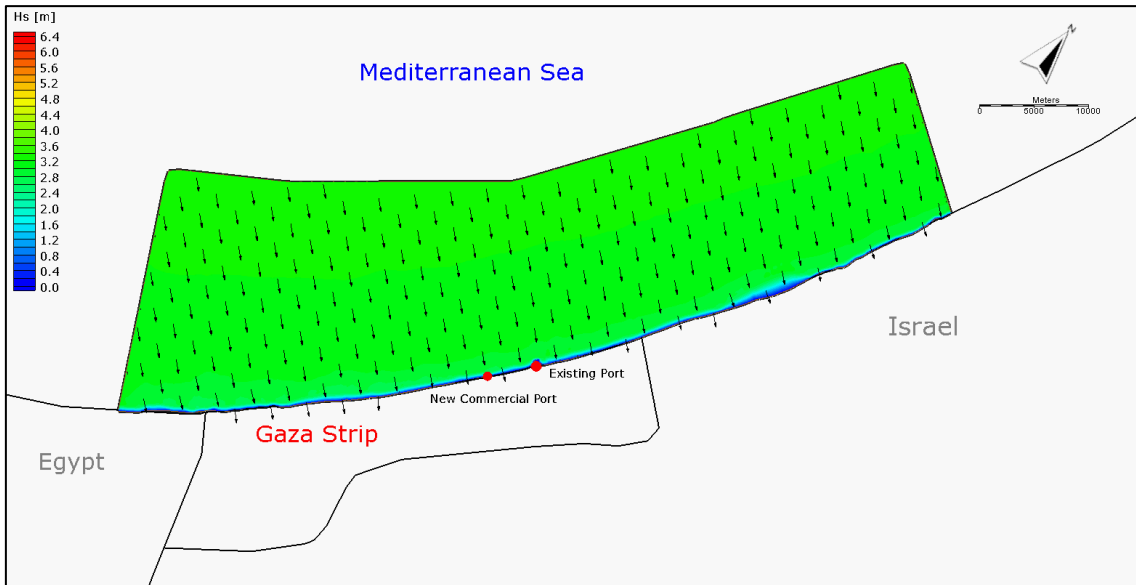


Figure 58. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8\text{m}$, peak period $T_p = 8.3\text{s}$, and wave direction $Dir = 310^\circ\text{N}$.

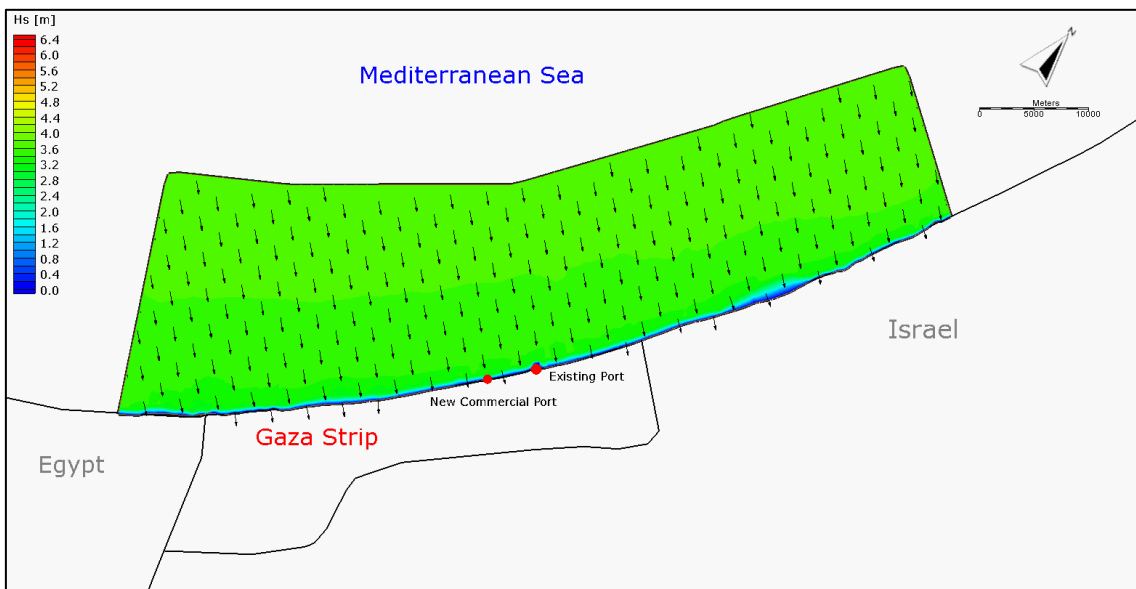


Figure 59. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=4.5m$, peak period $T_p = 9s$, and wave direction $Dir=310^\circ N$.

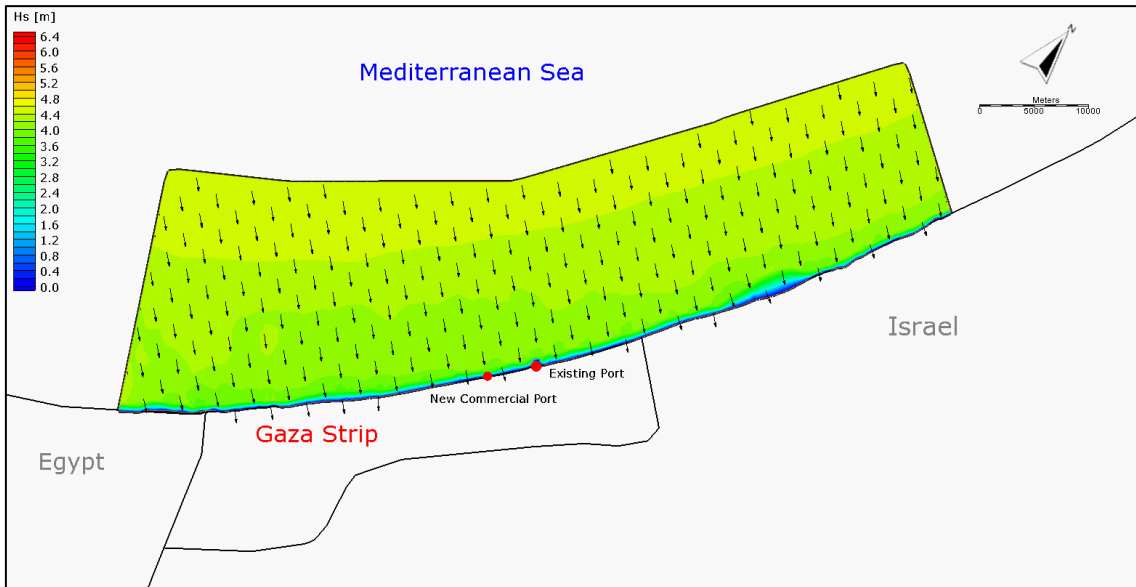


Figure 60. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir=320^\circ N$.

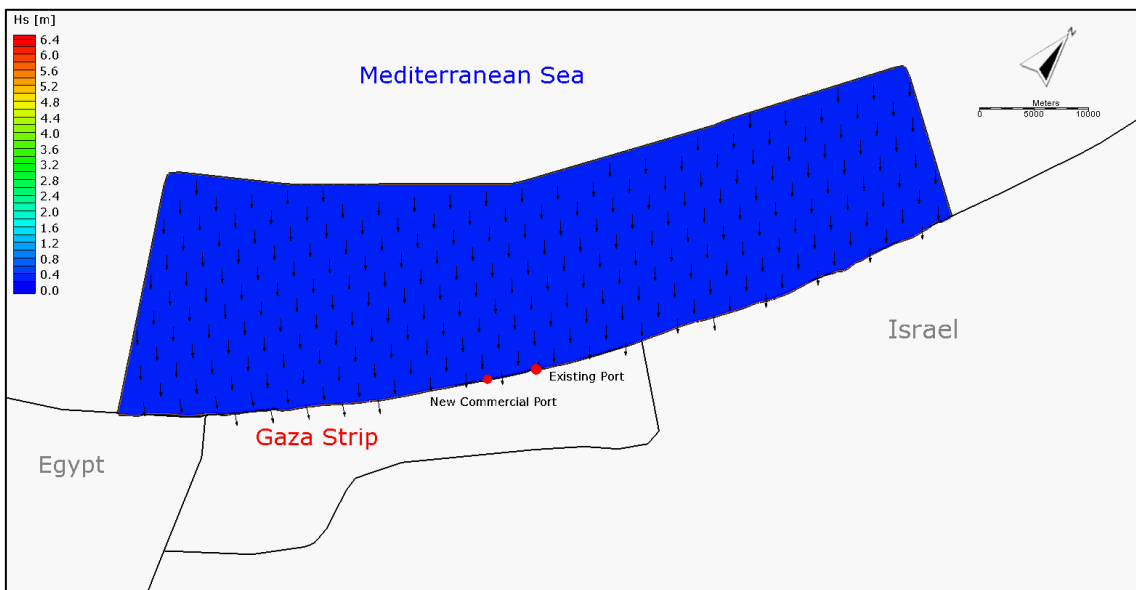


Figure 61. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75\text{m}$, peak period $T_p = 3.7\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

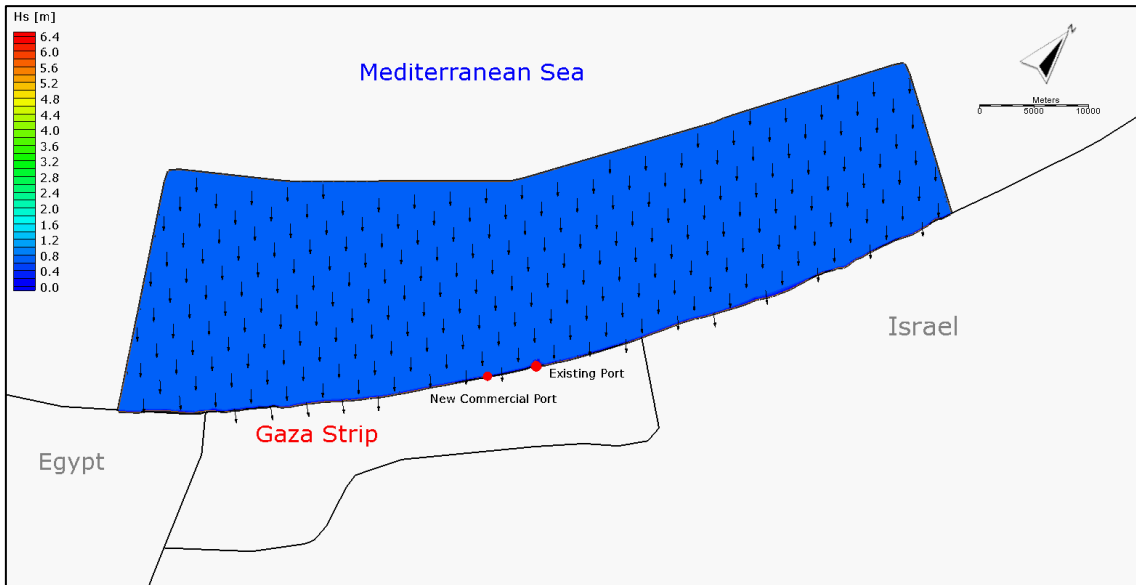


Figure 62. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

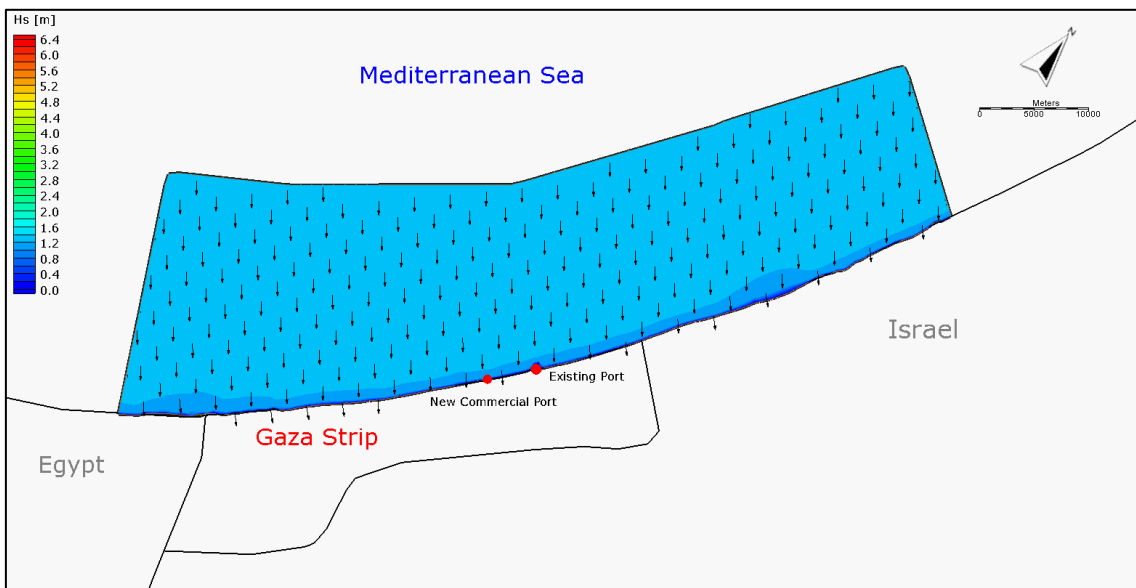


Figure 63. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

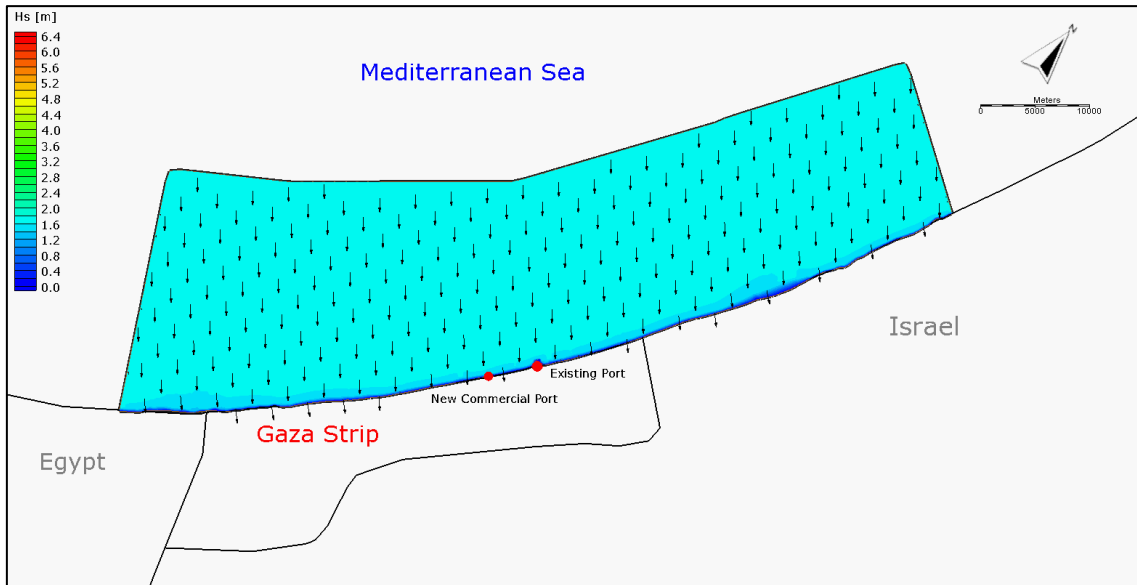


Figure 64. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

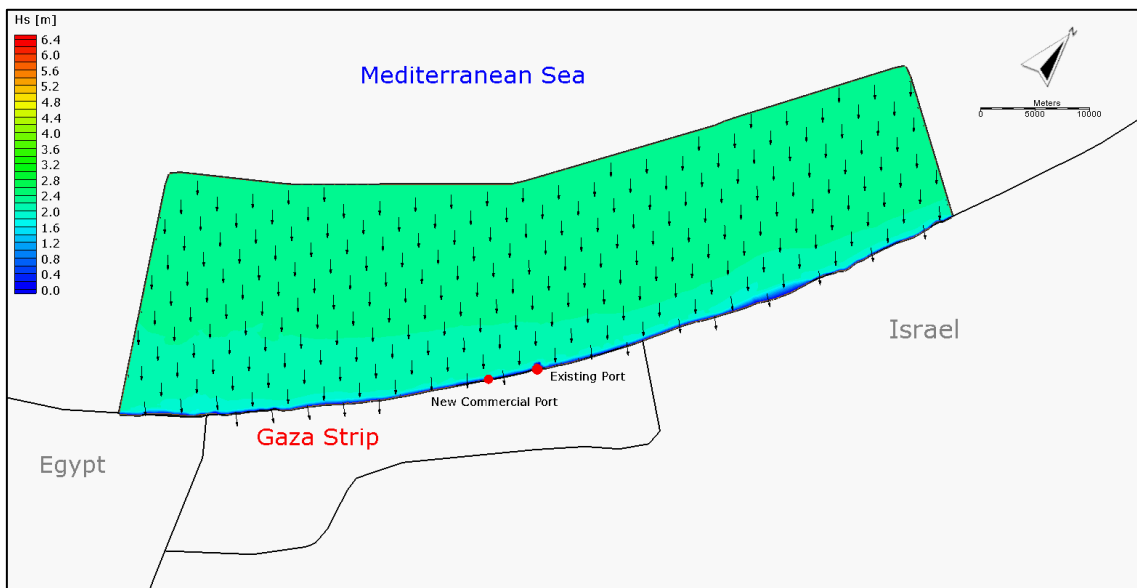


Figure 65. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8\text{m}$, peak period $T_p = 7.1\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

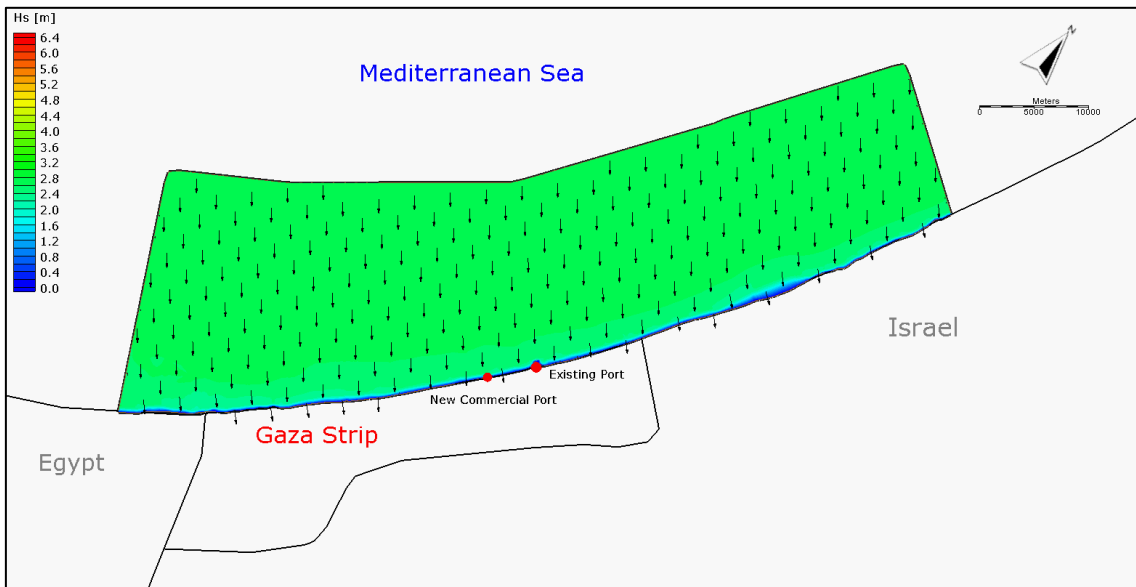


Figure 66. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.3\text{m}$, peak period $T_p = 7.7\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

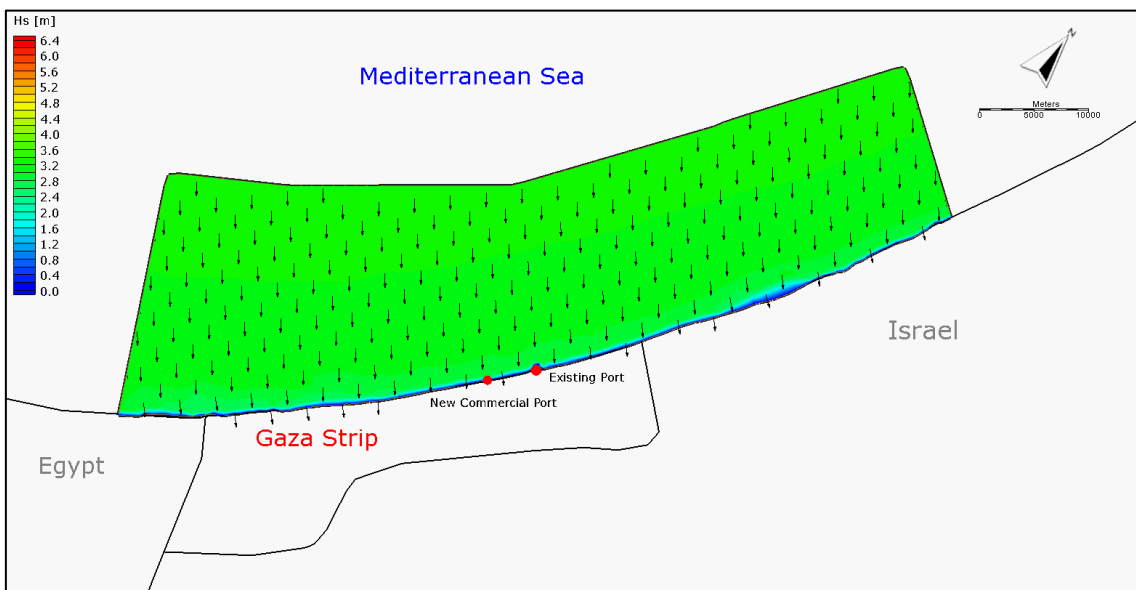


Figure 67. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8\text{m}$, peak period $T_p = 8.3\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

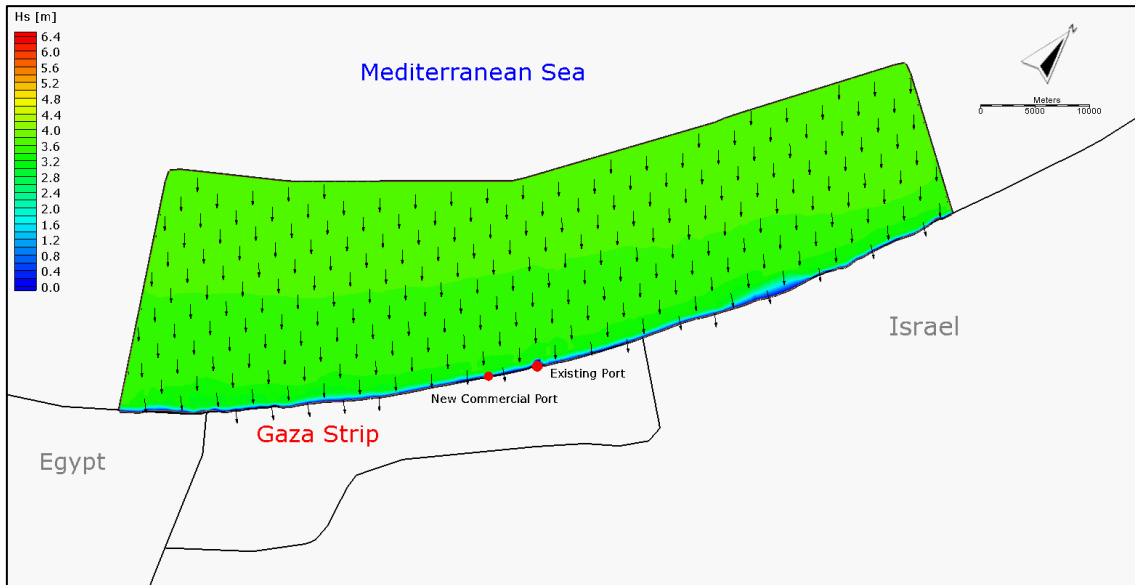


Figure 68. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 4.5\text{m}$, peak period $T_p = 9\text{s}$, and wave direction $Dir = 320^\circ\text{N}$.

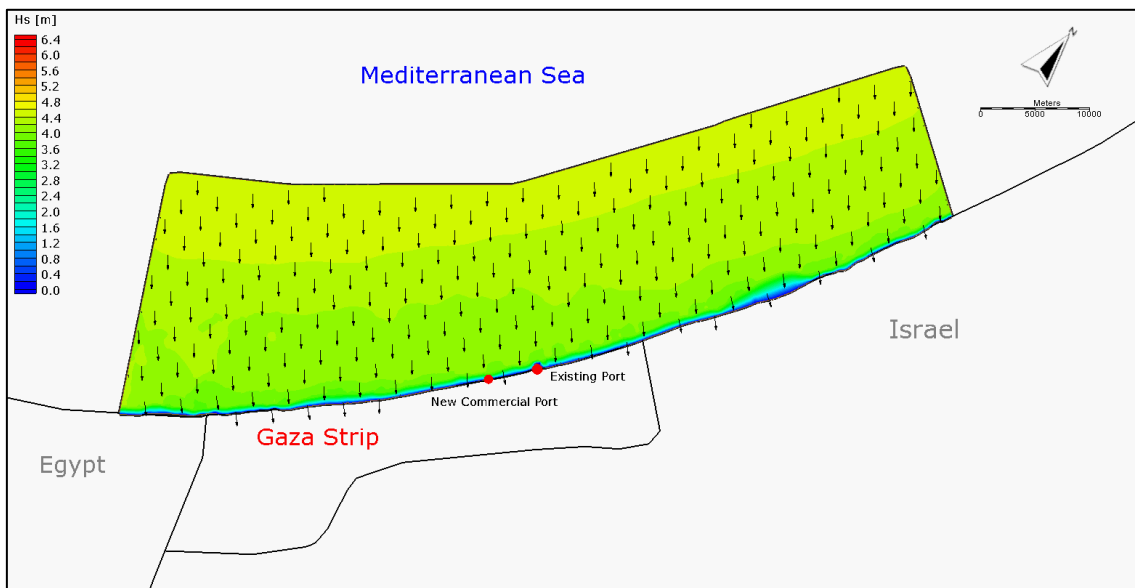


Figure 69. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=0.25m$, peak period $T_p=2.1s$, and wave direction $Dir=330^\circ N$.

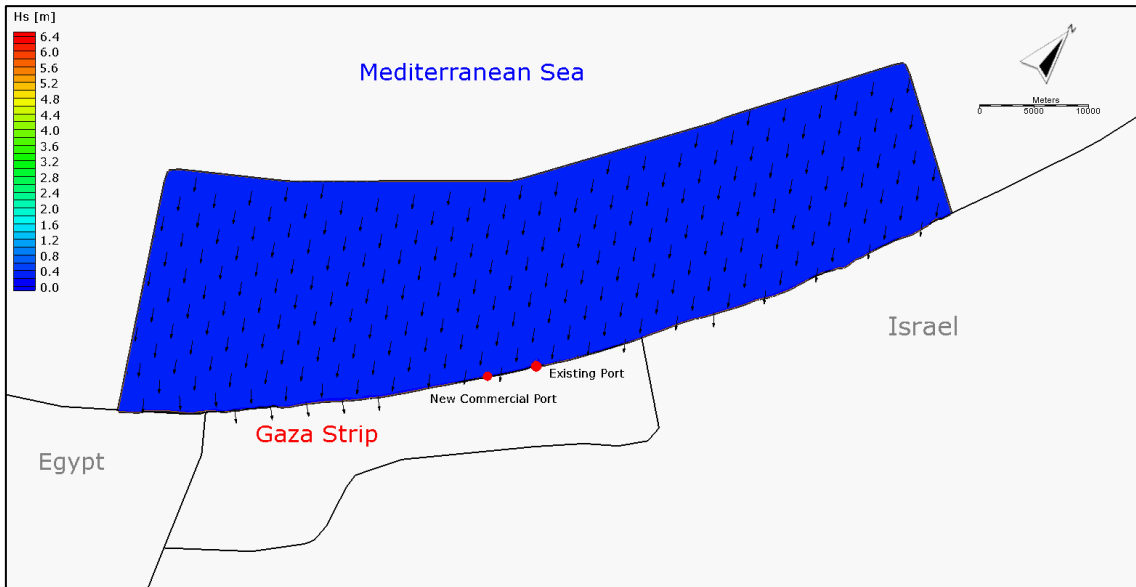


Figure 70. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=0.75m$, peak period $T_p=3.7s$, and wave direction $Dir=330^\circ N$.

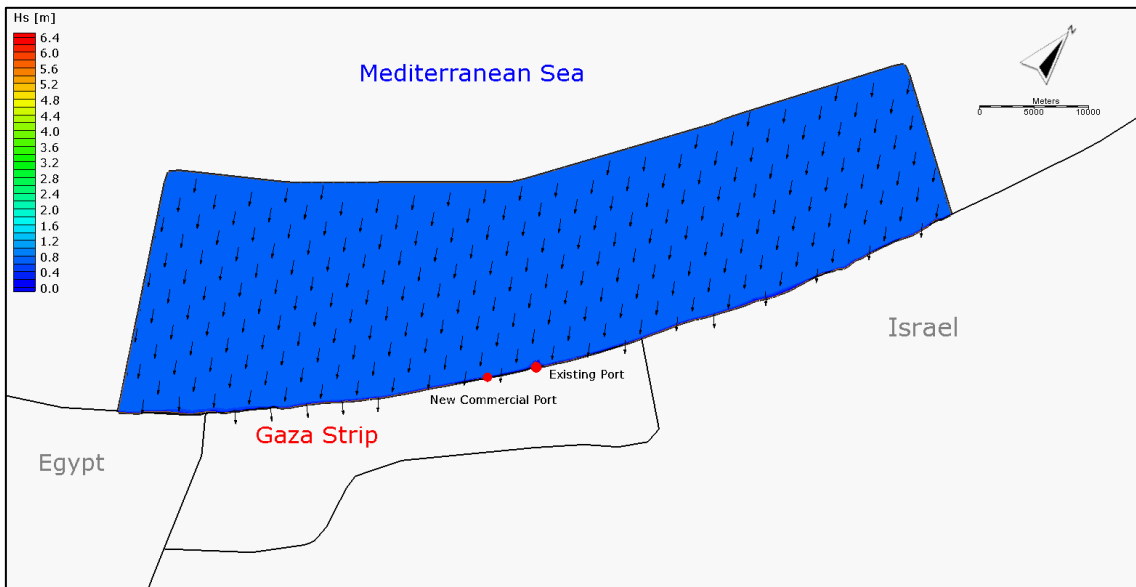


Figure 71. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3m$, peak period $T_p = 4.8s$, and wave direction $Dir = 330^\circ N$.

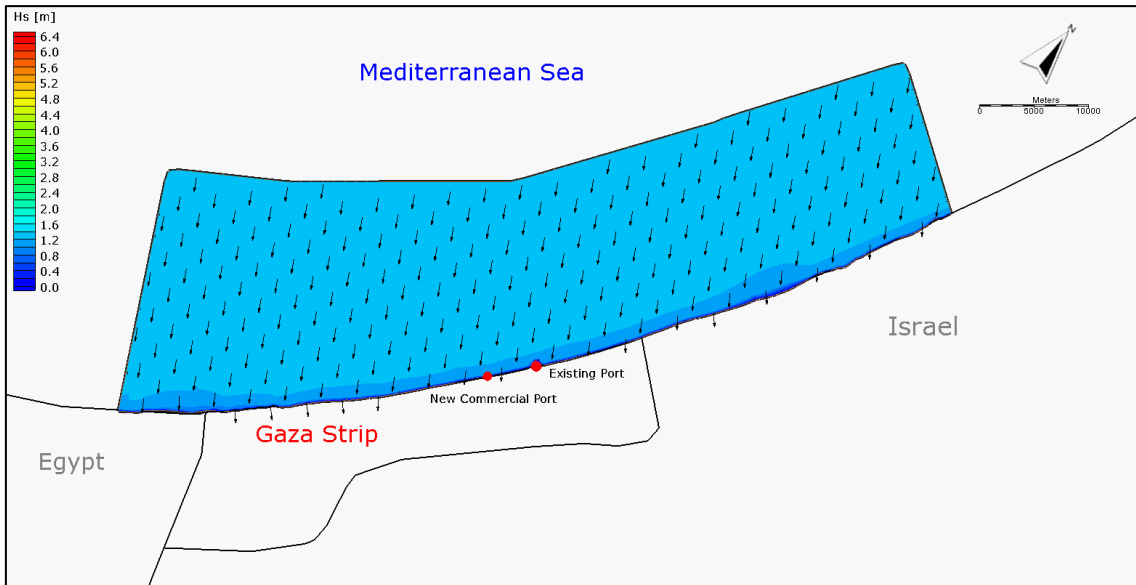


Figure 72. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8m$, peak period $T_p = 5.6s$, and wave direction $Dir = 330^\circ N$.

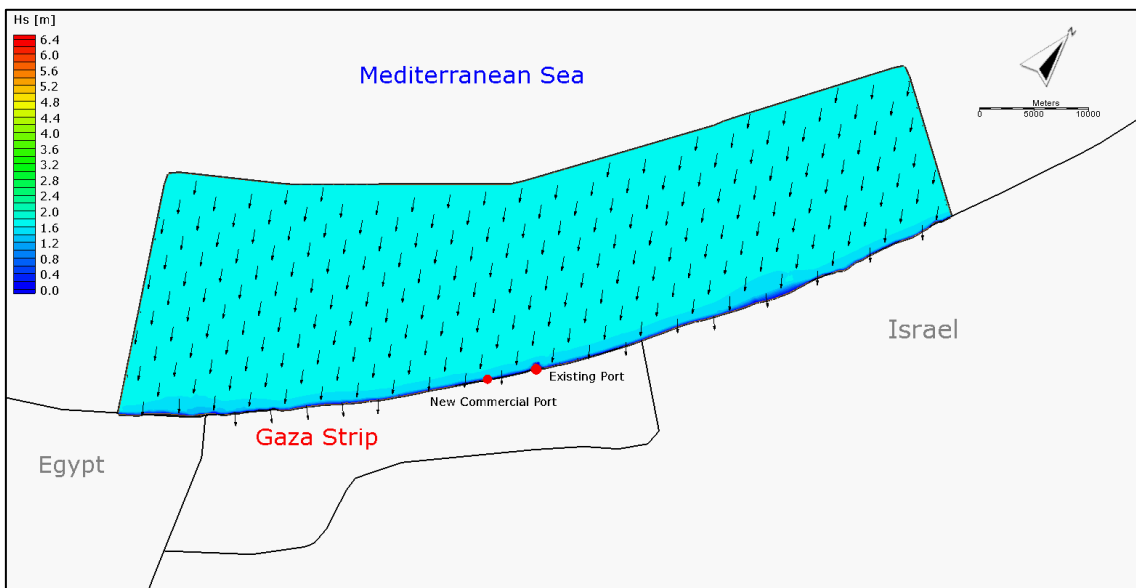


Figure 73. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 330^\circ\text{N}$.

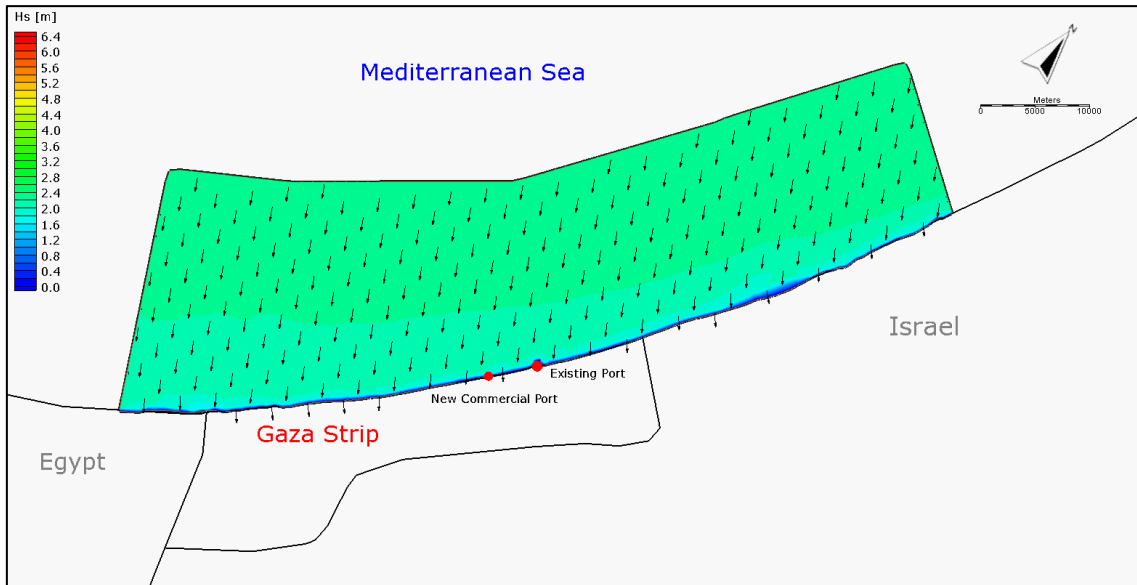


Figure 74. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8\text{m}$, peak period $T_p = 7.1\text{s}$, and wave direction $Dir = 330^\circ\text{N}$.

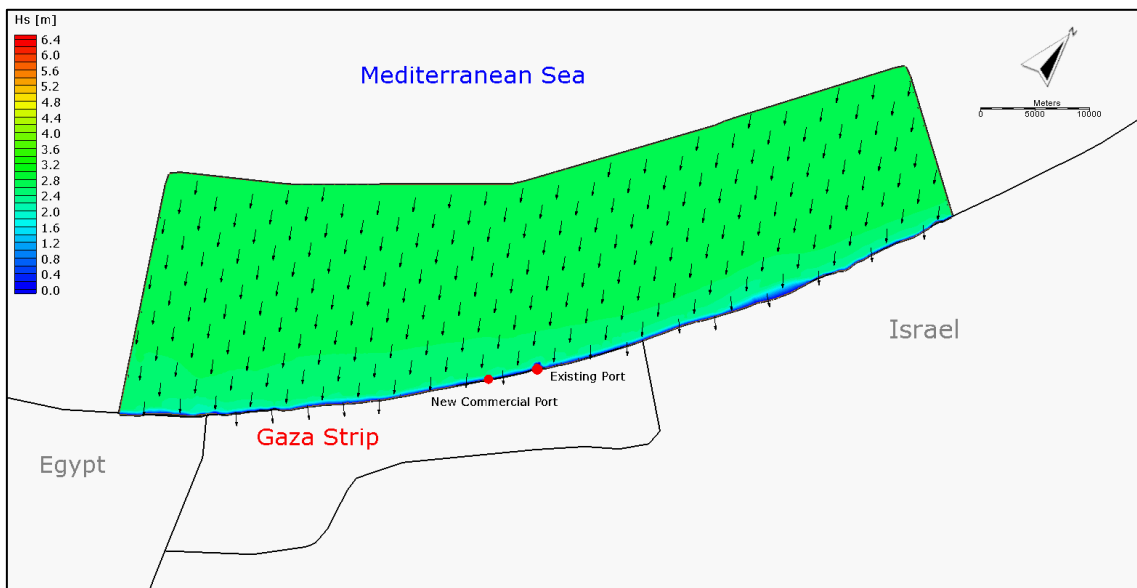


Figure 75. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.3\text{m}$, peak period $T_p = 7.7\text{s}$, and wave direction $Dir = 330^\circ\text{N}$.

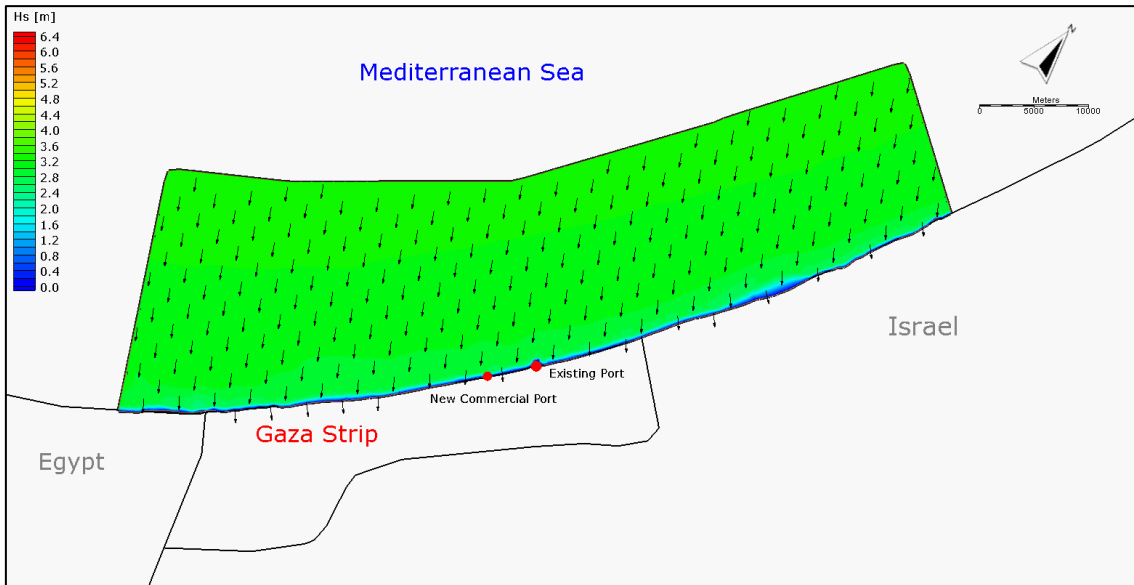


Figure 76. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8\text{m}$, peak period $T_p = 8.3\text{s}$, and wave direction $Dir = 330^\circ\text{N}$.

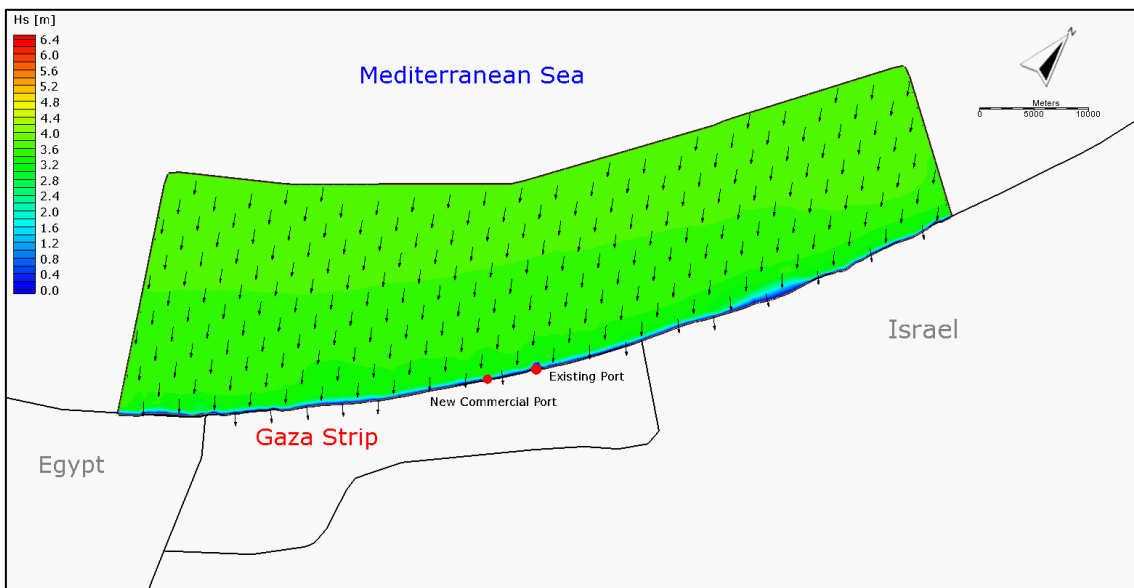


Figure 77. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=4.5m$, peak period $T_p = 9s$, and wave direction $Dir=330^\circ N$.

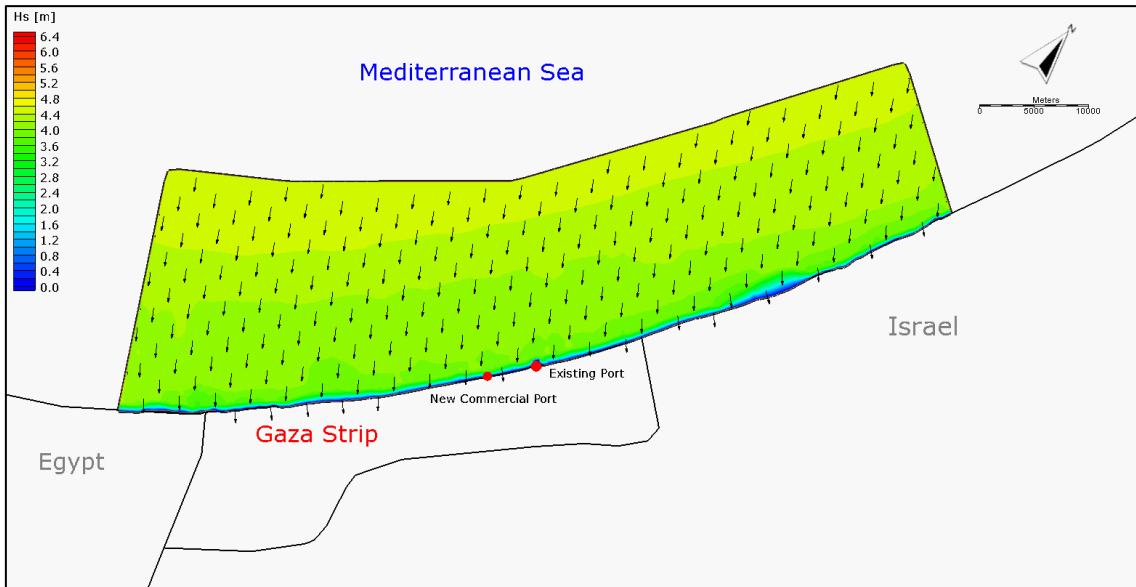


Figure 78. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s=0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir=340^\circ N$.

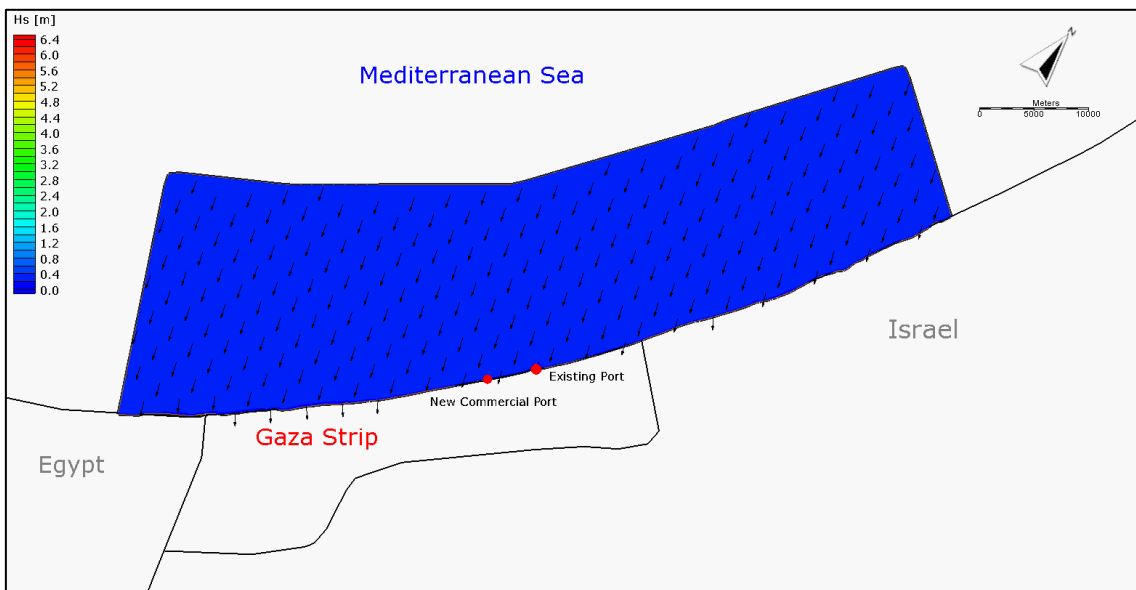


Figure 79. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75\text{m}$, peak period $T_p = 3.7\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

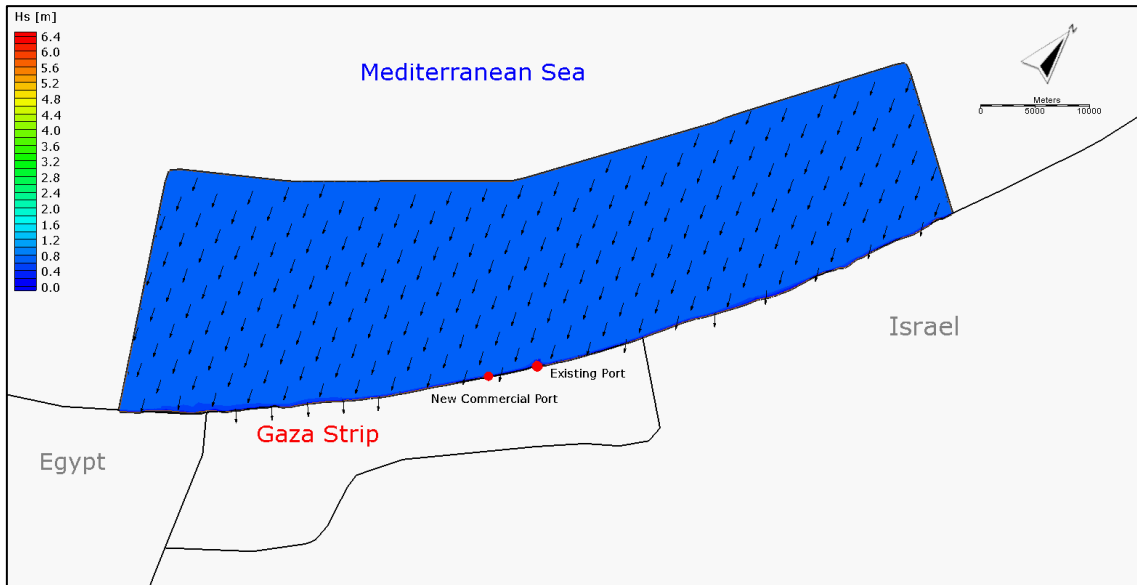


Figure 80. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

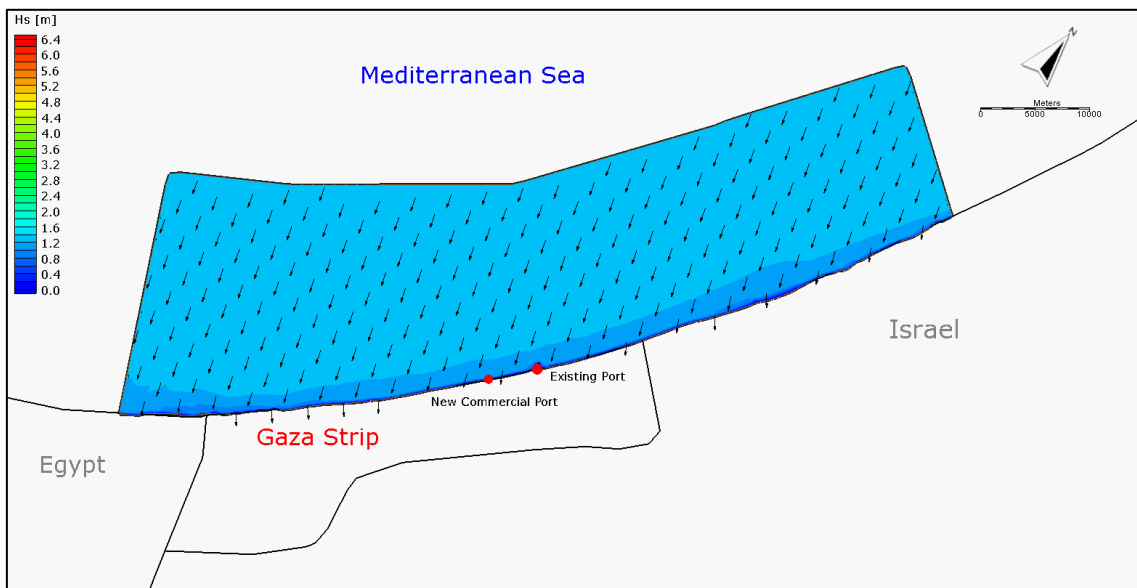


Figure 81. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

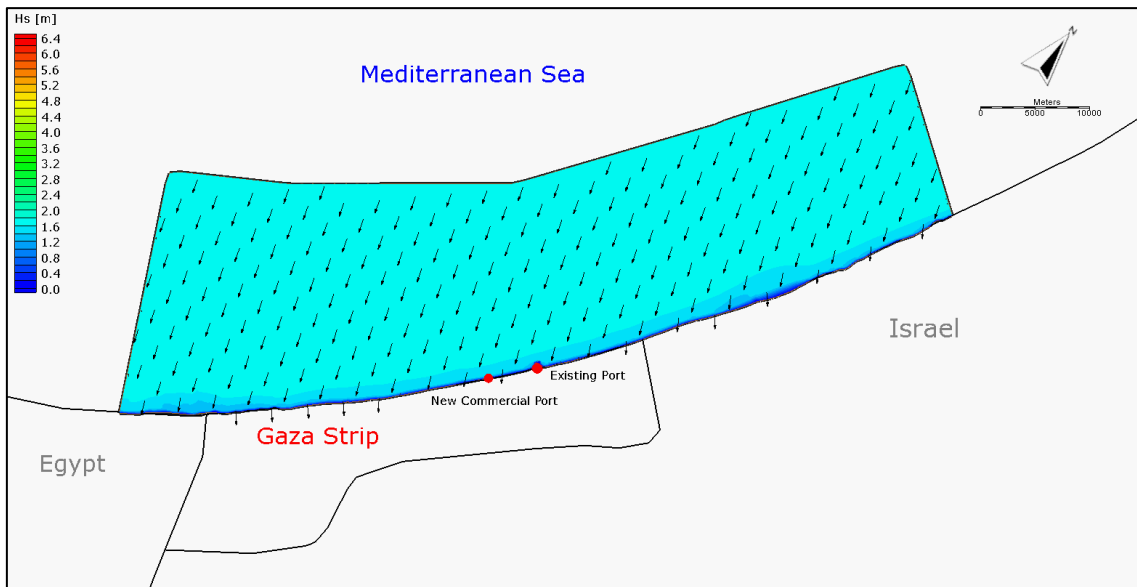


Figure 82. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3\text{m}$, peak period $T_p = 6.4\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

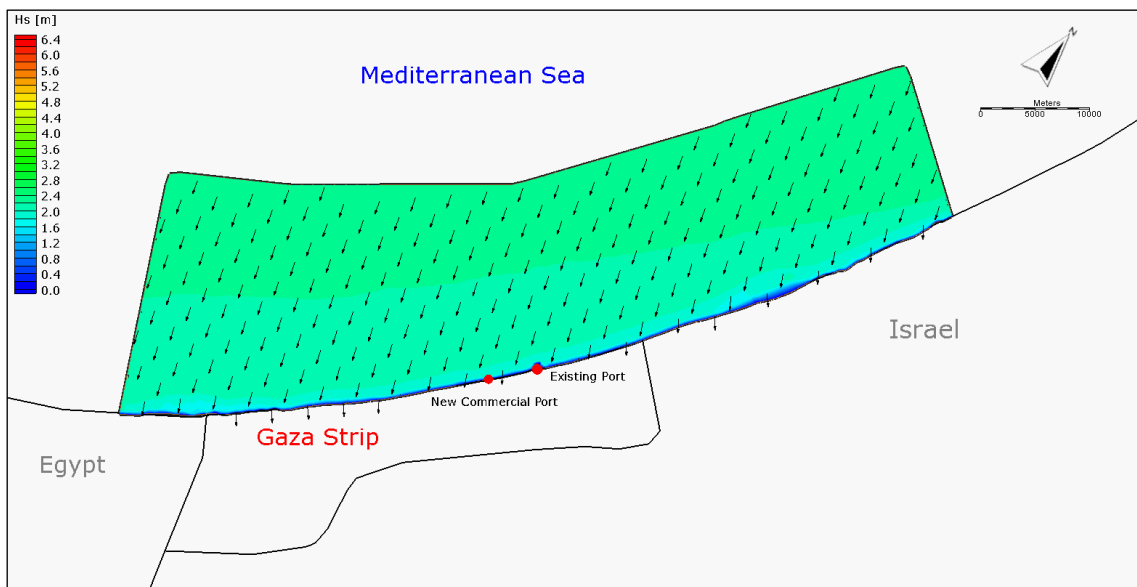


Figure 83. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8\text{m}$, peak period $T_p = 7.1\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

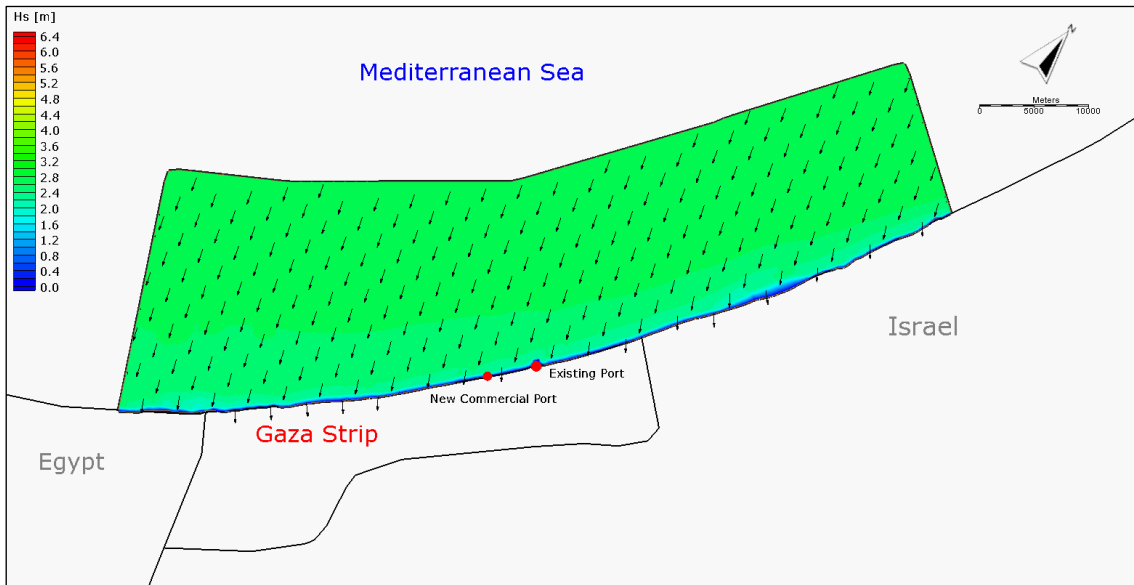


Figure 84. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.3\text{m}$, peak period $T_p = 7.7\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

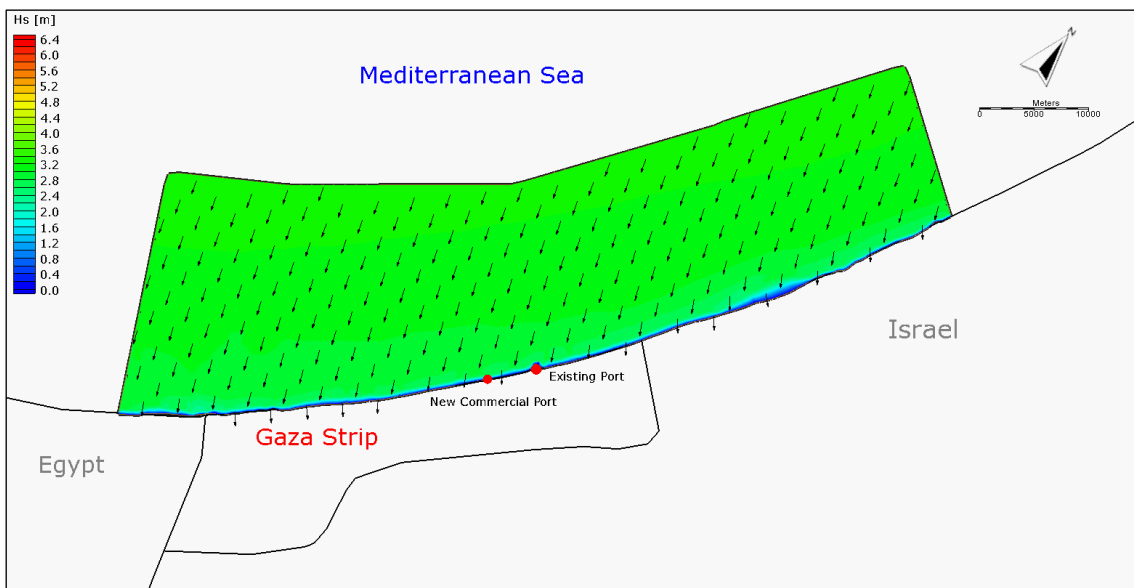


Figure 85. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.8\text{m}$, peak period $T_p = 8.3\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

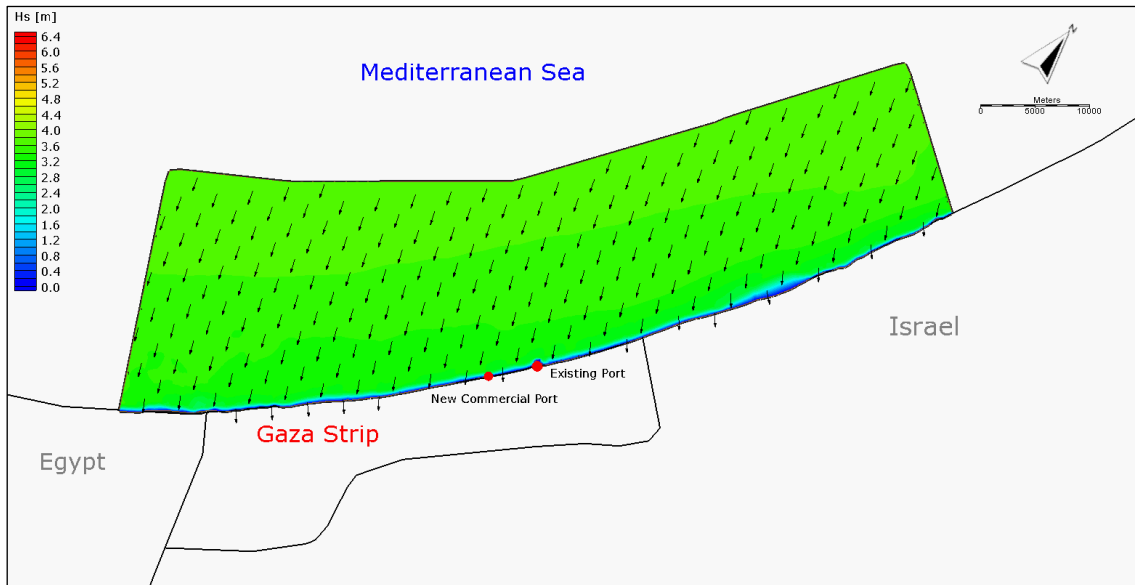


Figure 86. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 4.5\text{m}$, peak period $T_p = 9\text{s}$, and wave direction $Dir = 340^\circ\text{N}$.

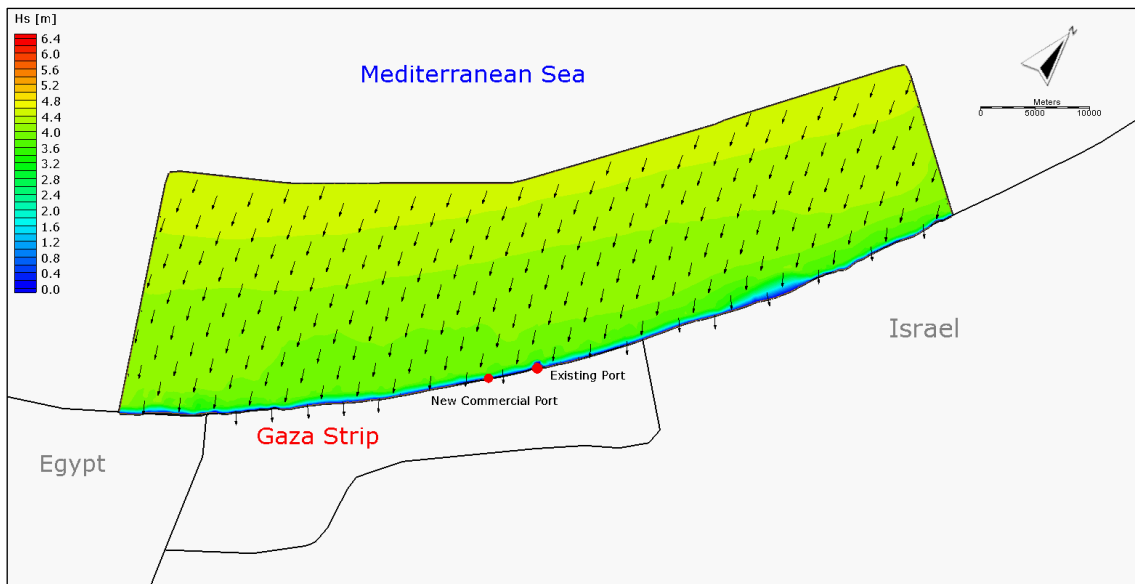


Figure 87. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.25m$, peak period $T_p = 2.1s$, and wave direction $Dir = 350^\circ N$.

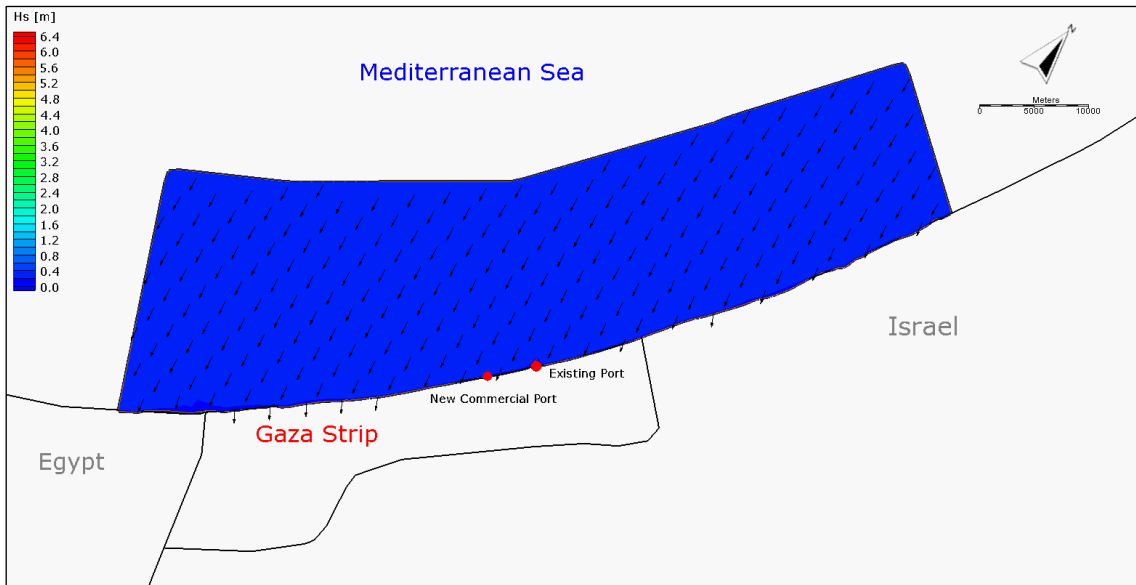


Figure 88. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 0.75m$, peak period $T_p = 3.7s$, and wave direction $Dir = 350^\circ N$.

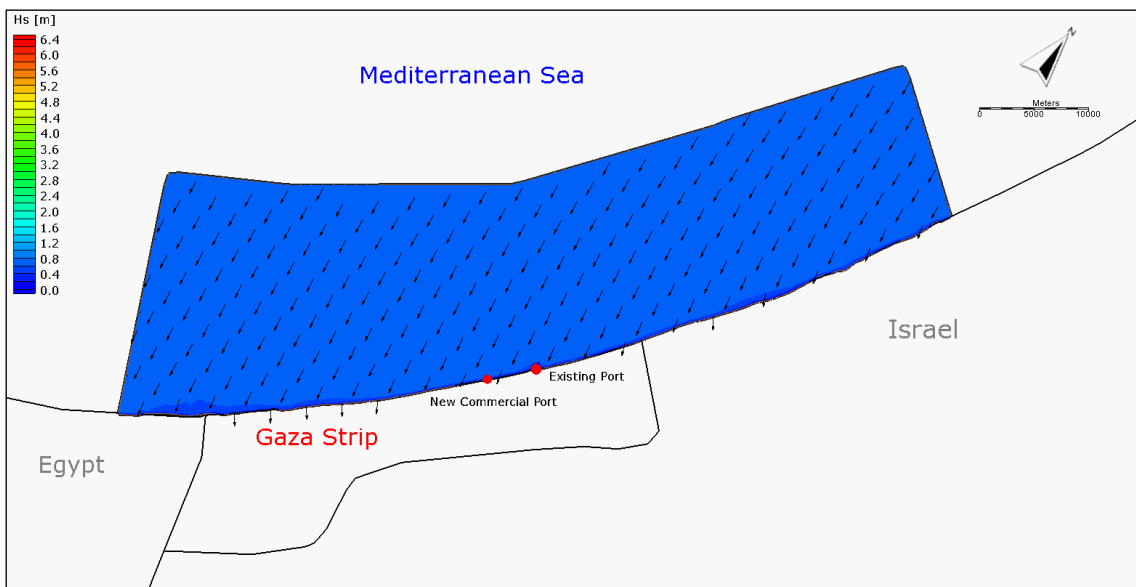


Figure 89. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.3\text{m}$, peak period $T_p = 4.8\text{s}$, and wave direction $Dir = 350^\circ\text{N}$.

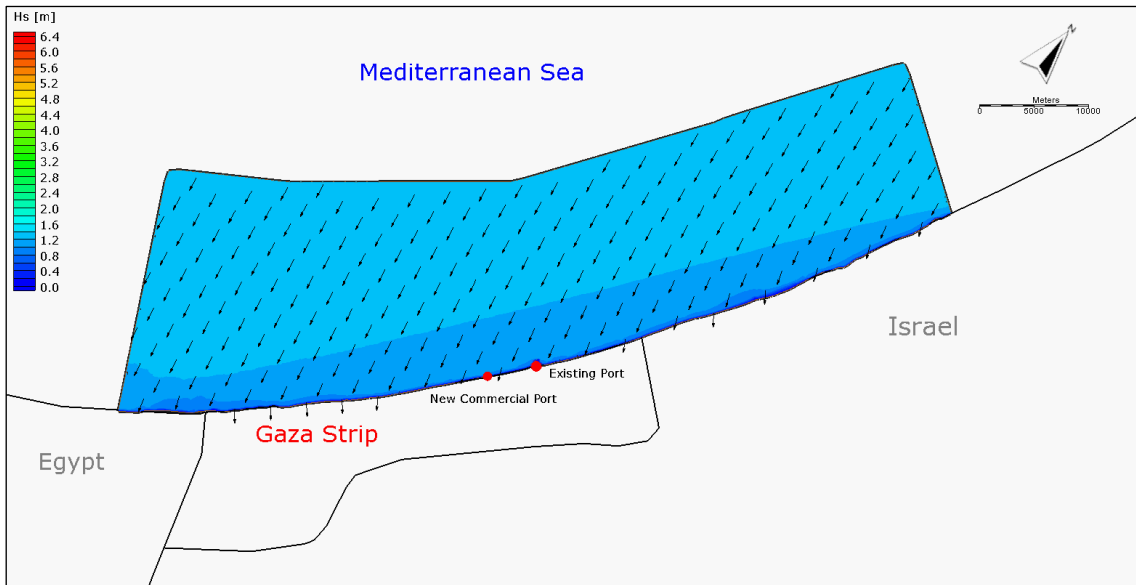


Figure 90. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 1.8\text{m}$, peak period $T_p = 5.6\text{s}$, and wave direction $Dir = 350^\circ\text{N}$.

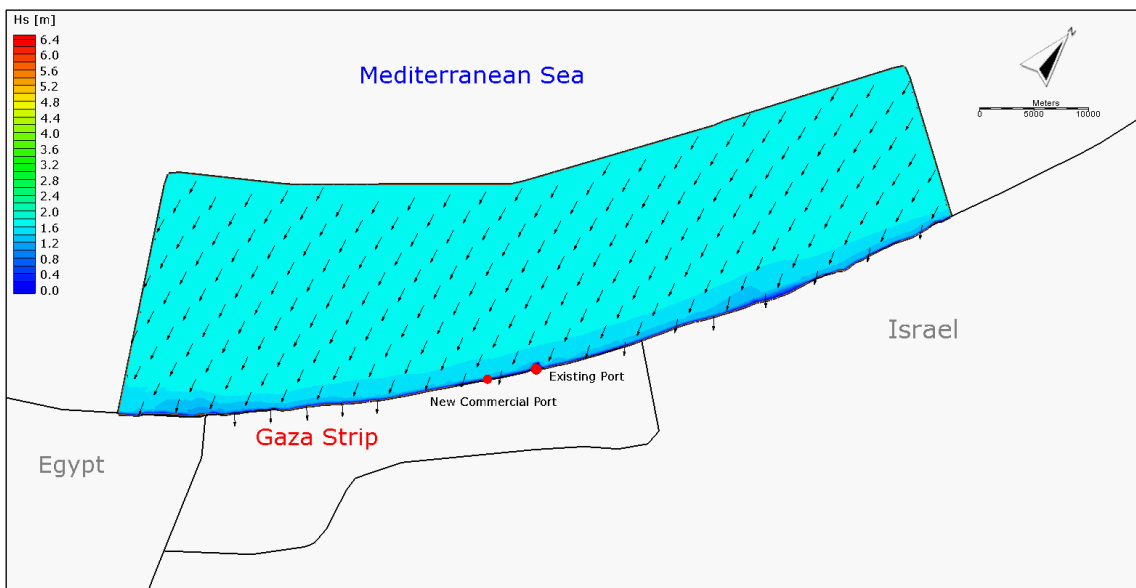


Figure 91. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.3m$, peak period $T_p = 6.4s$, and wave direction $Dir = 350^\circ N$.

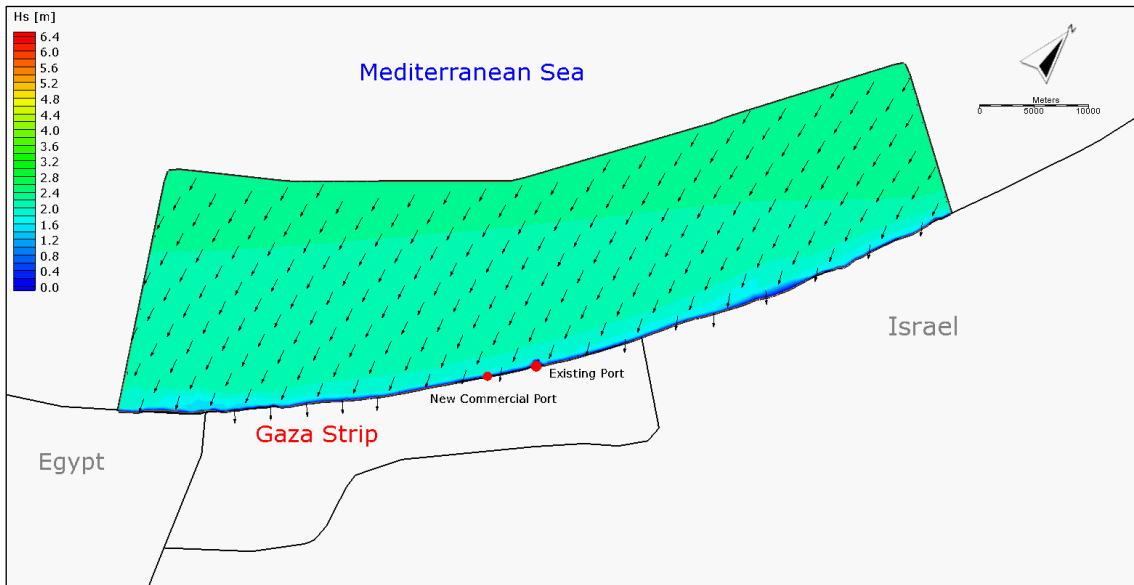


Figure 92. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 2.8m$, peak period $T_p = 7.1s$, and wave direction $Dir = 350^\circ N$.

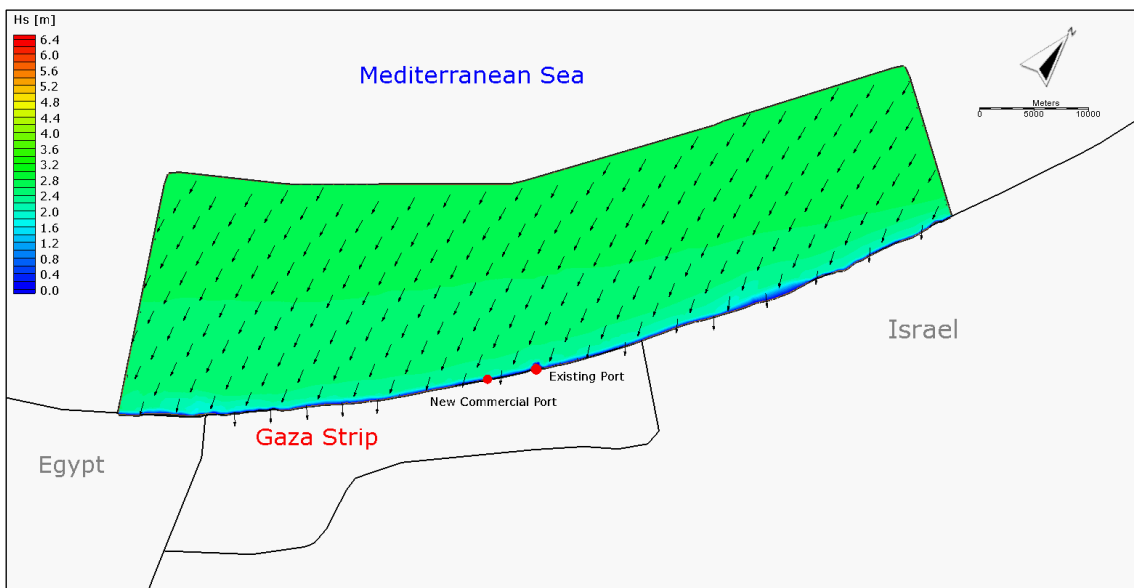
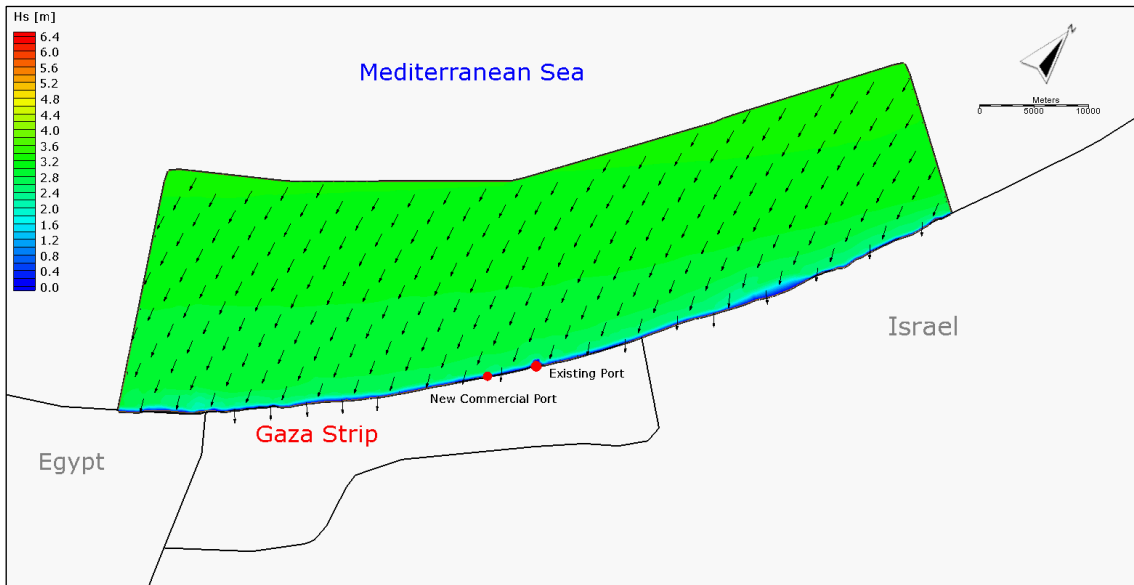


Figure 93. Spatial distribution of significant wave height. The arrows indicate the wave direction. Boundary conditions: significant wave height $H_s = 3.3\text{m}$, peak period $T_p = 7.7\text{s}$, and wave direction $Dir = 350^\circ\text{N}$.



2. Costs Analysis for Maritime Transport Proposed Projects

Costs Analysis for the Rehabilitation of Gaza Fishery Port

Tab 1. Main Costs for Rehabilitation of Gaza Fishery Port - Layout 1

Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)
PHASE 1				
DEFENSE WORKS				
Breakwater phase 1 (up to -8,00m)	1,010.00	m	22,000.00	22,220,000.00
Inner breakwater phase 1	285.00	m	10,000.00	2,850,000.00
QUAYS				
Quay phase 1 (up to -8,00m)	1,500.00	m	9,000.00	13,500,000.00
OPERATIONAL FORECOURTS				
Operational forecourt phase 1	230,000.00	m ²	60.00	13,800,000.00
FILLING				
Filling phase 1 (up to +2,00m)	630,000.00	m ³	8.00	5,040,000.00
ESCAVATION				
Excavation phase 1 (up to -8,00m)	1,320,000.00	m ³	5.00	6,600,000.00
Mooring arrangements				
Mooring arrangements - phase 1			750,000.00	750,000.00
Electrical, water and sprinkler systems				
Electrical, water and sprinkler systems - phase 1			1,100,000.00	1,100,000.00
PIERS				
Pier phase 1	570.00	m	2,000.00	1,140,000.00
				67,000,000.00

Tab 2. Main Costs for Rehabilitation of Gaza Fishery Port - Layout 2

Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)
PHASE 1				
DEFENSE WORKS				
Breakwater phase 1 (up to -8,00m)	1,010.00	m	22,000.00	22,220,000.00
Inner breakwater phase 1	285.00	m	10,000.00	2,850,000.00
QUAYS				
Quay phase 1 (up to -8,00m)	1,900.00	m	9,000.00	17,100,000.00
OPERATIONAL FORECOURTS				
Operational forecourt phase 1	156,870.00	m ²	60.00	9,412,200.00
FILLING				
Filling phase 1 (up to +2,00m)	628,000.00	m ³	8.00	5,024,000.00
ESCAVATION				
Excavation phase 1 (up to -8,00m)	1,350,000.00	m ³	5.00	6,750,000.00
Mooring arrangements				
Mooring arrangements - phase 1			493,800.00	493,800.00
Electrical, water and sprinkler systems				
Electrical, water and sprinkler systems - phase 1			900,000.00	900,000.00
PIERS				
Pier phase 1	1,625.00	m	2,000.00	3,250,000.00
				68,000,000.00



Costs Analysis for the Construction of New Commercial Port in Gaza

Tab 3. Main Costs for New Gaza Commercial Port - Alternative 1 Layout A-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	690.00	m	30,000.00	20,700,000.00	2.00	414,000.00
1A.2	Breakwater phase 1	2,318.00	m	60,000.00	139,080,000.00	2.00	2,781,600.00
1A.3	Temporary inner breakwater phase 1	605.00	m	10,000.00	6,050,000.00	1.00	60,500.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -14,00m)	3,100.00	m	28,000.00	86,800,000.00	1.50	1,302,000.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	573,500.00	m²	70.00	40,145,000.00	2.00	802,900.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	4,580,800.00	m³	12.00	54,969,600.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to -10,00m)	233,400.00	m³	8.00	1,867,200.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1		a corpo	2,500,000.00	2,500,000.00	1.00	25,000.00
1G	Elettrical, water and sprinkler systems						
1G.1	Elettrical, water and sprinkler systems - phase 1		a corpo	3,500,000.00	3,500,000.00	10.00	350,000.00
1H	PIERS						
1H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					363,611,800.00		6,536,000.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	690.00	m	30,000.00	20,700,000.00	2.00	414,000.00
2A.2	Breakwater phase 1	2,318.00	m	60,000.00	139,080,000.00	2.00	2,781,600.00
2A.3	Temporary inner breakwater phase 1	605.00	m	10,000.00	6,050,000.00	-	-
2A.4	Inner breakwater phase 2	1,575.00	m	15,000.00	23,625,000.00	2.00	472,500.00
2B	QUAYS						
2B.1	Quay phase 2 (up to -6,00m)	1,580.00	m	12,000.00	18,960,000.00	1.50	284,400.00
2B.2	Quay phase 1 (up to -14,00m)	3,100.00	m	28,000.00	86,800,000.00	1.50	1,302,000.00
2B.3	Quay phase 2 (up to -14,00m)	1,941.00	m	28,000.00	54,348,000.00	1.50	815,220.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	573,500.00	m²	70.00	40,145,000.00	2.00	802,900.00
2C.2	Operational forecourt phase 2	482,600.00	m²	70.00	33,782,000.00	2.00	675,640.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	4,580,800.00	m³	12.00	54,969,600.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	4,770,700.00	m³	12.00	57,248,400.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 2 (up to -6,00m)	308,600.00	m³	8.00	2,468,800.00	-	-
2E.2	Excavation phase 1 (up to -10,00m)	233,400.00	m³	8.00	1,867,200.00	-	-
2E.3	Excavation phase 2 (up to -14,00m)	1,949,200.00	m³	8.00	15,593,600.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1		a corpo	2,500,000.00	2,500,000.00	1.00	25,000.00
2F.2	Mooring arrangements - phase 2		a corpo	2,000,000.00	2,000,000.00	1.00	20,000.00
2G	Elettrical, water and sprinkler systems						
2G.1	Elettrical, water and sprinkler systems - phase 1		a corpo	3,500,000.00	3,500,000.00	10.00	350,000.00
2G.2	Elettrical, water and sprinkler systems - phase 2		a corpo	3,000,000.00	3,000,000.00	10.00	300,000.00
2H	PIERS						
1H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2H.1	Pier phase 2	841.00	m	5,000.00	4,205,000.00	2.00	84,100.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					618,842,600.00		13,127,360.00



Tab 4. Main Costs for New Gaza Commercial Port - Alternative 1 Layout B-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	715.00	m	30,000.00	21,450,000.00	2.00	429,000.00
1A.2	Breakwater phase 1	1,865.00	m	60,000.00	111,900,000.00	2.00	2,238,000.00
1A.3	Temporary inner breakwater phase 1	630.00	m	10,000.00	6,300,000.00	1.00	63,000.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -14,00m)	1,000.00	m	28,000.00	28,000,000.00	1.50	420,000.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	505,200.00	m²	70.00	35,364,000.00	2.00	707,280.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	3,031,200.00	m³	12.00	36,374,400.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to -10,00m)	304,500.00	m³	8.00	2,436,000.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1		a corpo	1,500,000.00	1,500,000.00	1.00	15,000.00
1G	Electrical, water and sprinkler systems						
1G.1	Electrical, water and sprinkler systems - phase 1		a corpo	2,000,000.00	2,000,000.00	10.00	200,000.00
1H	PIERS						
1H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					253,324,400.00		4,872,280.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	715.00	m	30,000.00	21,450,000.00	2.00	429,000.00
2A.2	Breakwater phase 1	1,865.00	m	60,000.00	111,900,000.00	2.00	2,238,000.00
2A.3	Temporary inner breakwater phase 1	630.00	m	10,000.00	6,300,000.00	-	-
2A.4	Inner breakwater phase 2	1,380.00	m	15,000.00	20,700,000.00	2.00	414,000.00
2B	QUAYS						
2B.1	Quay phase 2 (up to -6,00m)	1,220.00	m	12,000.00	14,640,000.00	1.50	219,600.00
2B.2	Quay phase 2 (up to -8,00m)	880.00	m	15,000.00	13,200,000.00	1.50	198,000.00
2B.3	Quay phase 1 (up to -14,00m)	1,000.00	m	28,000.00	28,000,000.00	1.50	420,000.00
2B.4	Quay phase 2 (up to -14,00m)	2,720.00	m	28,000.00	76,160,000.00	1.50	1,142,400.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	505,200.00	m²	70.00	35,364,000.00	2.00	707,280.00
2C.2	Operational forecourt phase 2	473,900.00	m²	70.00	33,173,000.00	2.00	663,460.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	3,031,200.00	m³	12.00	36,374,400.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	5,627,000.00	m³	12.00	67,524,000.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 2 (up to -6,00m)	237,100.00	m³	8.00	1,896,800.00	-	-
2E.2	Excavation phase 2 (up to -8,00m)	76,300.00	m³	8.00	610,400.00	-	-
2E.3	Excavation phase 1 (up to -10,00m)	304,500.00	m³	8.00	2,436,000.00	-	-
2E.4	Excavation phase 2 (up to -14,00m)	1,509,300.00	m³	8.00	12,074,400.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1		a corpo	1,500,000.00	1,500,000.00	1.00	15,000.00
2F.2	Mooring arrangements - phase 2		a corpo	2,500,000.00	2,500,000.00	1.00	25,000.00
2G	Electrical, water and sprinkler systems						
2G.1	Electrical, water and sprinkler systems - phase 1		a corpo	2,000,000.00	2,000,000.00	10.00	200,000.00
2G.2	Electrical, water and sprinkler systems - phase 2		a corpo	4,000,000.00	4,000,000.00	10.00	400,000.00
2H	PIERS						
2H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2H.2	Pier phase 2	645.00	m	5,000.00	3,225,000.00	2.00	64,500.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					543,028,000.00		11,936,240.00



Tab 5. Main Costs for New Gaza Commercial Port - Alternative 1 Layout C-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	710.00	m	30,000.00	21,300,000.00	2.00	426,000.00
1A.2	Breakwater phase 1	2,190.00	m	60,000.00	131,400,000.00	2.00	2,628,000.00
1A.3	Inner breakwater phase 1	1,330.00	m	10,000.00	13,300,000.00	1.00	133,000.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -14,00m)	1,700.00	m	28,000.00	47,600,000.00	1.50	714,000.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	626,000.00	m²	70.00	43,820,000.00	2.00	876,400.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	5,014,400.00	m³	12.00	60,172,800.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to -10,00m)	1,171,200.00	m³	8.00	9,369,600.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
1G	Elettrical, water and sprinkler systems						
1G.1	Elettrical, water and sprinkler systems - phase 1			3,000,000.00	3,000,000.00	10.00	300,000.00
1H	PIERS						
1H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					339,962,400.00		5,897,400.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 2 (up to -8,00m)	710.00	m	30,000.00	21,300,000.00	2.00	426,000.00
2A.2	Breakwater phase 2	2,190.00	m	60,000.00	131,400,000.00	2.00	2,628,000.00
2A.3	Inner breakwater phase 2	1,330.00	m	10,000.00	13,300,000.00	2.00	266,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -14,00m)	1,700.00	m	28,000.00	47,600,000.00	1.50	714,000.00
2B.2	Quay phase 2 (up to -14,00m)	4,400.00	m	28,000.00	123,200,000.00	1.50	1,848,000.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	626,000.00	m²	70.00	43,820,000.00	1.50	657,300.00
2C.2	Operational forecourt phase 2	324,000.00	m²	70.00	22,680,000.00	1.50	340,200.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	5,014,400.00	m³	12.00	60,172,800.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	2,445,600.00	m³	12.00	29,347,200.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to -10,00m)	1,171,200.00	m³	8.00	9,369,600.00	-	-
2E.2	Excavation phase 2 (up to -14,00m)	3,626,900.00	m³	8.00	29,015,200.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
2F.2	Mooring arrangements - phase 2			2,500,000.00	2,500,000.00	1.00	25,000.00
2G	Elettrical, water and sprinkler systems						
2G.1	Elettrical, water and sprinkler systems - phase 1			3,000,000.00	3,000,000.00	10.00	300,000.00
2G.2	Elettrical, water and sprinkler systems - phase 2			3,000,000.00	3,000,000.00	10.00	300,000.00
2H	PIERS						
2H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2H.2	Pier phase 2	645.00	m	5,000.00	3,225,000.00	2.00	64,500.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					592,929,800.00		12,389,000.00



Tab 6. Main Costs for New Gaza Commercial Port - Alternative 1 Layout D-5

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	700.00	m	30,000.00	21,000,000.00	2.00	420,000.00
1A.2	Breakwater phase 1	2,330.00	m	60,000.00	139,800,000.00	2.00	2,796,000.00
1A.3	Temporary inner breakwater phase 1	560.00	m	10,000.00	5,600,000.00	1.00	56,000.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -14,00m)	2,080.00	m	28,000.00	58,240,000.00	1.50	873,600.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	575,300.00	m²	70.00	40,271,000.00	2.00	805,420.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	4,602,400.00	m³	12.00	55,228,800.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to -10,00m)	757,000.00	m³	8.00	6,056,000.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
1G	Electrical, water and sprinkler systems						
1G.1	Electrical, water and sprinkler systems - phase 1			3,500,000.00	3,500,000.00	10.00	350,000.00
1H	PIERS						
1H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					339,695,800.00		6,121,020.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	700.00	m	40,000.00	28,000,000.00	2.00	560,000.00
2A.2	Breakwater phase 1	2,330.00	m	70,000.00	163,100,000.00	2.00	3,262,000.00
2A.3	Temporary inner breakwater phase 1	560.00	m	10,000.00	5,600,000.00	2.00	112,000.00
2A.4	Inner breakwater phase 2	1,450.00	m	15,000.00	21,750,000.00	2.00	435,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -14,00m)	2,080.00	m	28,000.00	58,240,000.00	1.50	873,600.00
2B.2	Quay phase 2 (up to -14,00m)	2,620.00	m	28,000.00	73,360,000.00	1.50	1,100,400.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	575,300.00	m²	70.00	40,271,000.00	1.50	604,065.00
2C.2	Operational forecourt phase 2	712,200.00	m²	70.00	49,854,000.00	1.50	747,810.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	4,602,400.00	m³	12.00	55,228,800.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	5,561,100.00	m³	12.00	66,733,200.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to -10,00m)	757,000.00	m³	8.00	6,056,000.00	-	-
2E.2	Excavation phase 2 (up to -14,00m)	4,992,200.00	m³	8.00	39,937,600.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
2F.2	Mooring arrangements - phase 2			2,000,000.00	2,000,000.00	1.00	20,000.00
2G	Electrical, water and sprinkler systems						
2G.1	Electrical, water and sprinkler systems - phase 1			3,500,000.00	3,500,000.00	-	-
2G.2	Electrical, water and sprinkler systems - phase 2			3,500,000.00	3,500,000.00	10.00	350,000.00
2H	PIERS						
2H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2H.1	Pier phase 2	668.00	m	5,000.00	3,340,000.00	2.00	66,800.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					670,470,600.00		12,951,675.00



Tab 7. Main Costs for New Gaza Commercial Port - Alternative 1 Layout E-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	700.00	m	30,000.00	21,000,000.00	2.00	420,000.00
1A.2	Breakwater phase 1	1,850.00	m	60,000.00	111,000,000.00	2.00	2,220,000.00
1A.3	Temporary inner breakwater phase 1	560.00	m	10,000.00	5,600,000.00	1.00	56,000.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -14,00m)	2,100.00	m	28,000.00	58,800,000.00	1.50	882,000.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	605,500.00	m ²	70.00	42,385,000.00	2.00	847,700.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	4,844,000.00	m ³	12.00	58,128,000.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to -10,00m)	759,300.00	m ³	8.00	6,074,400.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
1G	Electrical, water and sprinkler systems						
1G.1	Electrical, water and sprinkler systems - phase 1			3,500,000.00	3,500,000.00	10.00	350,000.00
1H	PIERS						
1H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					316,487,400.00		5,595,700.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	700.00	m	30,000.00	21,000,000.00	2.00	420,000.00
2A.2	Breakwater phase 1	1,850.00	m	60,000.00	111,000,000.00	2.00	2,220,000.00
2A.3	Temporary inner breakwater phase 1	560.00	m	10,000.00	5,600,000.00	-	-
2A.4	Inner breakwater phase 2	1,410.00	m	15,000.00	21,150,000.00	2.00	423,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -14,00m)	2,100.00	m	28,000.00	58,800,000.00	1.50	882,000.00
2B.2	Quay phase 2 (up to -14,00m)	1,900.00	m	28,000.00	53,200,000.00	1.50	798,000.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	605,500.00	m ²	70.00	42,385,000.00	1.50	635,775.00
2C.2	Operational forecourt phase 2	163,100.00	m ²	70.00	11,417,000.00	1.50	171,255.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	4,844,000.00	m ³	12.00	58,128,000.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	1,168,700.00	m ³	12.00	14,024,400.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to -10,00m)	759,300.00	m ³	8.00	6,074,400.00	-	-
2E.2	Excavation phase 2 (up to -14,00m)	3,165,900.00	m ³	8.00	25,327,200.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
2F.2	Mooring arrangements - phase 2			1,500,000.00	1,500,000.00	1.00	15,000.00
2G	Electrical, water and sprinkler systems						
2G.1	Electrical, water and sprinkler systems - phase 1			3,500,000.00	3,500,000.00	10.00	350,000.00
2G.2	Electrical, water and sprinkler systems - phase 2			2,500,000.00	2,500,000.00	10.00	250,000.00
2H	PIERS						
2H.1	Pier phase 1	0.00	m	5,000.00	0.00	2.00	-
2H.1	Pier phase 2	660.00	m	5,000.00	3,300,000.00	2.00	66,000.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					488,906,000.00		11,051,030.00



Tab 8. Main Costs for New Gaza Commercial Port - Alternative 1 Layout F-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	700.00	m	30,000.00	21,000,000.00	2.00	420,000.00
1A.2	Breakwater phase 1	2,300.00	m	60,000.00	138,000,000.00	2.00	2,760,000.00
1A.3	Temporary inner breakwater phase 1	700.00	m	10,000.00	7,000,000.00	1.00	70,000.00
1A.4	Inner breakwater phase 1	750.00	m	15,000.00	11,250,000.00	2.00	
1B	QUAYS						
1B.1	Quay phase 1 (up to -14,00m)	2,510.00	m	28,000.00	70,280,000.00	1.50	1,054,200.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	443,500.00	m²	70.00	31,045,000.00	1.50	465,675.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	3,548,000.00	m³	12.00	42,576,000.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to - 6,00m)	217,720.00	m³	8.00	1,741,760.00	-	-
1E.2	Excavation phase 1 (up to - 8,00m)	223,750.00	m³	8.00	1,790,000.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,200,000.00	2,200,000.00	1.00	22,000.00
1G	Elettrical, water and sprinkler systems						
1G.1	Elettrical, water and sprinkler systems - phase 1			2,500,000.00	2,500,000.00	10.00	250,000.00
1H	PIERS						
1H.1	Pier phase 1	720.00	m	5,000.00	3,600,000.00	2.00	72,000.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					340,982,760.00		5,913,875.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	700.00	m	30,000.00	21,000,000.00	2.00	420,000.00
2A.2	Breakwater phase 1	2,300.00	m	60,000.00	138,000,000.00	2.00	2,760,000.00
2A.3	Temporary inner breakwater phase 1	700.00	m	10,000.00	7,000,000.00	-	-
2A.4	Inner breakwater phase 1	750.00	m	15,000.00	11,250,000.00	2.00	225,000.00
2A.5	Inner breakwater phase 2	660.00	m	15,000.00	9,900,000.00	2.00	198,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -14,00m)	2,510.00	m	28,000.00	70,280,000.00	1.50	1,054,200.00
2B.2	Quay phase 2 (up to -14,00m)	2,180.00	m	28,000.00	61,040,000.00	1.50	915,600.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	443,500.00	m²	70.00	31,045,000.00	1.50	465,675.00
2C.2	Operational forecourt phase 2	545,070.00	m²	70.00	38,154,900.00	1.50	572,323.50
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	3,548,000.00	m³	12.00	42,576,000.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	4,360,560.00	m³	12.00	52,326,720.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to - 6,00m)	217,720.00	m³	8.00	1,741,760.00	-	-
2E.2	Excavation phase 1 (up to - 8,00m)	223,750.00	m³	8.00	1,790,000.00	-	-
2E.3	Excavation phase 2 (up to -14,00m)	5,307,730.00	m³	8.00	42,461,840.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,200,000.00	2,200,000.00	1.00	
2F.2	Mooring arrangements - phase 2			2,000,000.00	2,000,000.00	1.00	20,000.00
2G	Elettrical, water and sprinkler systems						
2G.1	Elettrical, water and sprinkler systems - phase 1			2,500,000.00	2,500,000.00	10.00	
2G.2	Elettrical, water and sprinkler systems - phase 2			3,500,000.00	3,500,000.00	10.00	350,000.00
2H	PIERS						
2H.1	Pier phase 1	720.00	m	5,000.00	3,600,000.00	2.00	72,000.00
2H.2	Pier phase 2	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					590,366,220.00		11,852,798.50



Tab 9. Main Costs for New Gaza Commercial Port - Alternative 1 Layout G-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	620.00	m	30,000.00	18,600,000.00	2.00	372,000.00
1A.2	Breakwater phase 1	2,360.00	m	60,000.00	141,600,000.00	2.00	2,832,000.00
1A.3	Temporary inner breakwater phase 1	360.00	m	10,000.00	3,600,000.00	1.00	36,000.00
1A.4	Inner breakwater phase 1	760.00	m	15,000.00	11,400,000.00	2.00	228,000.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -6,00m)	355.00	m	12,000.00	4,260,000.00	1.50	63,900.00
1B.2	Quay phase 1 (up to -8,00m)	215.00	m	15,000.00	3,225,000.00	1.50	48,375.00
1B.3	Quay phase 1 (up to -14,00m)	1,730.00	m	28,000.00	48,440,000.00	1.50	726,600.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	407,200.00	m²	70.00	28,504,000.00	1.50	427,560.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	3,626,400.00	m³	12.00	43,516,800.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to - 6,00m)	120,000.00	m³	8.00	960,000.00	-	-
1E.2	Excavation phase 1 (up to - 8,00m)	128,000.00	m³	8.00	1,024,000.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
1G	Electrical, water and sprinkler systems						
1G.1	Electrical, water and sprinkler systems - phase 1			2,100,000.00	2,100,000.00	10.00	210,000.00
1H	PIERS						
1H.1	Pier phase 1	720.00	m	5,000.00	3,600,000.00	2.00	72,000.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					320,829,800.00		5,836,435.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	620.00	m	30,000.00	18,600,000.00	2.00	372,000.00
2A.2	Breakwater phase 1	2,360.00	m	60,000.00	141,600,000.00	2.00	2,832,000.00
2A.3	Temporary inner breakwater phase 1	360.00	m	10,000.00	3,600,000.00	-	-
2A.4	Inner breakwater phase 1	760.00	m	15,000.00	11,400,000.00	2.00	228,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -6,00m)	355.00	m	12,000.00	4,260,000.00	1.50	63,900.00
2B.2	Quay phase 1 (up to -8,00m)	215.00	m	15,000.00	3,225,000.00	1.50	48,375.00
2B.3	Quay phase 1 (up to -14,00m)	1,730.00	m	28,000.00	48,440,000.00	1.50	726,600.00
2B.4	Quay phase 2 (up to -6,00m)	490.00	m	12,000.00	5,880,000.00	1.50	88,200.00
2B.5	Quay phase 2 (up to -8,00m)	1,145.00	m	15,000.00	17,175,000.00	1.50	257,625.00
2B.6	Quay phase 2 (up to -14,00m)	2,920.00	m	28,000.00	81,760,000.00	1.50	1,226,400.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	407,200.00	m²	70.00	28,504,000.00	1.50	427,560.00
2C.2	Operational forecourt phase 2	541,900.00	m²	70.00	37,933,000.00	1.50	568,995.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	3,626,400.00	m³	12.00	43,516,800.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	4,915,500.00	m³	12.00	58,986,000.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to - 6,00m)	120,000.00	m³	8.00	960,000.00	-	-
2E.2	Excavation phase 1 (up to - 8,00m)	128,000.00	m³	8.00	1,024,000.00	-	-
2E.3	Excavation phase 2 (up to -14,00m)	2,135,000.00	m³	8.00	17,080,000.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,000,000.00	2,000,000.00	1.00	20,000.00
2F.2	Mooring arrangements - phase 2			2,500,000.00	2,500,000.00	1.00	25,000.00
2G	Electrical, water and sprinkler systems						
2G.1	Electrical, water and sprinkler systems - phase 1			2,100,000.00	2,100,000.00	10.00	210,000.00
2G.2	Electrical, water and sprinkler systems - phase 2			3,600,000.00	3,600,000.00	10.00	360,000.00
2H	PIERS						
2H.1	Pier phase 1	720.00	m	5,000.00	3,600,000.00	2.00	72,000.00
2H.2	Pier phase 2	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					585,743,800.00		12,326,655.00



Tab 10. Main Costs for New Gaza Commercial Port - Alternative 1 Layout H-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	600.00	m	30,000.00	18,000,000.00	2.00	360,000.00
1A.2	Breakwater phase 1	1,950.00	m	60,000.00	117,000,000.00	2.00	2,340,000.00
1A.3	Temporary inner breakwater phase 1	530.00	m	10,000.00	5,300,000.00	1.00	53,000.00
1A.4	Inner breakwater phase 1	565.00	m	15,000.00	8,475,000.00	2.00	169,500.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -6,00m)	340.00	m	12,000.00	4,080,000.00	1.50	61,200.00
1B.2	Quay phase 1 (up to -8,00m)	630.00	m	15,000.00	9,450,000.00	1.50	141,750.00
1B.3	Quay phase 1 (up to -14,00m)	1,440.00	m	28,000.00	40,320,000.00	1.50	604,800.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	387,600.00	m²	70.00	27,132,000.00	1.50	406,980.00
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	3,422,400.00	m³	12.00	41,068,800.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to - 6,00m)	60,070.00	m³	8.00	480,560.00	-	-
1E.2	Excavation phase 1 (up to - 10,00m)	28,720.00	m³	8.00	229,760.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,100,000.00	2,100,000.00	1.00	21,000.00
1G	Elettrical, water and sprinkler systems						
1G.1	Elettrical, water and sprinkler systems - phase 1			2,200,000.00	2,200,000.00	10.00	220,000.00
1H	PIERS						
1H.1	Pier phase 1	960.00	m	5,000.00	4,800,000.00	2.00	96,000.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
				-99,999.00	288,636,120.00	-	99,999.00
							5,274,230.00
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	600.00	m	30,000.00	18,000,000.00	2.00	360,000.00
2A.2	Breakwater phase 1	1,950.00	m	60,000.00	117,000,000.00	2.00	2,340,000.00
2A.3	Temporary inner breakwater phase 1	530.00	m	10,000.00	5,300,000.00	-	-
2A.4	Inner breakwater phase 1	565.00	m	15,000.00	8,475,000.00	2.00	169,500.00
2A.4	Inner breakwater phase 2	640.00	m	15,000.00	9,600,000.00	2.00	192,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -6,00m)	340.00	m	12,000.00	4,080,000.00	1.50	61,200.00
2B.2	Quay phase 1 (up to -8,00m)	630.00	m	15,000.00	9,450,000.00	1.50	141,750.00
2B.3	Quay phase 1 (up to -14,00m)	1,440.00	m	28,000.00	40,320,000.00	1.50	604,800.00
2B.4	Quay phase 2 (up to -6,00m)	535.00	m	12,000.00	6,420,000.00	1.50	96,300.00
2B.5	Quay phase 2 (up to -8,00m)	760.00	m	15,000.00	11,400,000.00	1.50	171,000.00
2B.6	Quay phase 2 (up to -14,00m)	2,070.00	m	28,000.00	57,960,000.00	1.50	869,400.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	387,600.00	m²	70.00	27,132,000.00	1.50	406,980.00
2C.2	Operational forecourt phase 2	354,820.00	m²	70.00	24,837,400.00	1.50	372,561.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	3,422,400.00	m³	12.00	41,068,800.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	4,001,800.00	m³	12.00	48,021,600.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to - 6,00m)	60,070.00	m³	8.00	480,560.00	-	-
2E.2	Excavation phase 1 (up to - 8,00m)	28,720.00	m³	8.00	229,760.00	-	-
2E.3	Excavation phase 2 (up to -14,00m)	921,920.00	m³	8.00	7,375,360.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,100,000.00	2,100,000.00	1.00	21,000.00
2F.2	Mooring arrangements - phase 2			2,200,000.00	2,200,000.00	1.00	22,000.00
2G	Elettrical, water and sprinkler systems						
2G.1	Elettrical, water and sprinkler systems - phase 1			2,200,000.00	2,200,000.00	10.00	220,000.00
2G.2	Elettrical, water and sprinkler systems - phase 2			3,200,000.00	3,200,000.00	10.00	320,000.00
2H	PIERS						
2H.1	Pier phase 1	960.00	m	5,000.00	4,800,000.00	2.00	96,000.00
2H.2	Pier phase 2	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
				-99,999.00	499,650,480.00	-	99,999.00
							11,264,491.00



Tab 11. Main Costs for New Gaza Commercial Port - Alternative 1 Layout I-S

N°	Description	Estimated Qty	Unit	Estimated Unit price (€)	Total Estimated (€)	Maintenance (% of estimated cost)	Maintenance (€)
PHASE 1							
1A	DEFENSE WORKS						
1A.1	Breakwater phase 1 (up to -8,00m)	600.00	m	30,000.00	18,000,000.00	2.00	360,000.00
1A.2	Breakwater phase 1	1,950.00	m	60,000.00	117,000,000.00	2.00	2,340,000.00
1A.3	Temporary inner breakwater phase 1	505.00	m	10,000.00	5,050,000.00	1.00	50,500.00
1A.4	Inner breakwater phase 1	565.00	m	15,000.00	8,475,000.00	2.00	169,500.00
1B	QUAYS						
1B.1	Quay phase 1 (up to -6,00m)	340.00	m	12,000.00	4,080,000.00	1.50	61,200.00
1B.2	Quay phase 1 (up to -8,00m)	630.00	m	15,000.00	9,450,000.00	1.50	141,750.00
1B.3	Quay phase 1 (up to -14,00m)	1,440.00	m	28,000.00	40,320,000.00	1.50	604,800.00
1C	OPERATIONAL FORECOURTS						
1C.1	Operational forecourt phase 1	376,650.00	m²	70.00	26,365,500.00	1.50	395,482.50
1D	FILLING						
1D.1	Filling phase 1 (up to +2,00m)	3,422,400.00	m³	12.00	41,068,800.00	-	-
1E	ESCAVATION						
1E.1	Excavation phase 1 (up to -6,00m)	59,800.00	m³	8.00	478,400.00	-	-
1E.2	Excavation phase 1 (up to -10,00m)	29,200.00	m³	8.00	233,600.00	-	-
1F	Mooring arrangements						
1F.1	Mooring arrangements - phase 1			2,100,000.00	2,100,000.00	1.00	21,000.00
1G	Electrical, water and sprinkler systems						
1G.1	Electrical, water and sprinkler systems - phase 1			2,200,000.00	2,200,000.00	10.00	220,000.00
1H	PIERS						
1H.1	Pier phase 1	960.00	m	5,000.00	4,800,000.00	2.00	96,000.00
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
					287,621,300.00		5,260,232.50
PHASE 2							
2A	DEFENSE WORKS						
2A.1	Breakwater phase 1 (up to -8,00m)	600.00	m	30,000.00	18,000,000.00	2.00	360,000.00
2A.2	Breakwater phase 1	1,950.00	m	60,000.00	117,000,000.00	2.00	2,340,000.00
2A.3	Temporary inner breakwater phase 1	505.00	m	10,000.00	5,050,000.00	-	-
2A.4	Inner breakwater phase 1	565.00	m	15,000.00	8,475,000.00	2.00	169,500.00
2A.4	Inner breakwater phase 2	640.00	m	15,000.00	9,600,000.00	2.00	192,000.00
2B	QUAYS						
2B.1	Quay phase 1 (up to -6,00m)	340.00	m	12,000.00	4,080,000.00	1.50	61,200.00
2B.2	Quay phase 1 (up to -8,00m)	630.00	m	15,000.00	9,450,000.00	1.50	141,750.00
2B.3	Quay phase 1 (up to -14,00m)	1,440.00	m	28,000.00	40,320,000.00	1.50	604,800.00
2B.4	Quay phase 2 (up to -6,00m)	520.00	m	12,000.00	6,240,000.00	1.50	93,600.00
2B.5	Quay phase 2 (up to -8,00m)	820.00	m	15,000.00	12,300,000.00	1.50	184,500.00
2B.6	Quay phase 2 (up to -14,00m)	2,130.00	m	28,000.00	59,640,000.00	1.50	894,600.00
2C	OPERATIONAL FORECOURTS						
2C.1	Operational forecourt phase 1	376,650.00	m²	70.00	26,365,500.00	1.50	395,482.50
2C.2	Operational forecourt phase 2	474,760.00	m²	70.00	33,233,200.00	1.50	498,498.00
2D	FILLING						
2D.1	Filling phase 1 (up to +2,00m)	3,422,400.00	m³	12.00	41,068,800.00	-	-
2D.2	Filling phase 2 (up to +2,00m)	4,141,700.00	m³	12.00	49,700,400.00	-	-
2E	ESCAVATION						
2E.1	Excavation phase 1 (up to -6,00m)	59,800.00	m³	8.00	478,400.00	-	-
2E.2	Excavation phase 1 (up to -8,00m)	29,200.00	m³	8.00	233,600.00	-	-
2E.3	Excavation phase 2 (up to -14,00m)	1,047,800.00	m³	8.00	8,382,400.00	-	-
2F	Mooring arrangements						
2F.1	Mooring arrangements - phase 1			2,100,000.00	2,100,000.00	1.00	21,000.00
2F.2	Mooring arrangements - phase 2			2,300,000.00	2,300,000.00	1.00	23,000.00
2G	Electrical, water and sprinkler systems						
2G.1	Electrical, water and sprinkler systems - phase 1			2,200,000.00	2,200,000.00	10.00	220,000.00
2G.2	Electrical, water and sprinkler systems - phase 2			3,400,000.00	3,400,000.00	10.00	340,000.00
2H	PIERS						
2H.1	Pier phase 1	960.00	m	5,000.00	4,800,000.00	2.00	96,000.00
2H.2	Pier phase 2	0.00	m	5,000.00	0.00	2.00	-
2I	Cranes phase 1	1.00		8,000,000.00	8,000,000.00	10.00	800,000.00
	Cranes phase 2	5.00		8,000,000.00	40,000,000.00	10.00	4,000,000.00
					512,417,300.00		11,435,930.50