

Ocean Uses and Marine Renewable Energy

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2018-01-08 16:15

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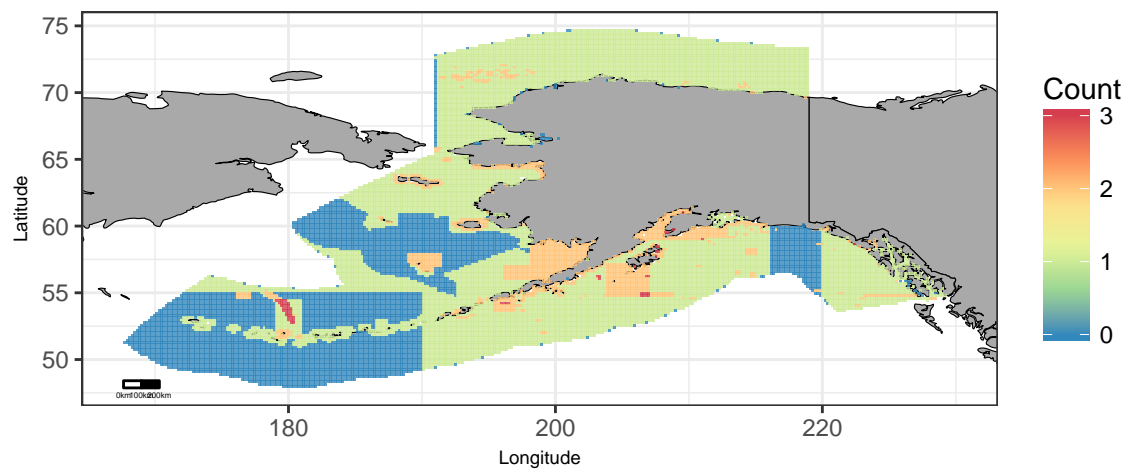


Figure 1: Map of cumulative ocean use in Alaska region.

Ocean Use Layers

Existence of ocean use layers across regions.										
	Source	Layer	Alaska	Atlantic Islands	East	Great Lakes	Gulf of Mexico	Hawaii	Pacific Islands	West
1	GEBCO	Depth (m)								
2	Marine Cadastre	Active Oil & Gas Leases								
3	Marine Cadastre	Aquaculture								
4	Marine Cadastre	Essential Fish Habitat								
5	Marine Cadastre	Marine Protected Areas								
6	Marine Cadastre	Shipping Lanes								
7	NOAA Ocean Uses	Ocean Use Atlas for California								
8	NOAA Ocean Uses	Ocean Use Atlas for Hawaii								
9	NOAA Ocean Uses	Ocean Use Atlas for Oregon & Washington								
10	NREL	Tide (W/m2)								
11	NREL	Wave (kW/m)								
12	NREL	Wind (m/s @ 90m)								

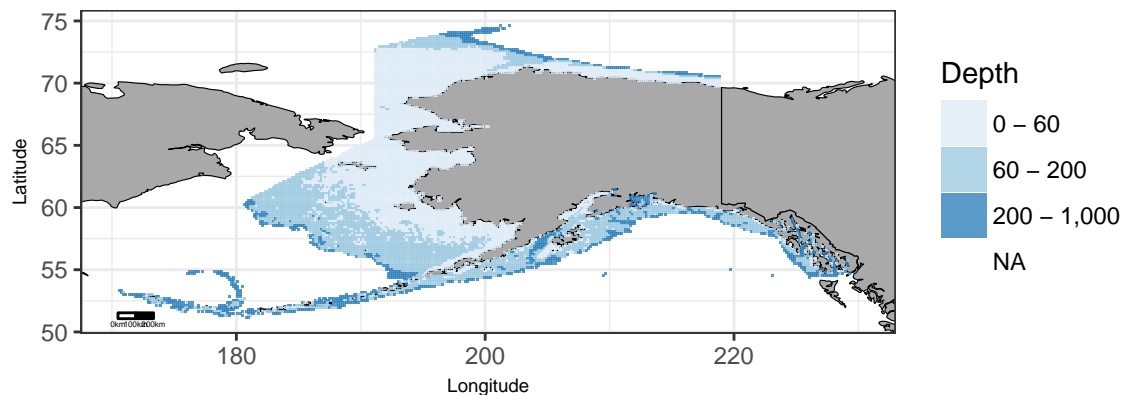


Figure 2: Map of viable depth in Alaska region.

Alaska

Alaska: Map of Uses

Alaska: Map of Depth

Alaska: Plot of Uses by Depth

Alaska: Table of Uses by Depth

Table 1: Area (km²) of Ocean Use by Depth (m) bin for Alaska region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)							
Category	Layer	Component	0 - 60		60 - 200		200 - 1,000		Total	Rank
	Total Area		709,865		627,590		212,112		1,549,566	0
Governance: Commercial Leases	Active Oil & Gas Leases		11,750		11		0		11,761	4
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	530		252		11		794	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	609,470		403,506		150,351		1,163,327	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	806		913		341		2,060	8
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	12,543		1,211		127		13,881	3
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	131,096		118,622		48,760		298,478	2
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Bowers	0		365		10,525		10,890	5
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Coral	0		42		5		47	13
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Seamount	40		0		517		517	10
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Skate	0		113		165		279	11

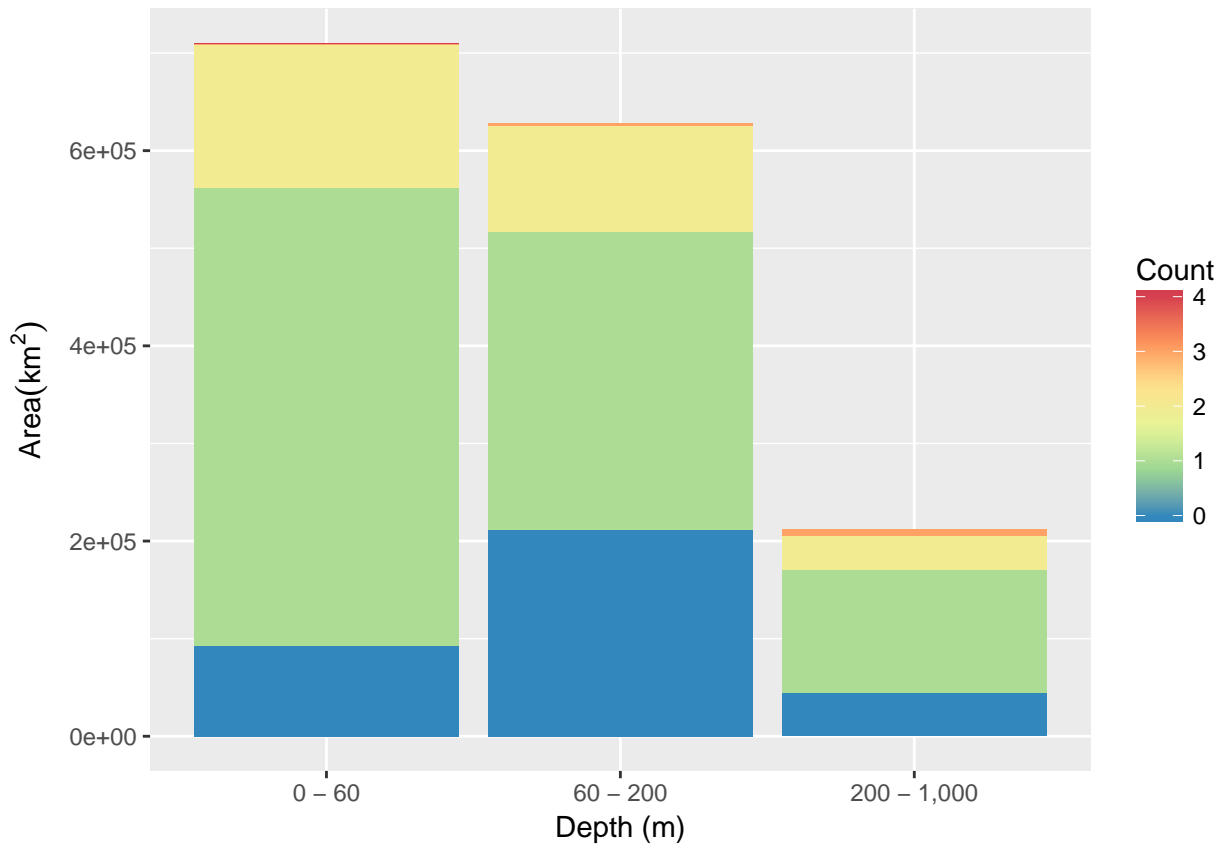


Figure 3: Area of Cumulative Ocean Use by Depth (m) for Alaska region. Cumulative use are counted and summarized by Depth (m) and area.

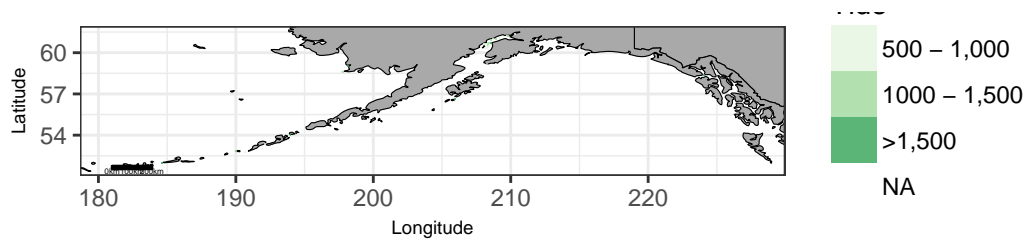


Figure 4: Map of viable tide in Alaska region.

Alaska: Map of Tide

Alaska: Plot of Uses by Tide

Alaska: Table of Uses by Tide

Table 2: Area (km²) of Ocean Use by Tide (W/m2) bin for Alaska region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Tide (W/m2)				Total	Rank
Category	Layer	Component	500 - 1,000	1000 - 1,500	>1,500			
	Total Area		1,600	390	236	2,227		0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	1,553	366	190	2,109		1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	13	11	34	57		3
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	2	0	2	4		4
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	1,219	288	123	1,631		2

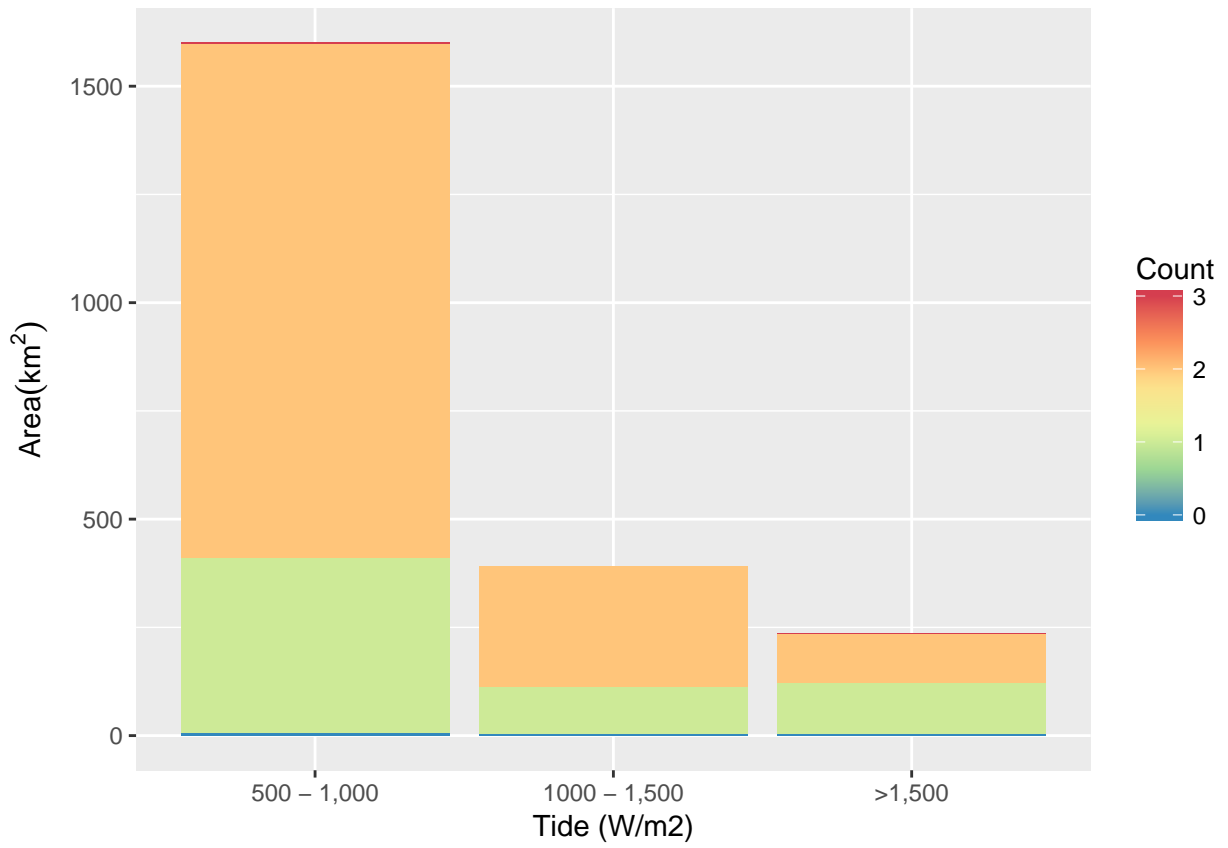


Figure 5: Area of Cumulative Ocean Use by Tide (W/m²) for Alaska region. Cumulative use are counted and summarized by Tide (W/m²) and area.

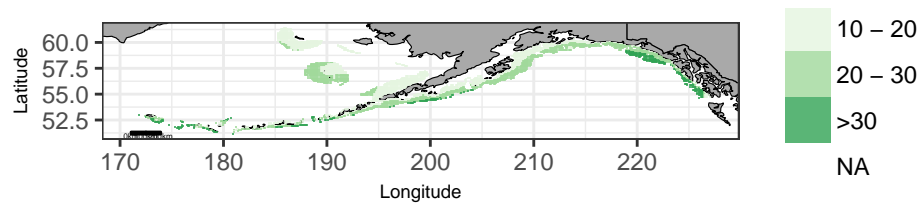


Figure 6: Map of viable wave in Alaska region.

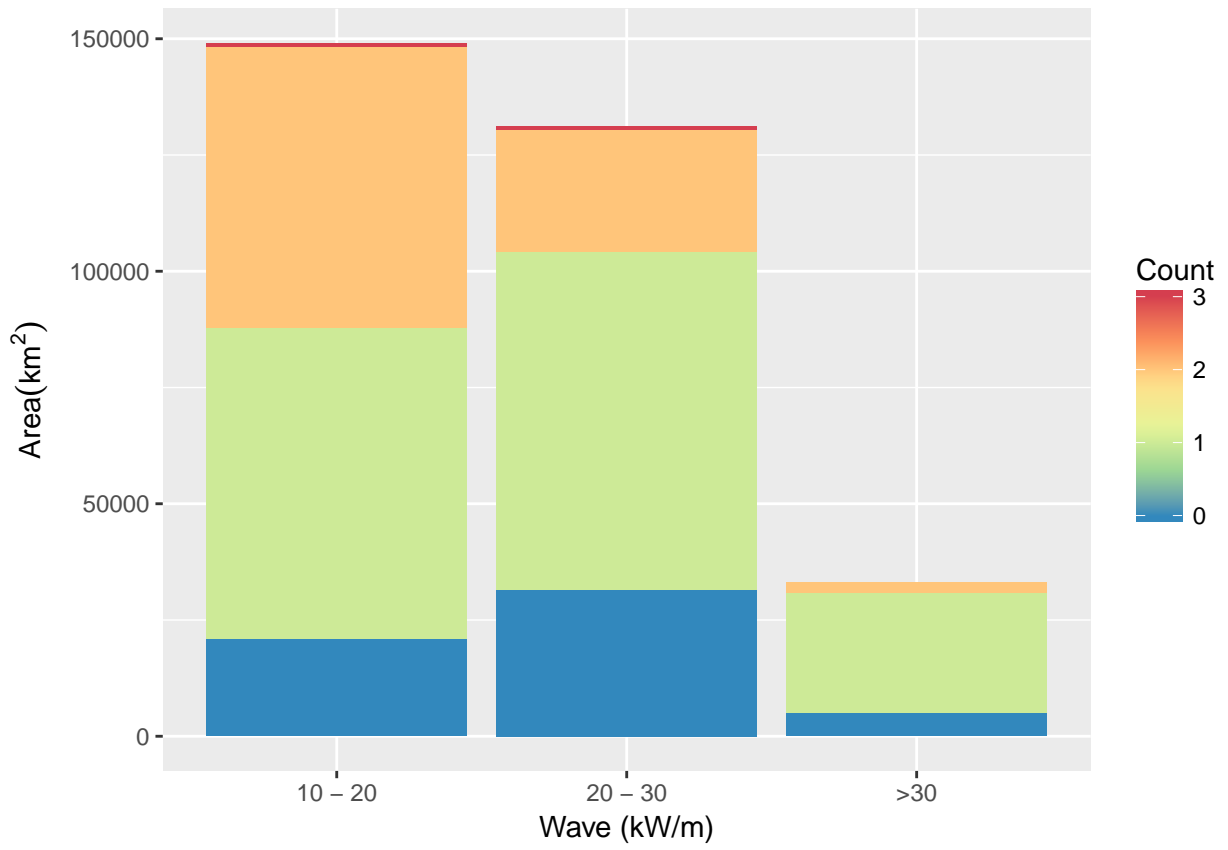


Figure 7: Area of Cumulative Ocean Use by Wave (kW/m) for Alaska region. Cumulative use are counted and summarized by Wave (kW/m) and area.

Alaska: Map of Wave

Alaska: Plot of Uses by Wave

Alaska: Table of Uses by Wave

Table 3: Area (km²) of Ocean Use by Wave (kW/m) bin for Alaska region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wave (kW/m)				Rank
Category	Layer	Component	10 - 20	20 - 30	>30	Total	
	Total Area		148,995	131,201	33,013	313,209	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	127,753	99,076	27,507	254,336	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	0	411	0	411	6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	561	4	1	566	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	60,115	25,651	2,131	87,897	2
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Coral	0	0	42	42	8
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Skate	0	64	0	64	7
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Slope	0	830	428	1,258	4
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		1,557	1,417	0	2,974	3

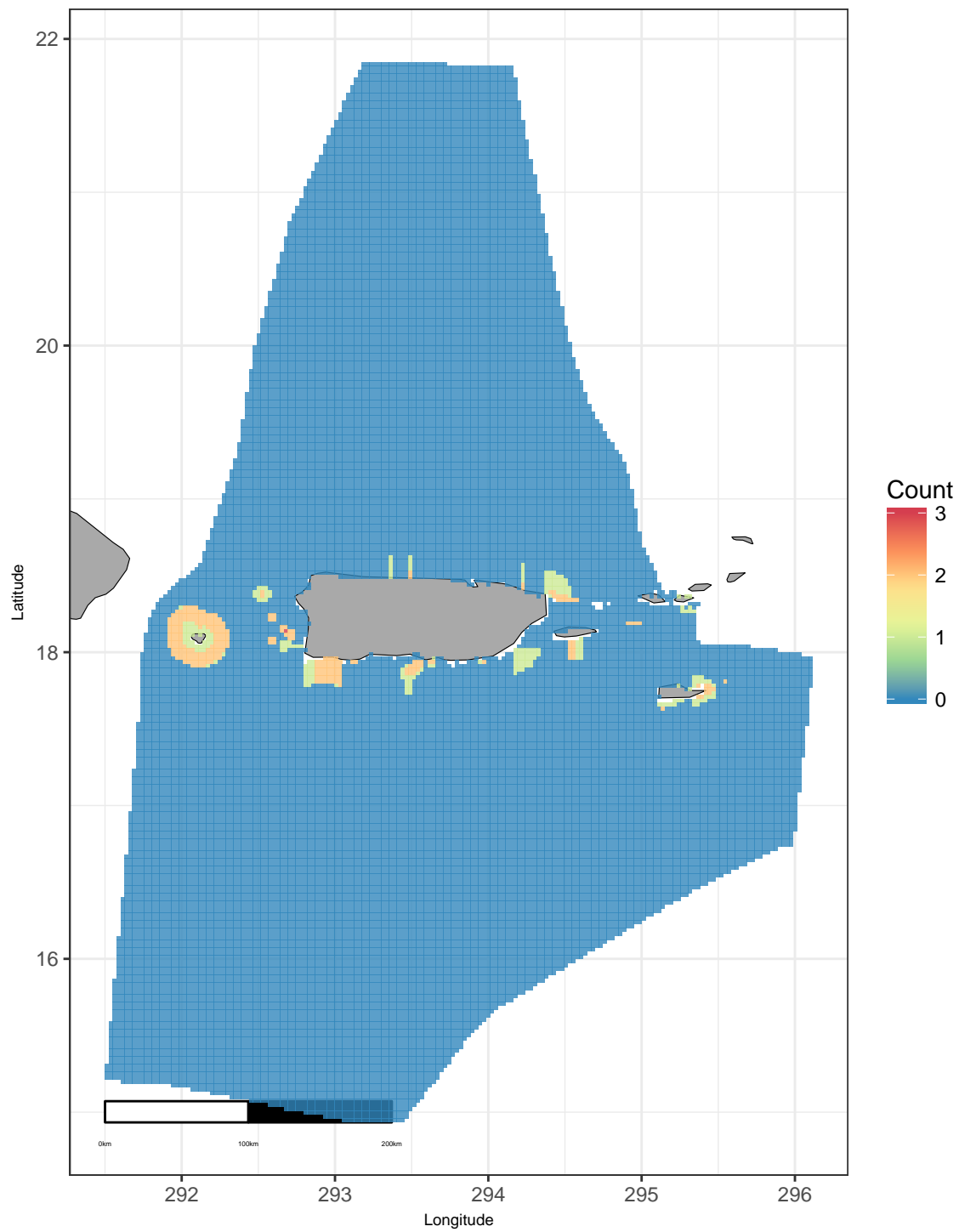


Figure 8: Map of cumulative ocean use in Atlantic Islands region.

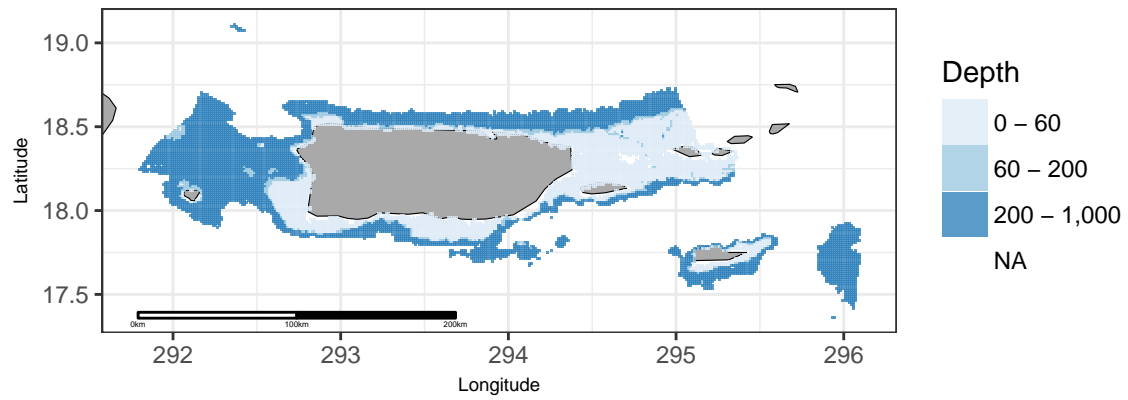


Figure 9: Map of viable depth in Atlantic Islands region.

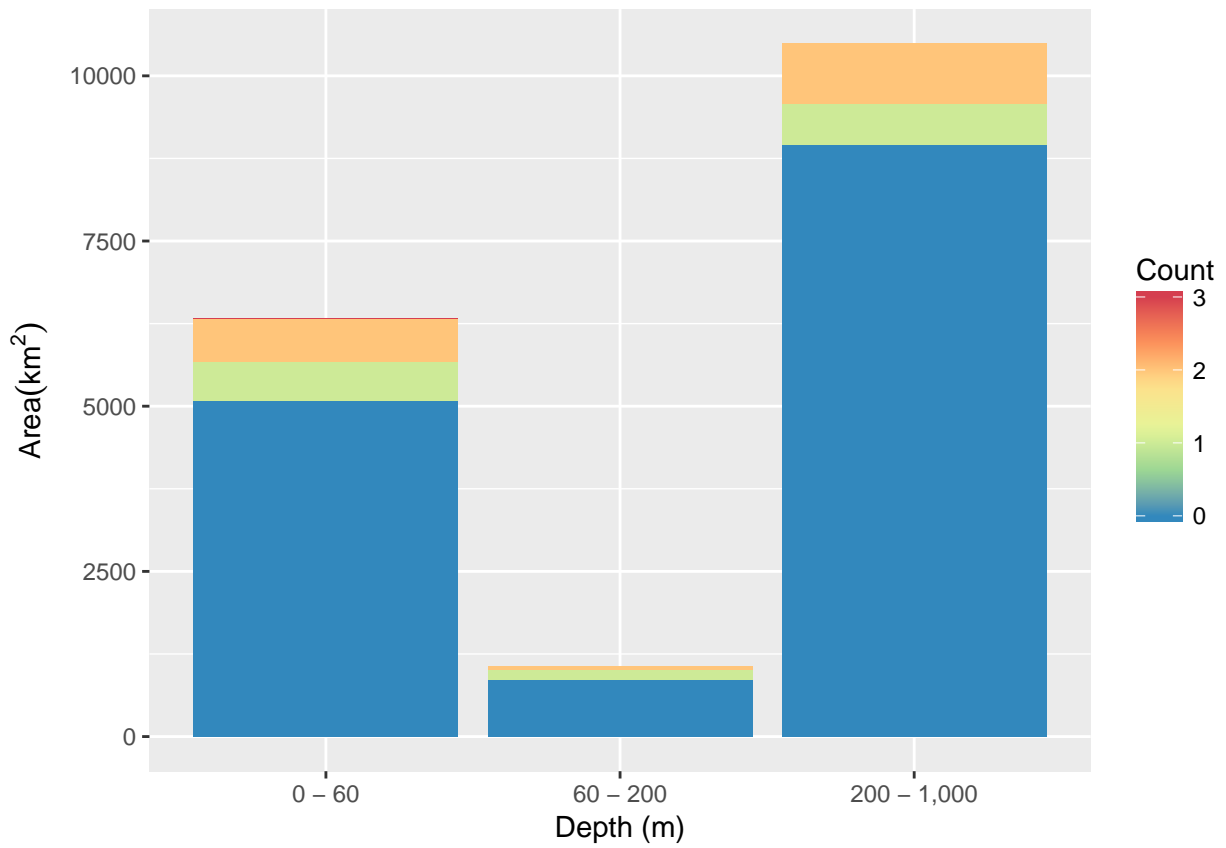


Figure 10: Area of Cumulative Ocean Use by Depth (m) for Atlantic Islands region. Cumulative use are counted and summarized by Depth (m) and area.

Atlantic Islands

Atlantic Islands: Map of Uses

Atlantic Islands: Map of Depth

Atlantic Islands: Plot of Uses by Depth

Atlantic Islands: Table of Uses by Depth

Table 4: Area (km²) of Ocean Use by Depth (m) bin for Atlantic Islands region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)				Total	Rank
Category	Layer	Component	0 - 60	60 - 200	200 - 1,000			
	Total Area		6,340	1,069	10,486		17,895	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Marine National Monuments	66	17	24		107	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	2	0	0		2	7
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	97	28	31		156	3
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	11	0	0		11	6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Puerto Rico	879	135	1,314		2,328	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	U S Virgin Islands	101	11	29		142	4
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	782	77	1,045		1,905	2

Atlantic Islands: Map of Wave

Atlantic Islands: Plot of Uses by Wave

Atlantic Islands: Table of Uses by Wave

Table 5: Area (km²) of Ocean Use by Wave (kW/m) bin for Atlantic Islands region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wave (kW/m)		Rank
Category	Layer	Component	10 - 20	Total	
	Total Area		7	7	0

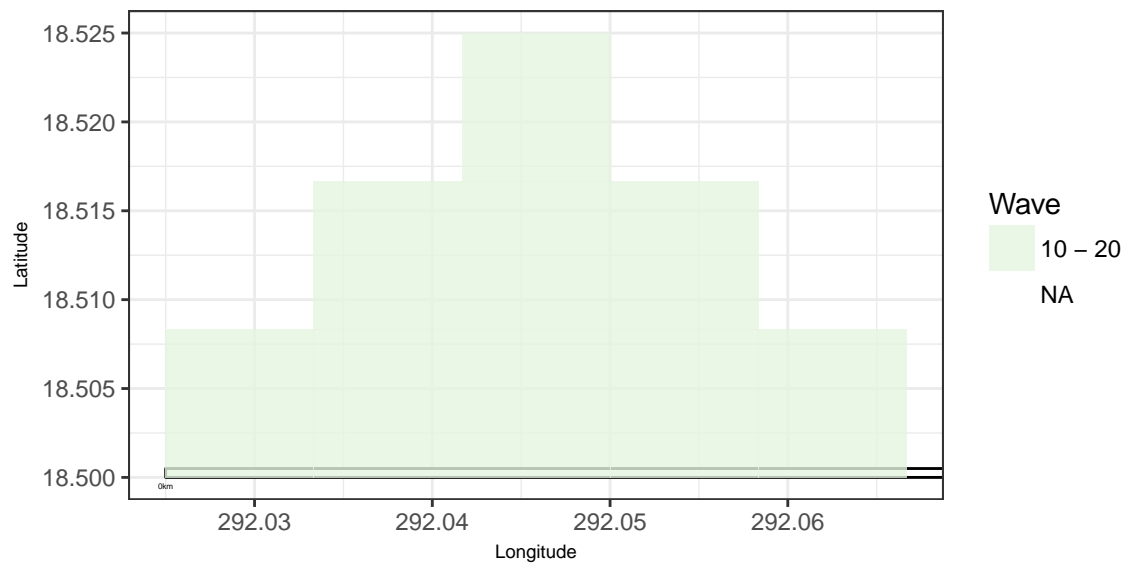


Figure 11: Map of viable wave in Atlantic Islands region.

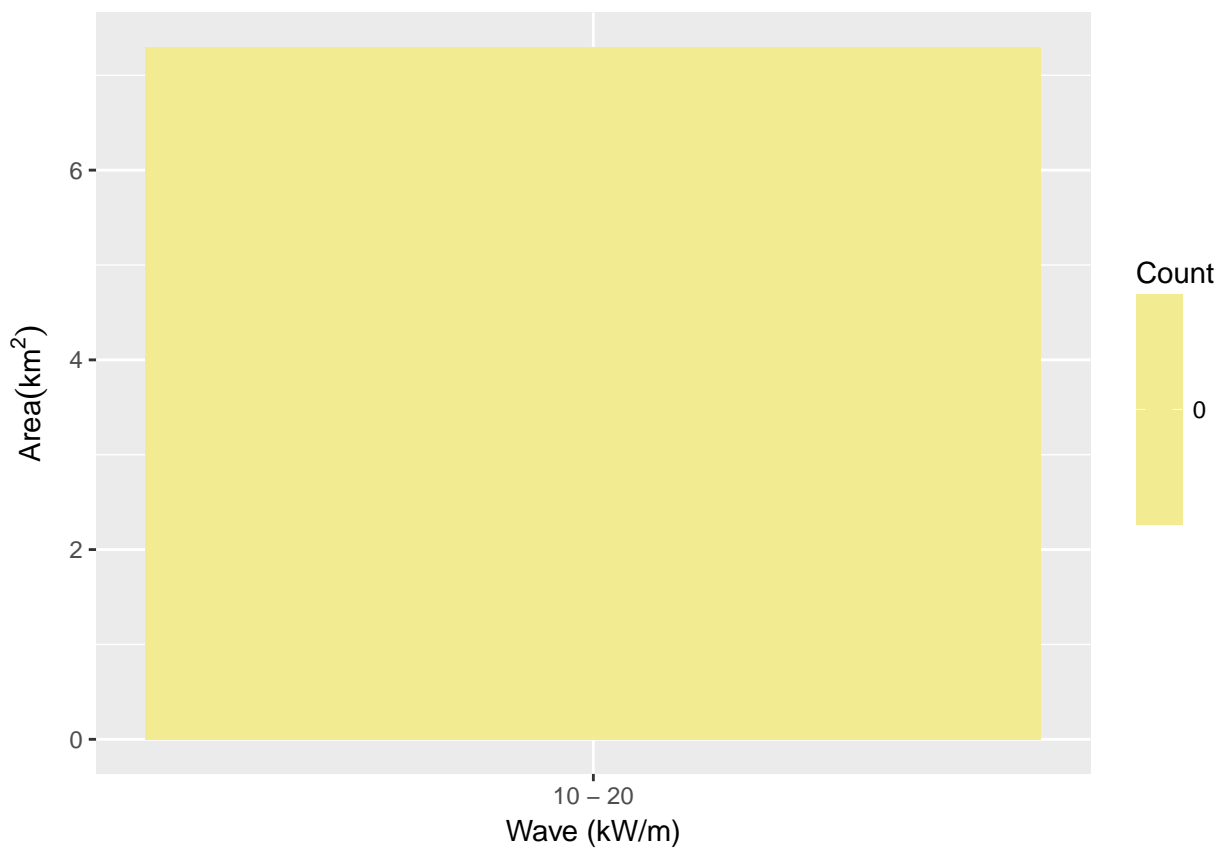


Figure 12: Area of Cumulative Ocean Use by Wave (kW/m) for Atlantic Islands region. Cumulative use are counted and summarized by Wave (kW/m) and area.

East

East: Map of Uses

East: Map of Depth

East: Plot of Uses by Depth

East: Table of Uses by Depth

Table 6: Area (km²) of Ocean Use by Depth (m) bin for East region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)				Total	Rank
Category	Layer	Component	0 - 60	60 - 200	200 - 1,000			
	Total Area		239,101	118,153	183,838		541,091	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Marine National Monuments	1	0	0		1	12
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	625	1	0		626	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	233,164	117,716	182,167		533,048	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	5,265	2,113	0		7,379	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	1,165	0	0		1,165	6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	985	0	0		985	7
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	16,188	151	0		16,339	3
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	49,636	7,388	32,497		89,522	2
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		6,115	3,734	4		9,854	4
	Aquaculture	Finfish	4	0	0		4	11
	Aquaculture	Other	6	0	0		6	10
	Aquaculture	Shellfish	653	0	0		653	8

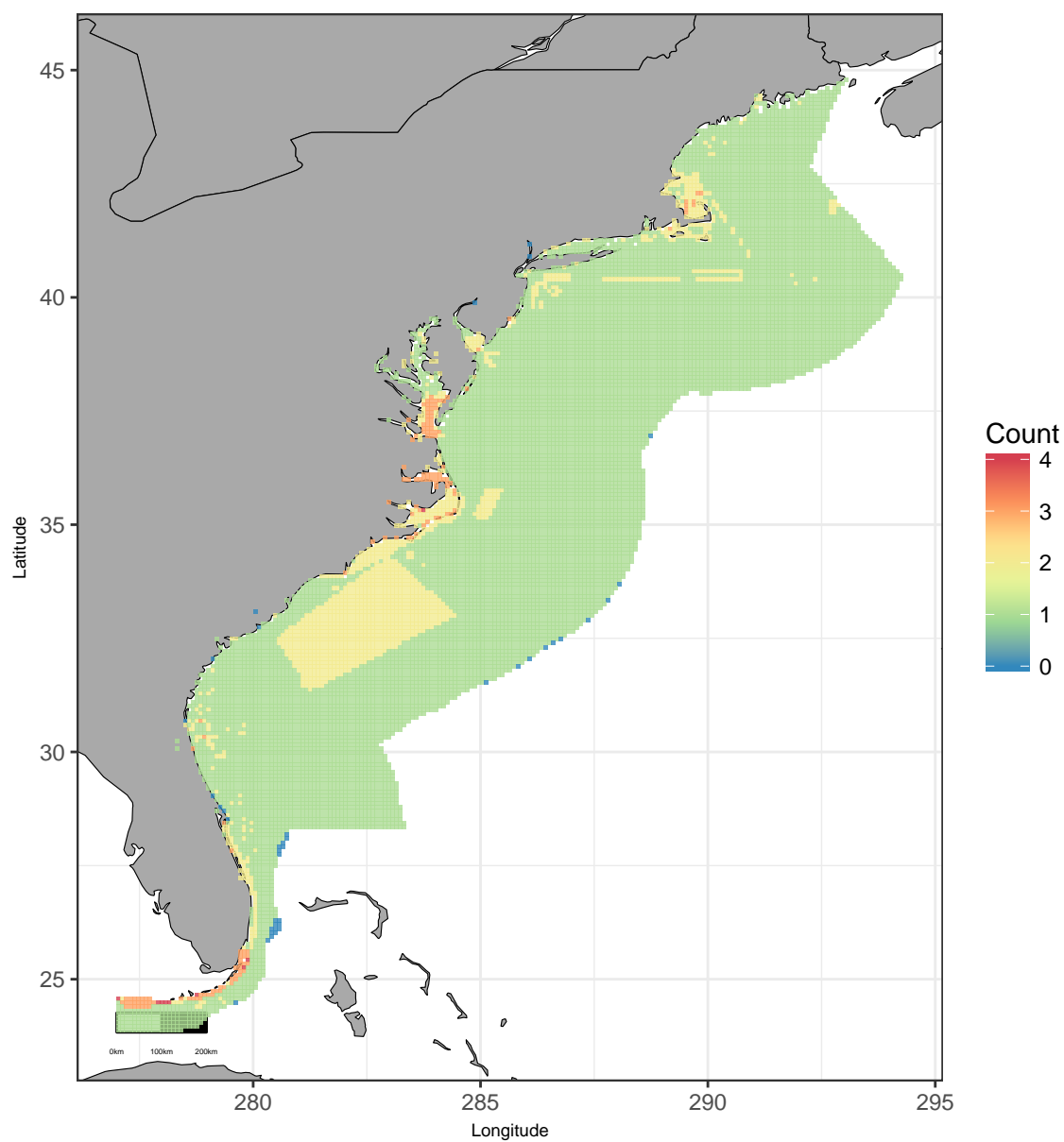


Figure 13: Map of cumulative ocean use in East region.

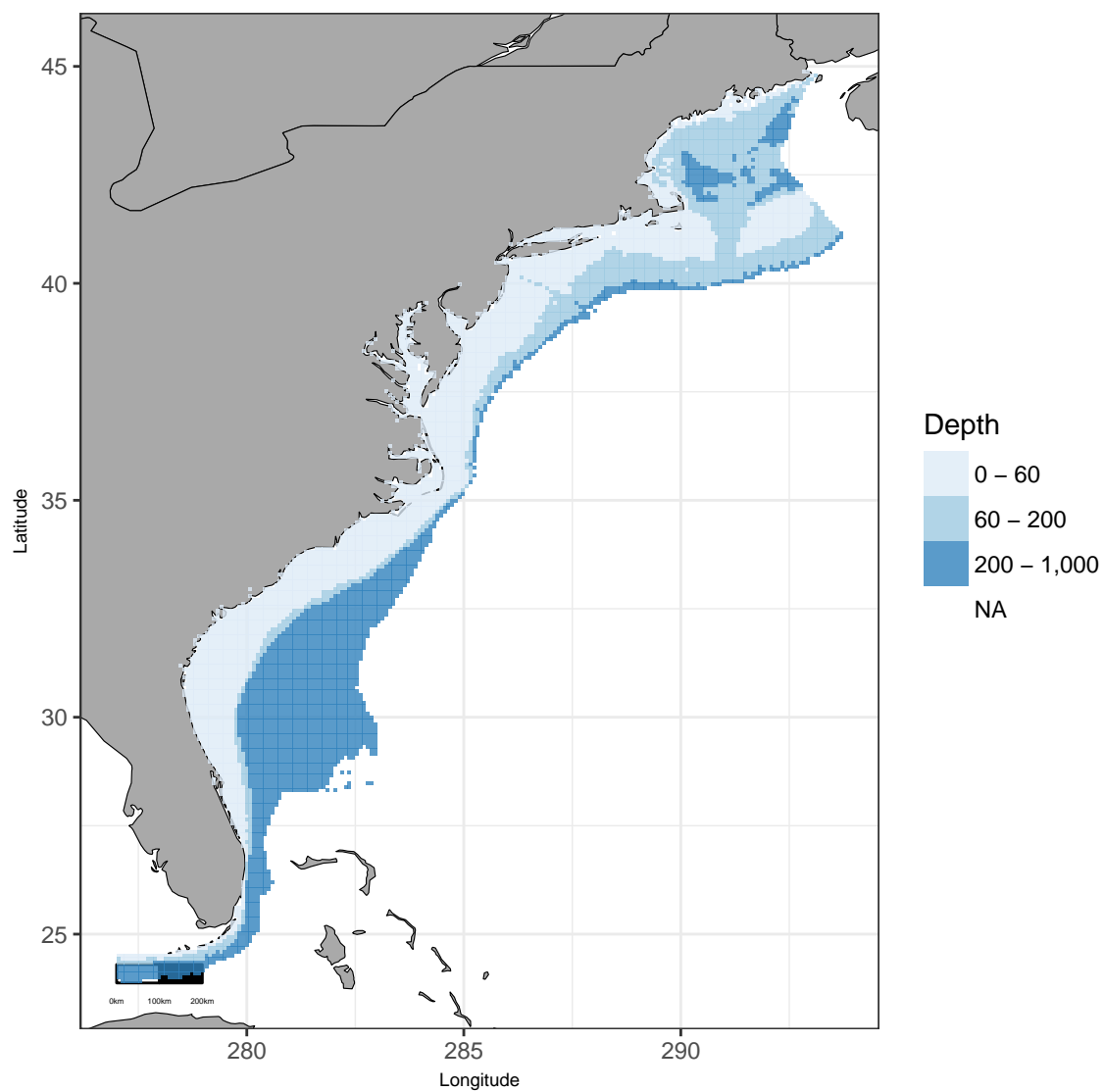


Figure 14: Map of viable depth in East region.

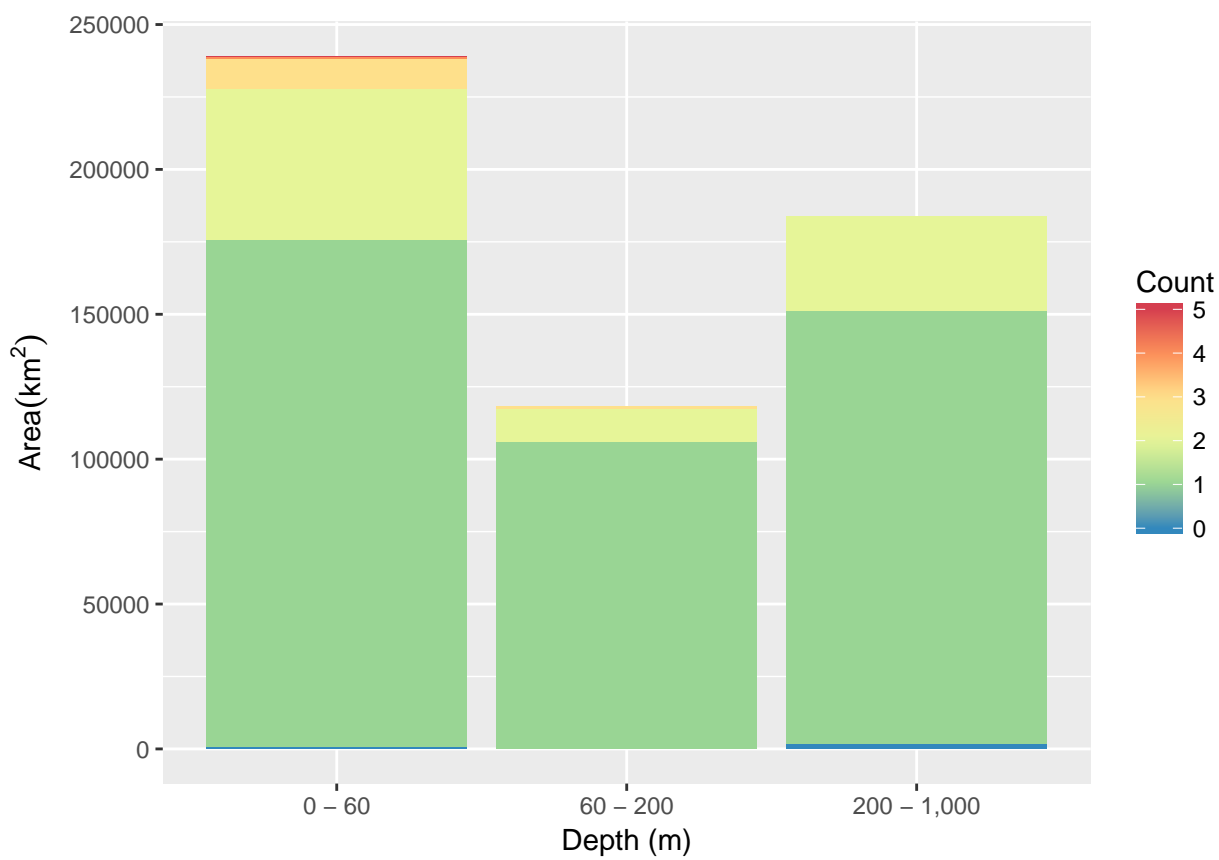


Figure 15: Area of Cumulative Ocean Use by Depth (m) for East region. Cumulative use are counted and summarized by Depth (m) and area.

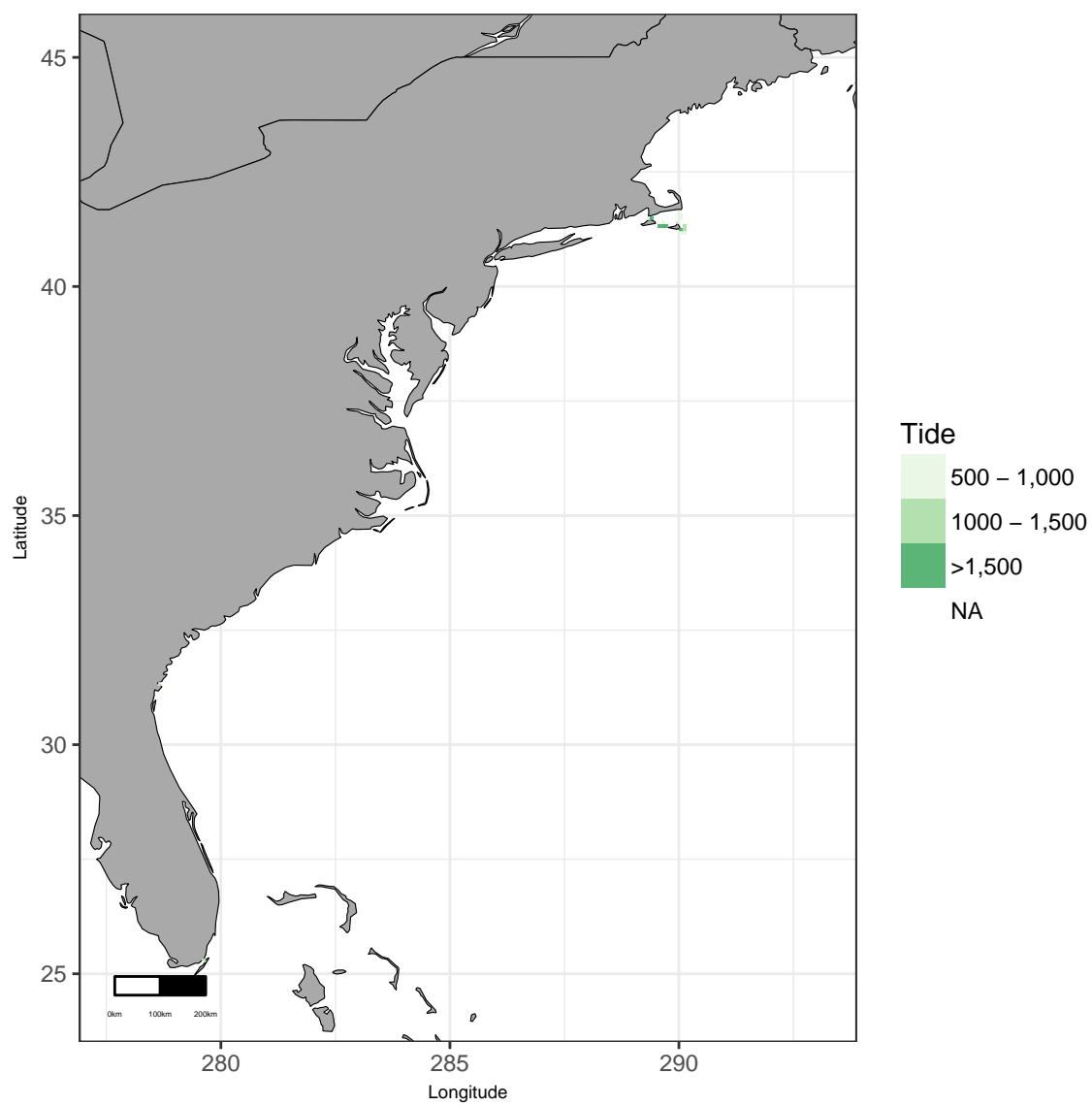


Figure 16: Map of viable tide in East region.

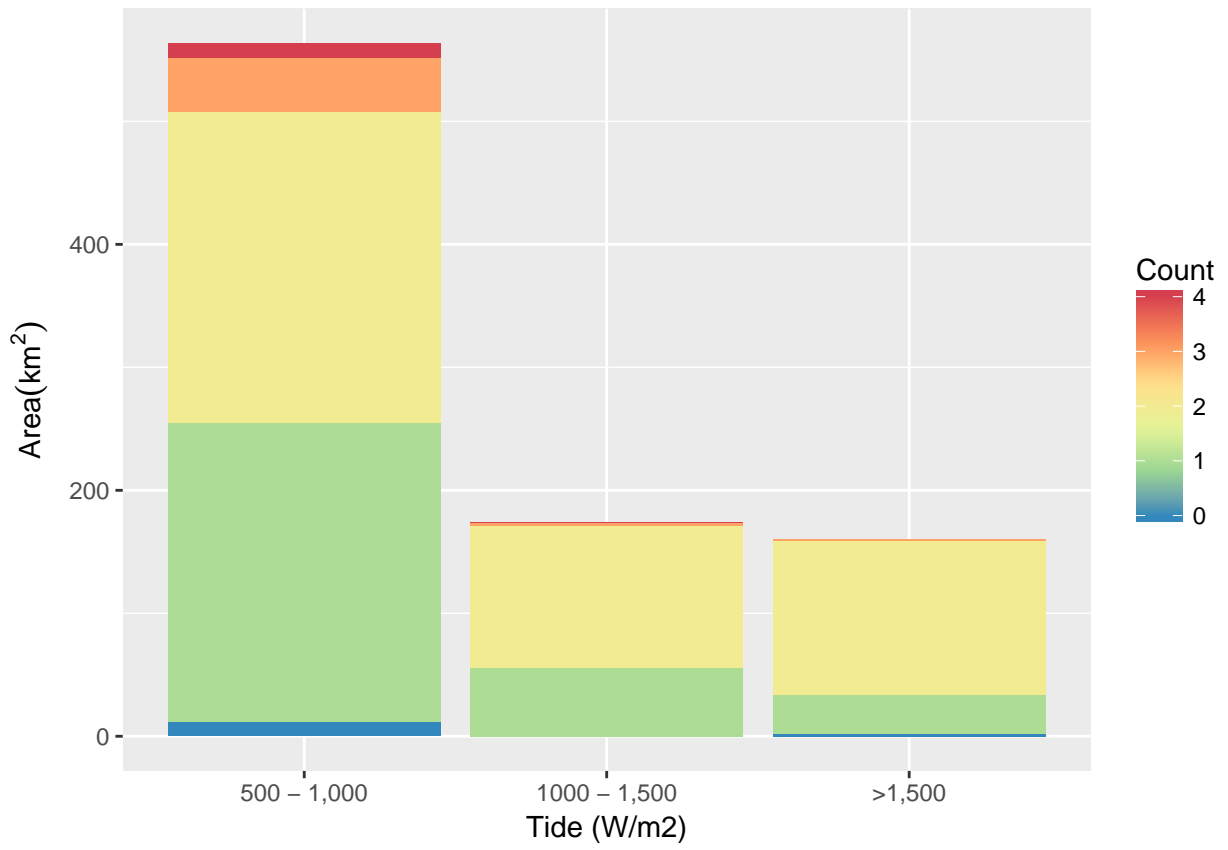


Figure 17: Area of Cumulative Ocean Use by Tide (W/m²) for East region. Cumulative use are counted and summarized by Tide (W/m²) and area.

East: Map of Tide

East: Plot of Uses by Tide

East: Table of Uses by Tide

Table 7: Area (km²) of Ocean Use by Tide (W/m2) bin for East region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Tide (W/m2)				Rank
Category	Layer	Component	500 - 1,000	1000 - 1,500	>1,500	Total	
	Total Area		563	174	160	898	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	13	0	1	14	7
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	472	170	156	798	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	29	1	1	30	4
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	14	3	1	18	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	15	1	0	16	6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	279	113	125	517	2
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	105	7	3	115	3
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		1	0	0	1	8

East: Map of Wave

East: Plot of Uses by Wave

East: Table of Uses by Wave

Table 8: Area (km²) of Ocean Use by Wave (kW/m) bin for East region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wave (kW/m)			Rank
Category	Layer	Component	10 - 20	Total		
	Total Area		17,357	17,357		0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	17,357	17,357		1
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	2,060	2,060		3
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		2,365	2,365		2

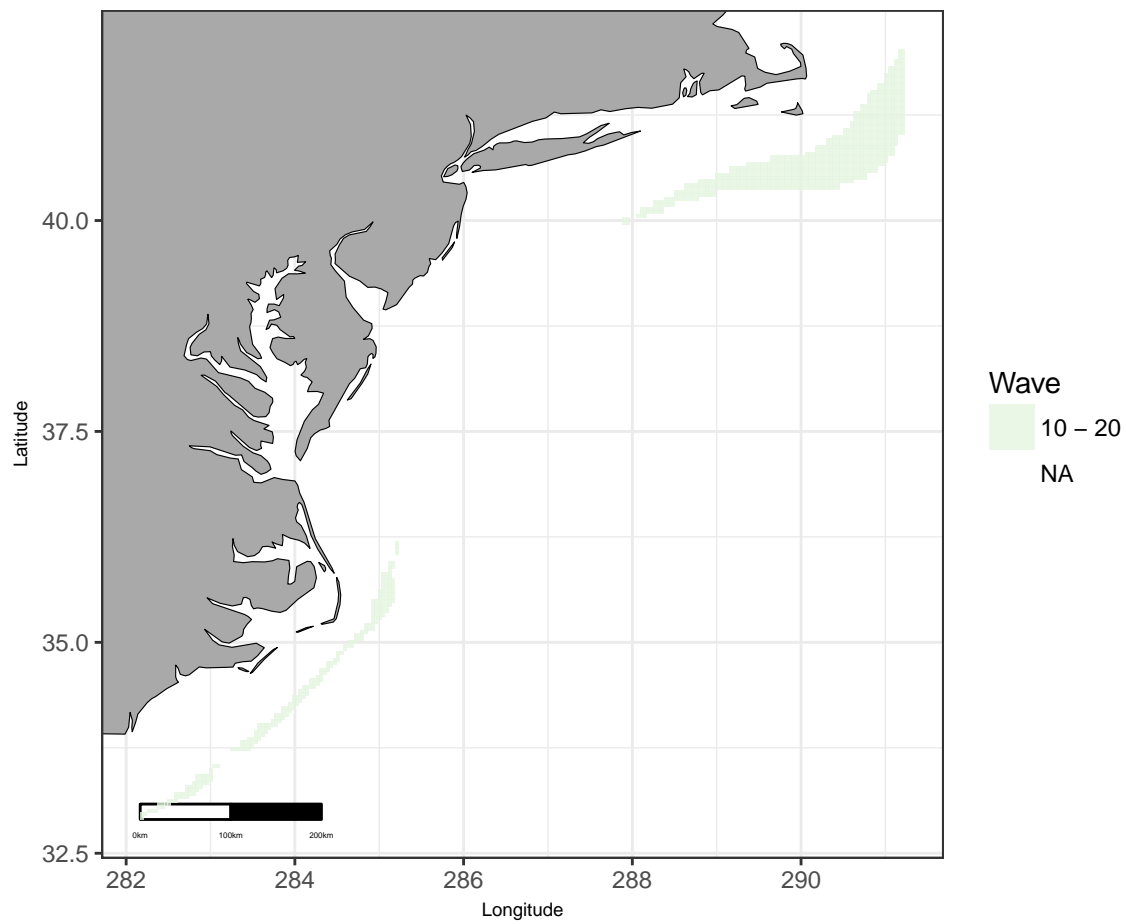


Figure 18: Map of viable wave in East region.

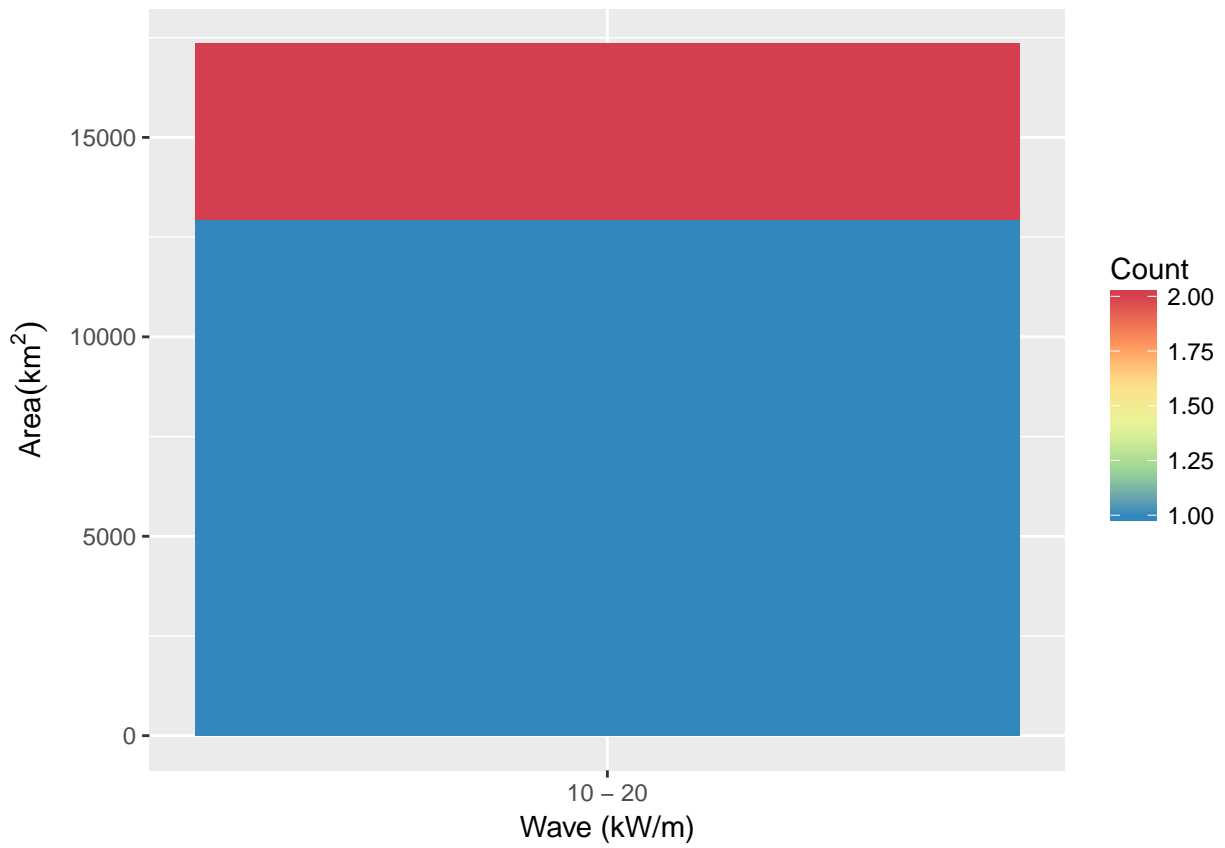


Figure 19: Area of Cumulative Ocean Use by Wave (kW/m) for East region. Cumulative use are counted and summarized by Wave (kW/m) and area.

East: Map of Wind

East: Plot of Uses by Wind

East: Table of Uses by Wind

Table 9: Area (km²) of Ocean Use by Wind (m/s @ 90m) bin for East region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wind (m/s @ 90m)				
Category	Layer	Component	7 - 8.5	8.5 - 10	>10	Total	Rank
	Total Area		113,859	123,994	1	237,853	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Marine National Monuments	1	0	0	1	12
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	375	0	0	375	6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	113,201	123,992	1	237,194	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	63	2,181	0	2,244	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	256	12	0	268	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	259	24	0	283	8
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	8,098	3,703	0	11,801	3
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	33,771	5,370	0	39,141	2
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		1,504	6,868	0	8,372	4
	Aquaculture	Finfish	3	0	0	3	10
	Aquaculture	Other	1	1	0	2	11
	Aquaculture	Shellfish	320	0	0	320	7

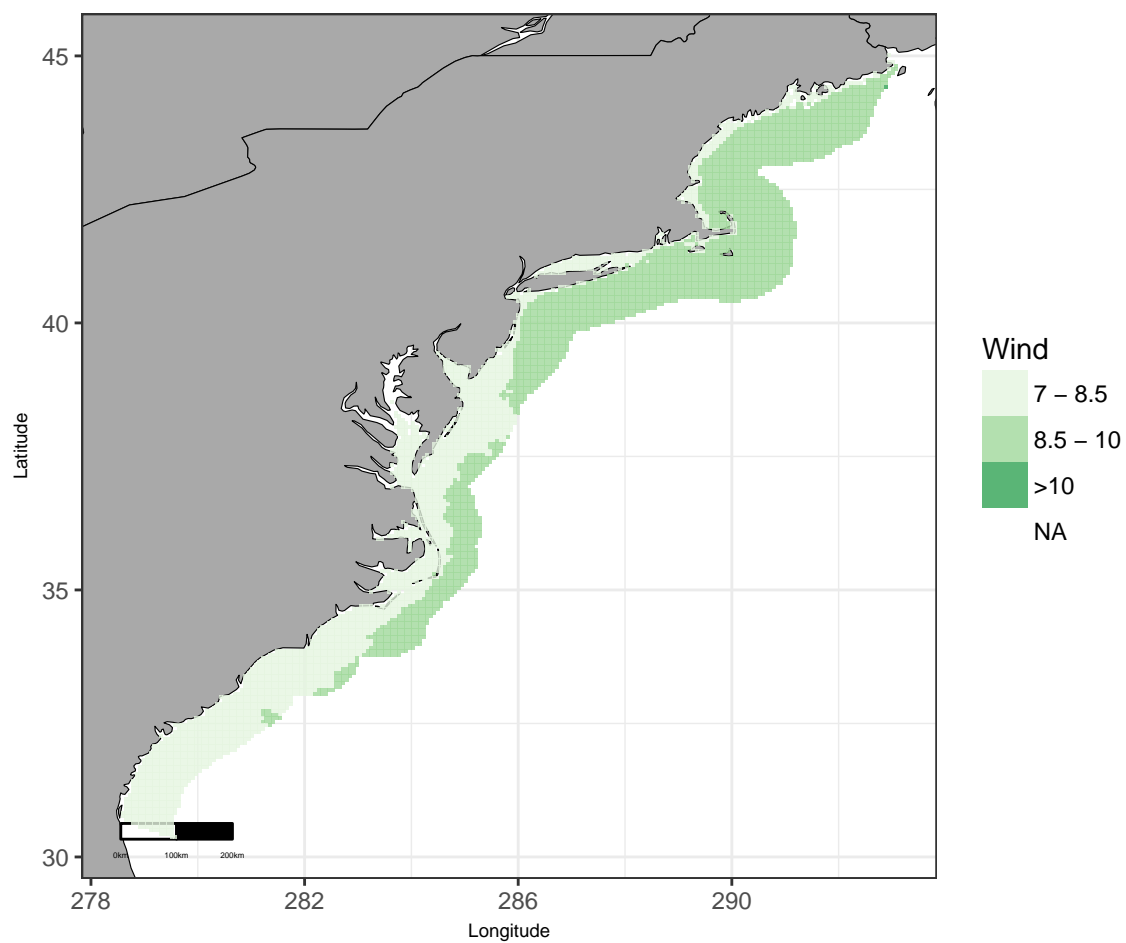


Figure 20: Map of viable wind in East region.

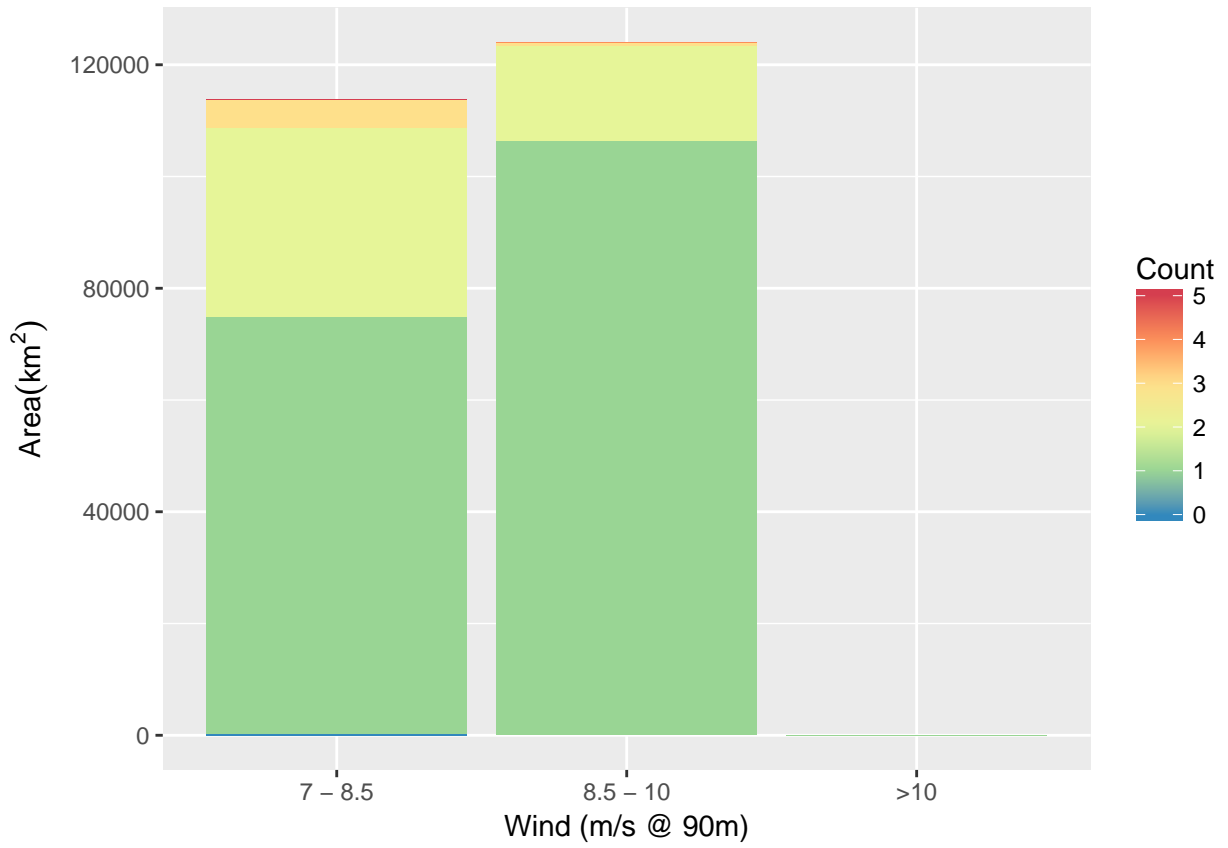


Figure 21: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for East region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

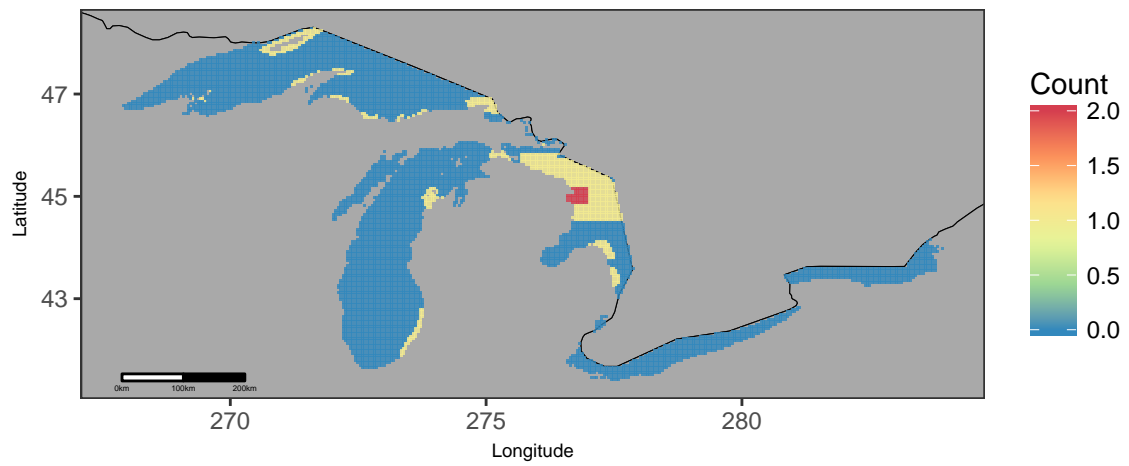


Figure 22: Map of cumulative ocean use in Great Lakes region.

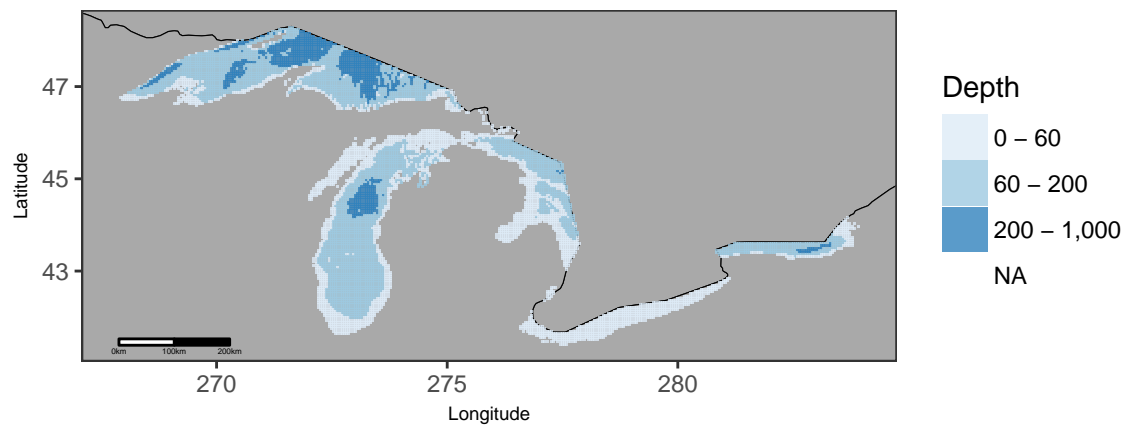


Figure 23: Map of viable depth in Great Lakes region.

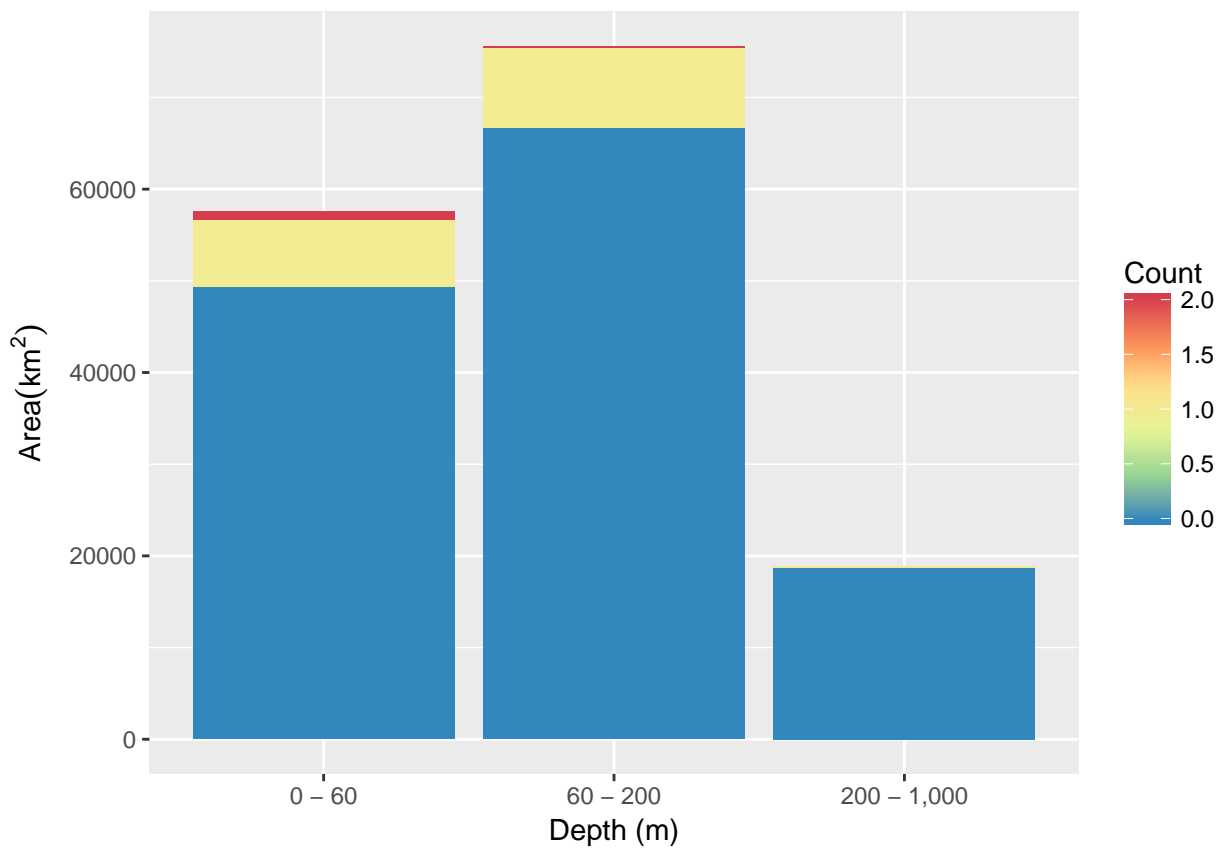


Figure 24: Area of Cumulative Ocean Use by Depth (m) for Great Lakes region. Cumulative use are counted and summarized by Depth (m) and area.

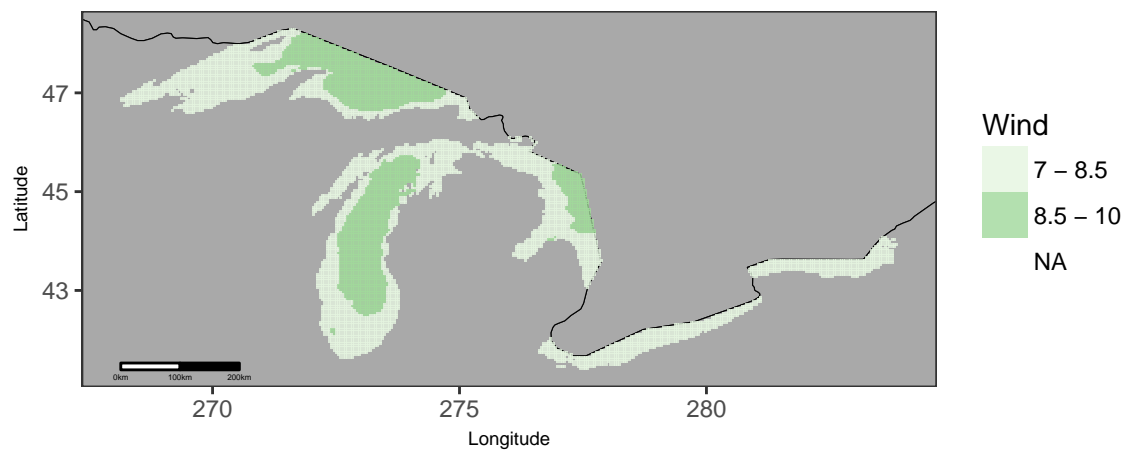


Figure 25: Map of viable wind in Great Lakes region.

Great Lakes

Great Lakes: Map of Uses

Great Lakes: Map of Depth

Great Lakes: Plot of Uses by Depth

Great Lakes: Table of Uses by Depth

Table 10: Area (km²) of Ocean Use by Depth (m) bin for Great Lakes region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)				Total	Rank
Category	Layer	Component	0 - 60	60 - 200	200 - 1,000			
	Total Area		57,650	75,569	18,881		152,099	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	1	0	0		1	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	3,759	7,071	83		10,913	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	365	1,172	117		1,655	3
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Pennsylvania	7	0	0		7	4
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	5,160	760	0		5,920	2

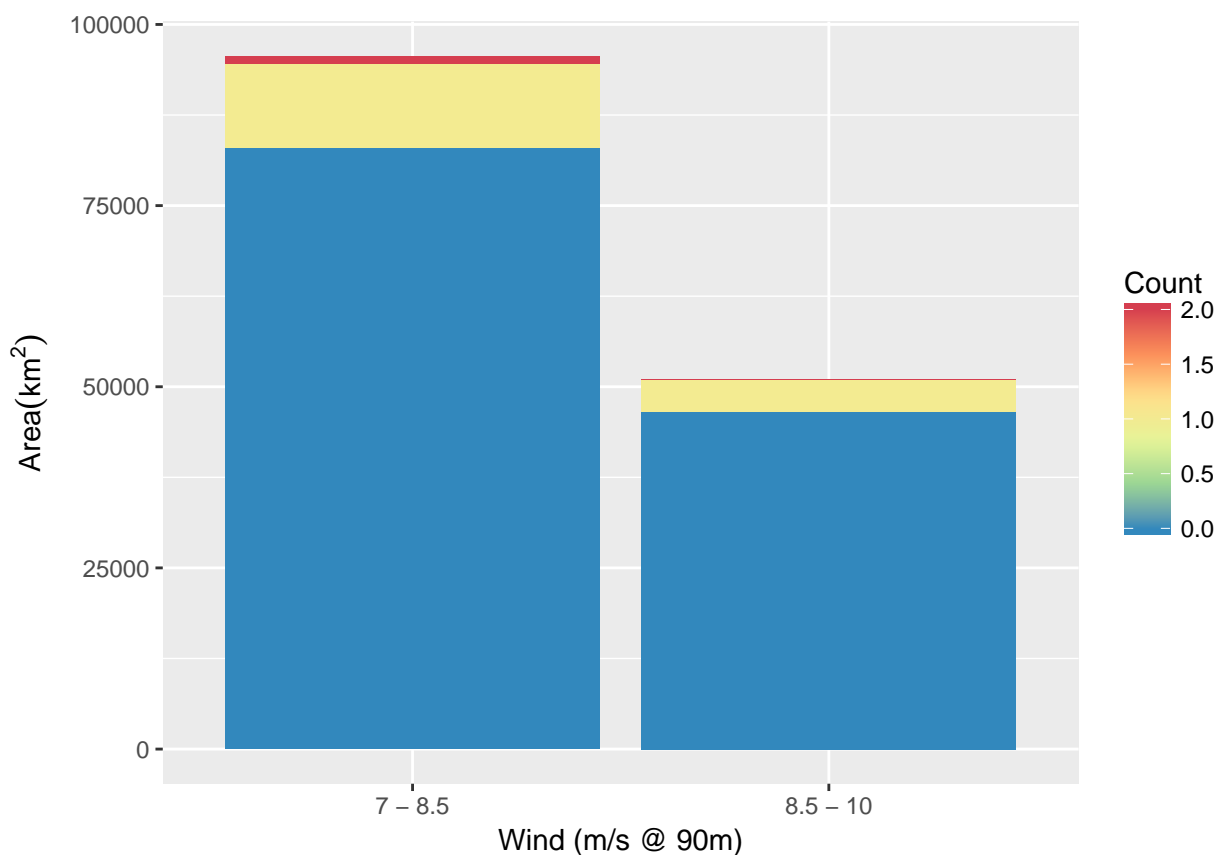


Figure 26: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for Great Lakes region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

Great Lakes: Map of Wind

Great Lakes: Plot of Uses by Wind

Great Lakes: Table of Uses by Wind

Table 11: Area (km²) of Ocean Use by Wind (m/s @ 90m) bin for Great Lakes region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wind (m/s @ 90m)				
Category	Layer	Component	7 - 8.5	8.5 - 10	Total	Rank	
	Total Area		95,612	50,989	146,601	0	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	■ 6,685	■ 4,116	■ 10,801	1	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	1,528	11	1,540	3	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Pennsylvania	7	0	7	4	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	■ 5,402	371	■ 5,772	2	

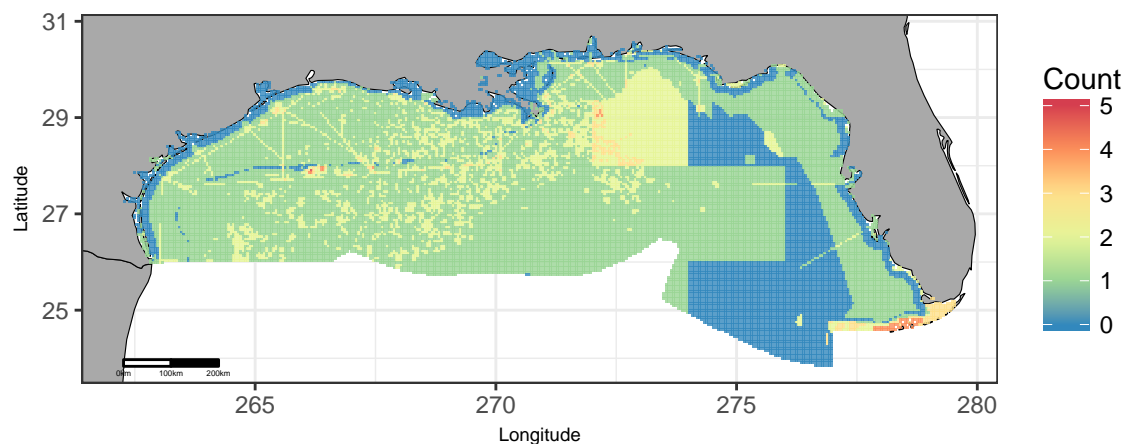


Figure 27: Map of cumulative ocean use in Gulf of Mexico region.

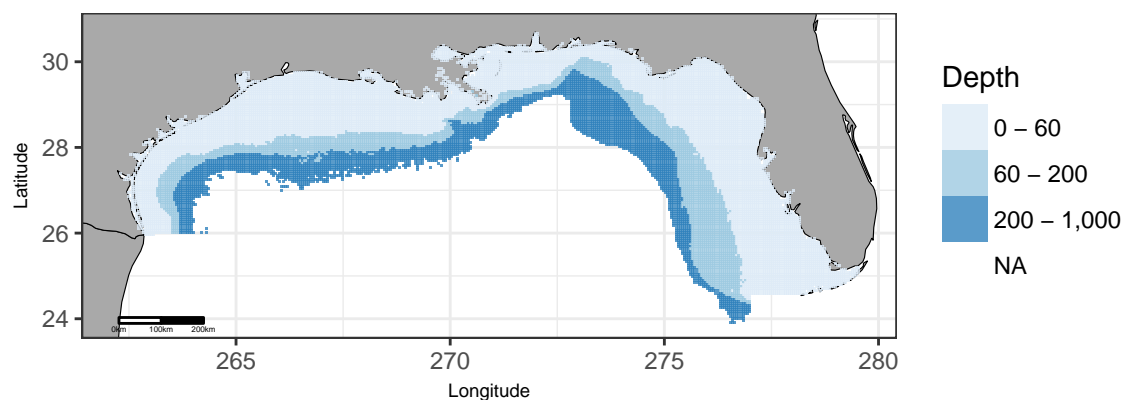


Figure 28: Map of viable depth in Gulf of Mexico region.

Gulf of Mexico

Gulf of Mexico: Map of Uses

Gulf of Mexico: Map of Depth

Gulf of Mexico: Plot of Uses by Depth

Gulf of Mexico: Table of Uses by Depth

Table 12: Area (km²) of Ocean Use by Depth (m) bin for Gulf of Mexico region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)				Total	Rank
Category	Layer	Component	0 - 60	60 - 200	200 - 1,000			
	Total Area		251,128	83,535	92,050		426,713	0
Governance: Commercial Leases	Active Oil & Gas Leases		12,432	6,239	8,747		27,418	3
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Bureau of Ocean Energy Management	437	1,642	561		2,640	8
			29					
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	996	0	0		996	10
Governance: Marine	Marine	National Marine						

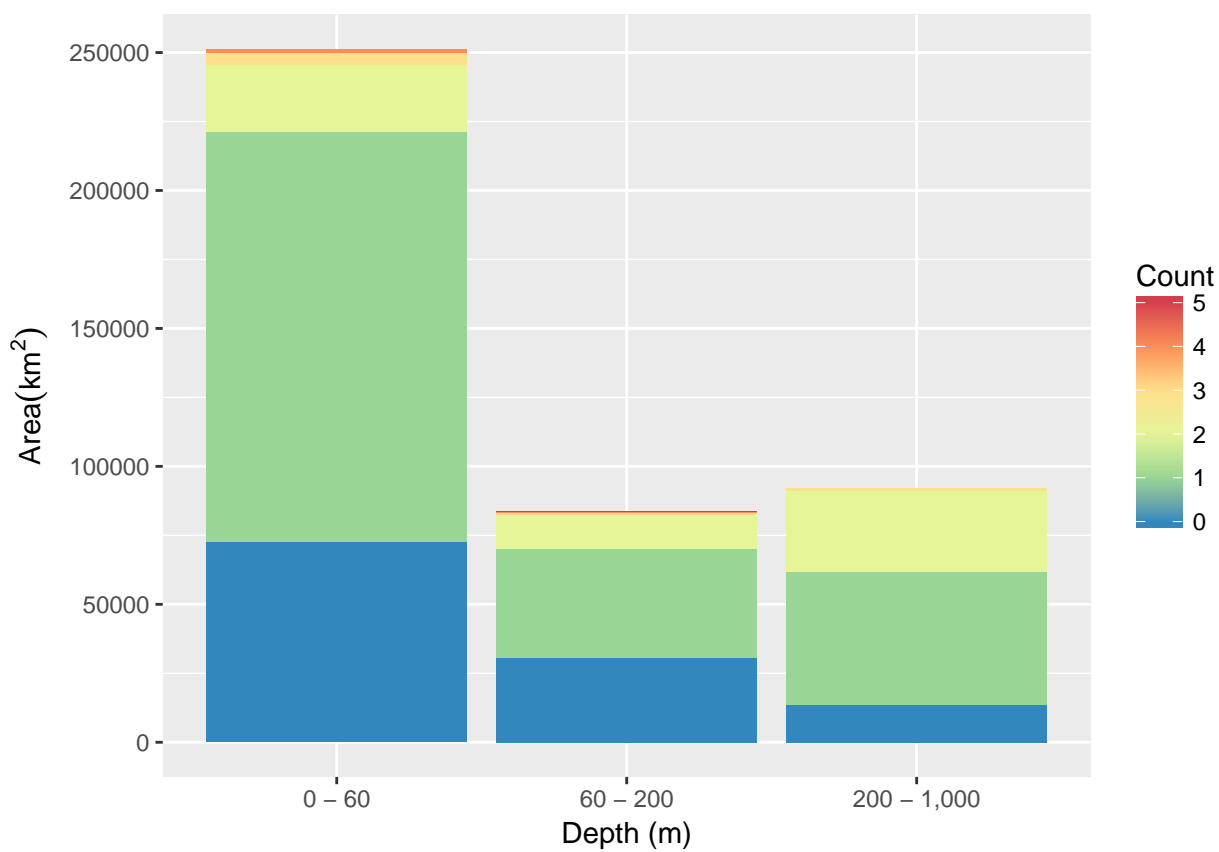


Figure 29: Area of Cumulative Ocean Use by Depth (m) for Gulf of Mexico region. Cumulative use are counted and summarized by Depth (m) and area.

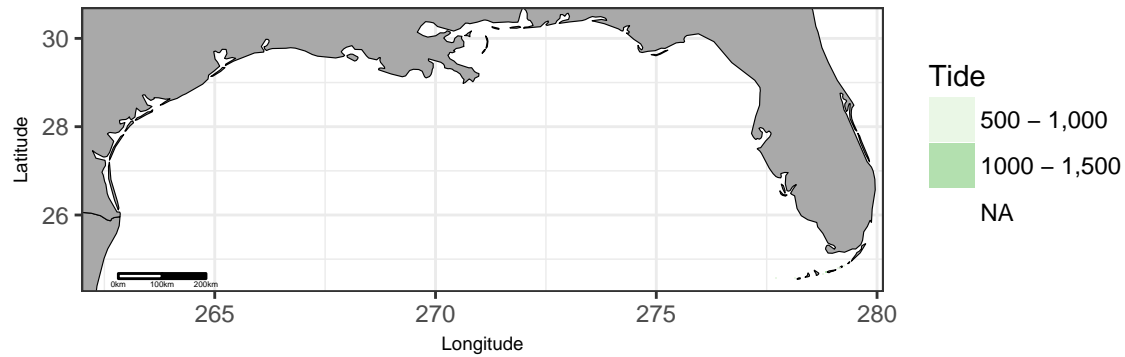


Figure 30: Map of viable tide in Gulf of Mexico region.

Gulf of Mexico: Map of Tide

Gulf of Mexico: Plot of Uses by Tide

Gulf of Mexico: Table of Uses by Tide

Table 13: Area (km²) of Ocean Use by Tide (W/m2) bin for Gulf of Mexico region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Tide (W/m2)				Total	Rank
Category	Layer	Component	500 - 1,000	1000 - 1,500	>1,500			
	Total Area		70	16	8	94		0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	2	0	0	2		5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	60	14	8	82		1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	1	0	0	1		6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	23	2	0	25		3
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	58	15	8	81		2
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	60	14	8	82		1
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		2	1	0	2		4

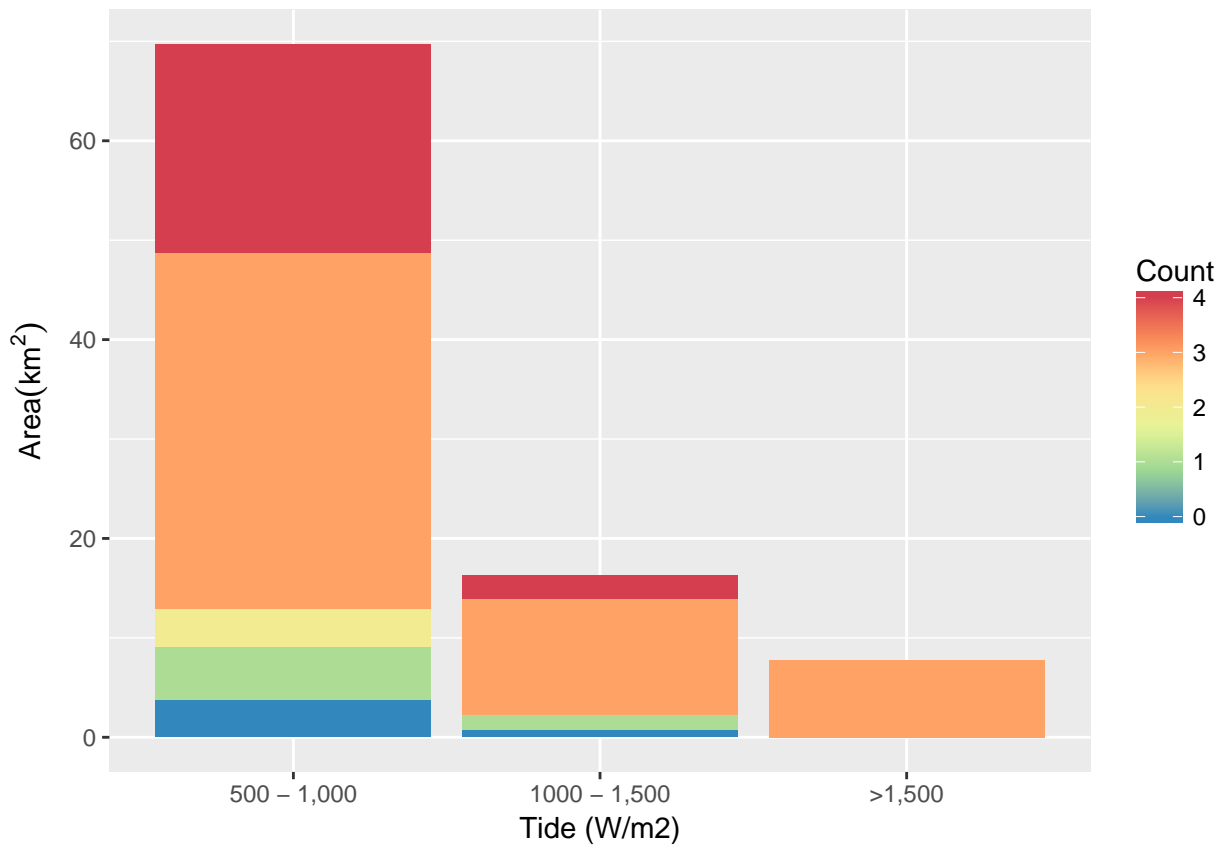


Figure 31: Area of Cumulative Ocean Use by Tide (W/m²) for Gulf of Mexico region. Cumulative use are counted and summarized by Tide (W/m²) and area.

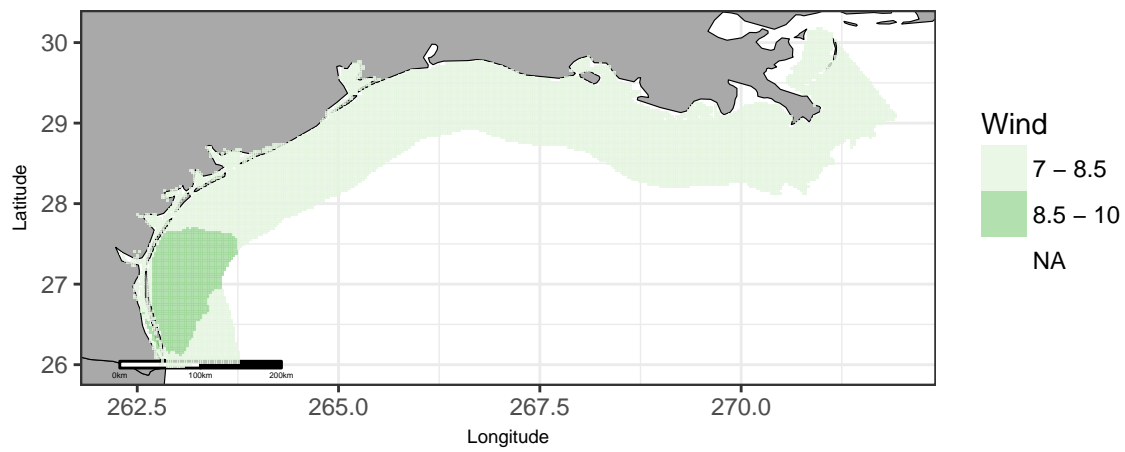


Figure 32: Map of viable wind in Gulf of Mexico region.

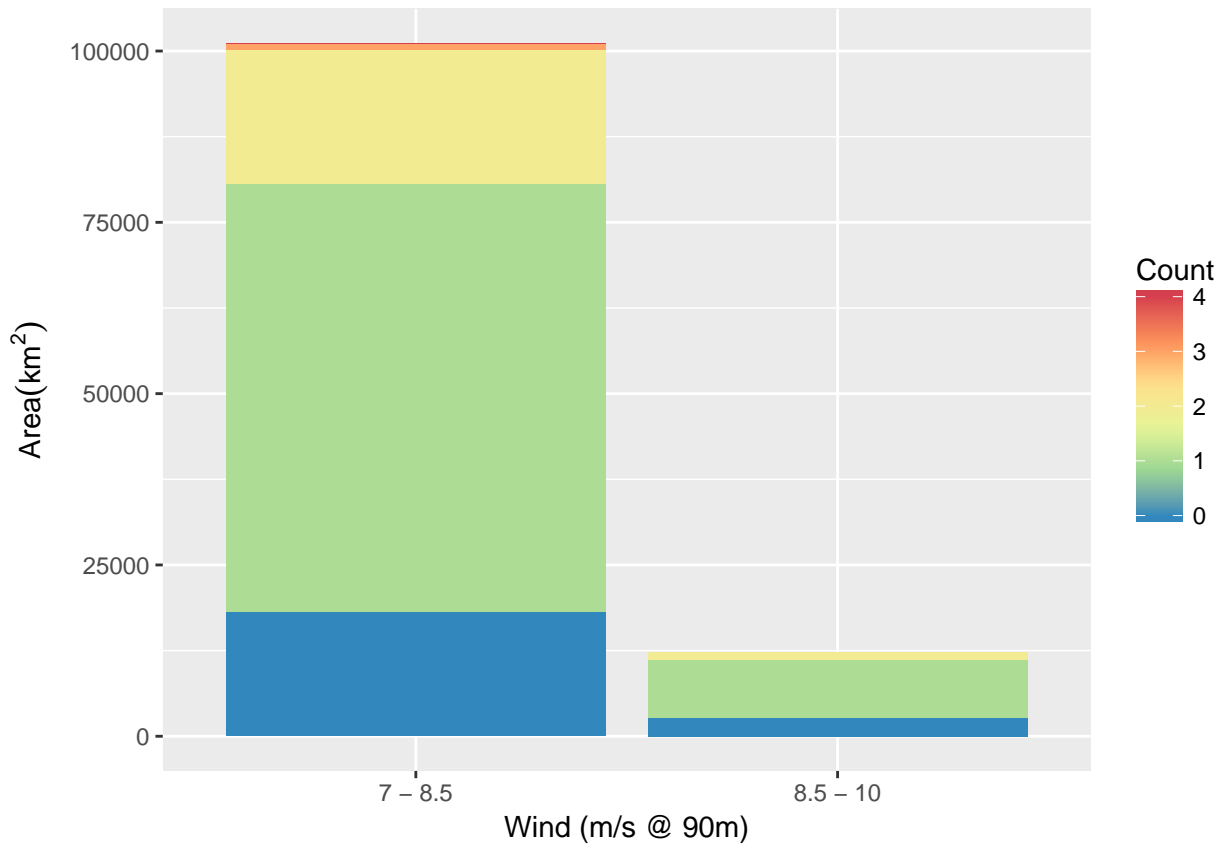


Figure 33: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for Gulf of Mexico region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

Gulf of Mexico: Map of Wind

Gulf of Mexico: Plot of Uses by Wind

Gulf of Mexico: Table of Uses by Wind

Table 14: Area (km²) of Ocean Use by Wind (m/s @ 90m) bin for Gulf of Mexico region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wind (m/s @ 90m)					
Category	Layer	Component	7 - 8.5		8.5 - 10		Total	Rank
	Total Area		<div><div></div></div> 101,108		<div><div></div></div> 12,235		<div><div></div></div> 113,343	0
Governance: Commercial Leases	Active Oil & Gas Leases		<div><div></div></div> 14,643		0	<div><div></div></div> 14,643	2	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Bureau of Ocean Energy Management	<div><div></div></div> 618		0	<div><div></div></div> 618	6	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System	<div><div></div></div> 420		0	<div><div></div></div> 420	8	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	<div><div></div></div> 68,618		<div><div></div></div> 8,459	<div><div></div></div> 77,077	1	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	<div><div></div></div> 239		0	<div><div></div></div> 239	9	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	<div><div></div></div> 465	<div><div></div></div> 183		<div><div></div></div> 648	5	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	<div><div></div></div> 519		0	<div><div></div></div> 519	7	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	<div><div></div></div> 11,544	<div><div></div></div> 888	<div><div></div></div>	<div><div></div></div> 12,433	3	
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		<div><div></div></div> 7,340	<div><div></div></div> 1,186	<div><div></div></div>	<div><div></div></div> 8,527	4	

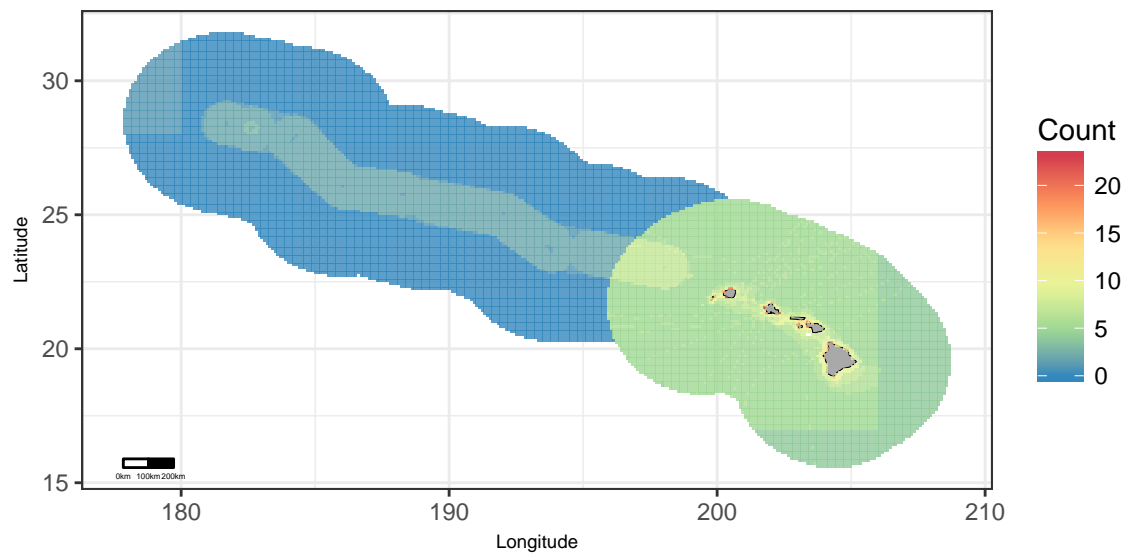


Figure 34: Map of cumulative ocean use in Hawaii region.

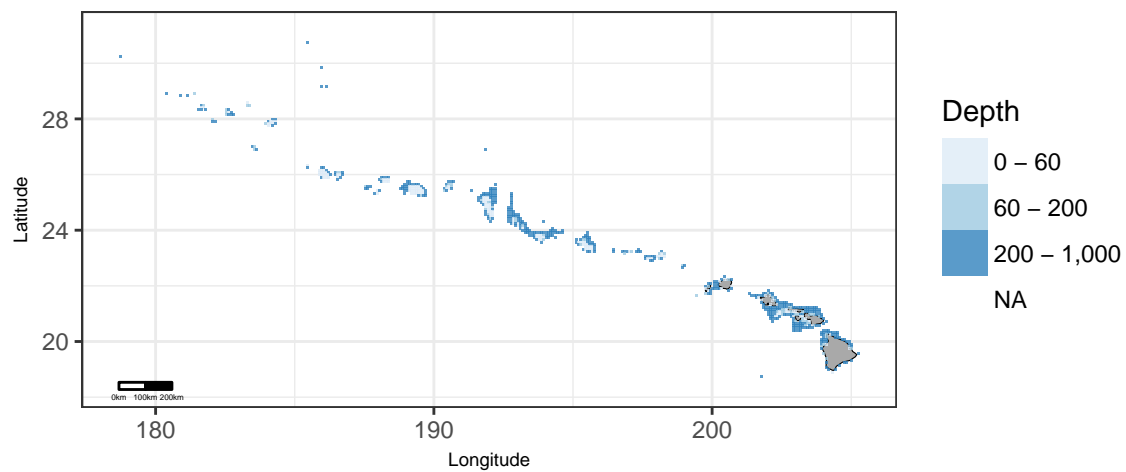


Figure 35: Map of viable depth in Hawaii region.

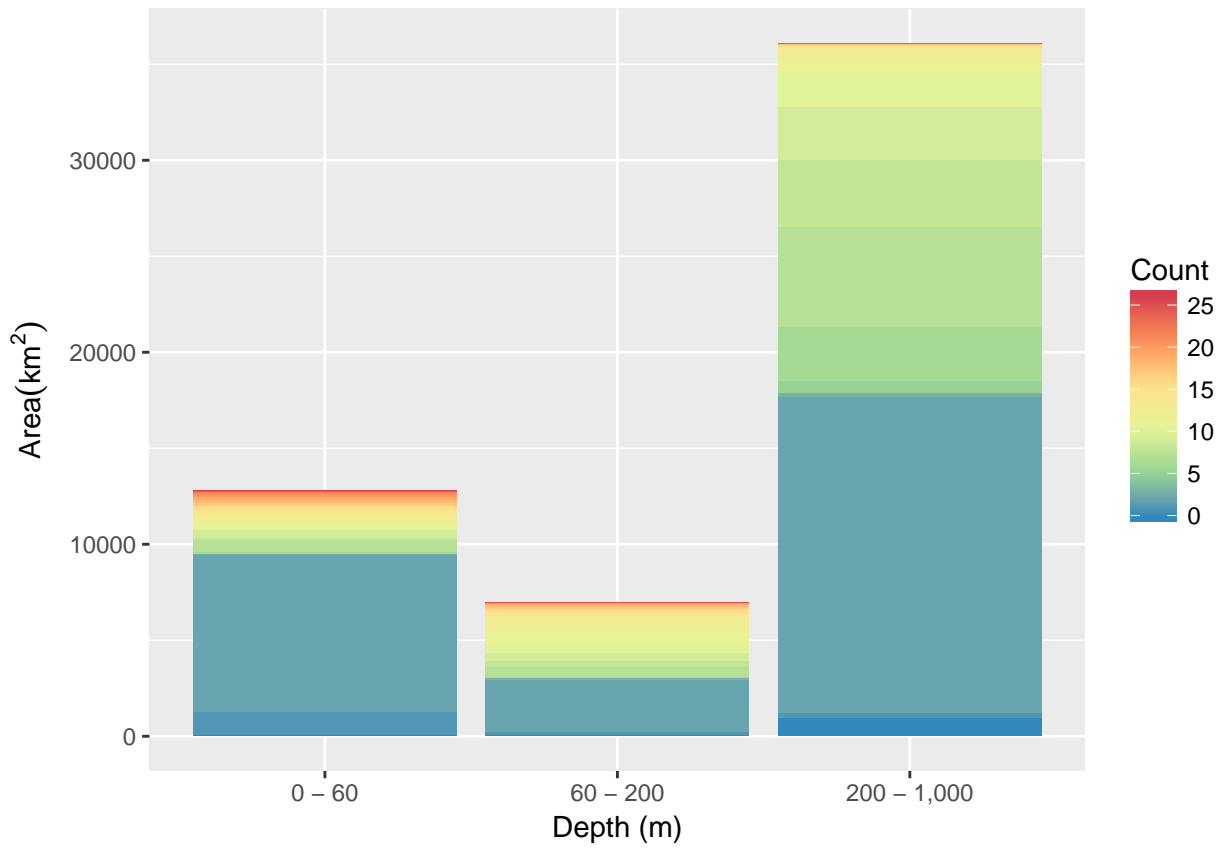


Figure 36: Area of Cumulative Ocean Use by Depth (m) for Hawaii region. Cumulative use are counted and summarized by Depth (m) and area.

Hawaii

Hawaii: Map of Uses

Hawaii: Map of Depth

Hawaii: Plot of Uses by Depth

Hawaii: Table of Uses by Depth

Table 15: Area (km²) of Ocean Use by Depth (m) bin for Hawaii region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)				Rank
Category	Layer	Component	0 - 60	60 - 200	200 - 1,000	Total	
	Total Area		12,800	6,968	36,084	55,852	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Marine National Monuments	10,320	3,300	18,622	32,042	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	8,711	3,094	18,443	30,248	2
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	1,394	1,763	220	3,378	11
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	4	0	0	4	31
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	165	173	200	538	23
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	208	622	1,407	2,238	18
	Ocean Use Atlas for Hawaii	Aquaculture	227	286	306	819	21
	Ocean Use Atlas for Hawaii	Com Dive Fishing	1,197	713	149	2,060	19
	Ocean Use Atlas for Hawaii	Com Fishing Fixed	939	420	1,085	2,444	14
	Ocean Use Atlas for Hawaii	Com Fishing Mobile	1,172	1,277	3,245	5,694	9
	Ocean Use Atlas for Hawaii	Com Gathering Shore	127	34	33	194	28
	Ocean Use Atlas for Hawaii	Com Pelagic Fishing	3,294	3,901	18,208	25,404	3
	Ocean Use Atlas for Hawaii	Cruise Ships	1,885	2,675	10,841	15,401	5
	Ocean Use Atlas for Hawaii	Fishing Shore	321	53	53	427	24
	Ocean Use Atlas for Hawaii	Kayak Fishing	935	1,038	3,878	5,851	8
	Ocean Use Atlas for Hawaii	Military Operations	3,294	3,901	18,208	25,404	3
	Ocean Use Atlas for Hawaii	Mining Mineral Ext	53	3	2	59	30
	Ocean Use Atlas for Hawaii	Motorized Bouting	3,294	3,901	18,208	25,404	3
	Ocean Use Atlas for Hawaii	Ocean Dumping	244	82	427	753	22
	Ocean Use Atlas for Hawaii	Offshore Alt Energy	92	136	161	389	26
	Ocean Use Atlas for Hawaii	Paddling	2,134	3,348	13,161	18,643	4
	Ocean Use Atlas for Hawaii	Perm Research Areas	1,639	1,976	1,251	4,866	10
	Ocean Use Atlas for Hawaii	Rec Dive Fishing	1,431	740	160	2,331	16
	Ocean Use Atlas for Hawaii	Rec Fishing Fixed	869	605	379	1,852	20
	Ocean Use Atlas for Hawaii	Rec Fishing Mobile	2,452	3,206	6,375	12,033	6
	Ocean Use Atlas for Hawaii	Rec Fishing Pel Boats	3,294	3,901	18,208	25,404	3
	Ocean Use Atlas for Hawaii	Rec Gathering Shore	266	36	33	336	27
	Ocean Use Atlas for Hawaii	Scuba Snorkeling	1,622	556	137	2,315	17
	Ocean Use Atlas for Hawaii	Shipping	3,294	3,901	18,208	25,404	3
	Ocean Use Atlas for Hawaii	Shore Use	339	35	19	397	25
	Ocean Use Atlas for Hawaii	Surface Board Sports	1,290	644	437	2,371	15
	Ocean Use Atlas for Hawaii	Swimming	884	642	1,138	2,664	13

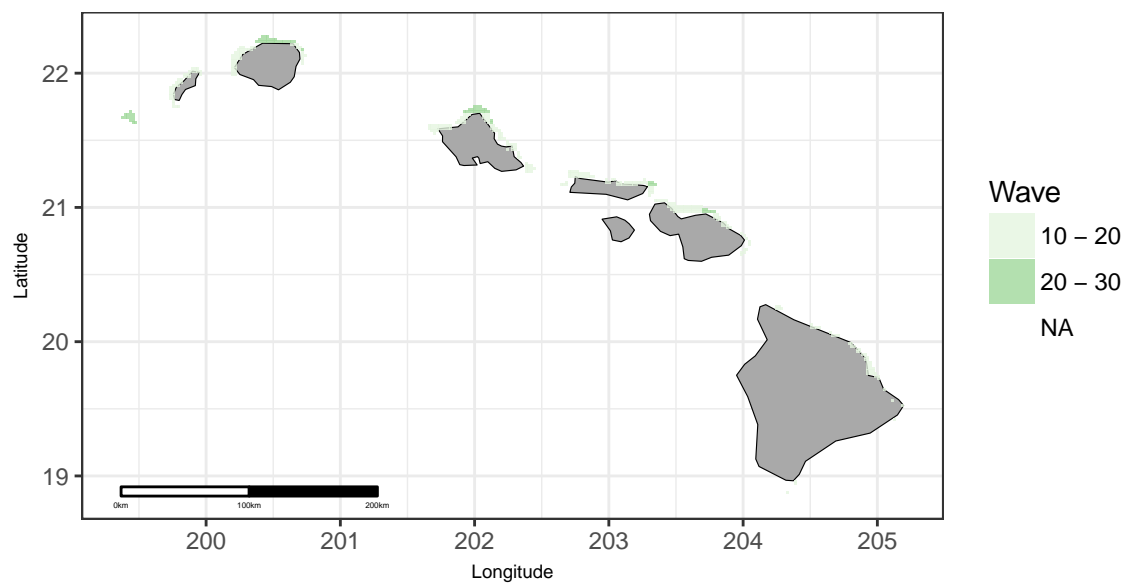


Figure 37: Map of viable wave in Hawaii region.

Hawaii: Map of Wave

Hawaii: Plot of Uses by Wave

Hawaii: Table of Uses by Wave

Table 16: Area (km²) of Ocean Use by Wave (kW/m) bin for Hawaii region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wave (kW/m)			
Category	Layer	Component	10 - 20	20 - 30	Total	Rank
	Total Area		1,489	311	1,800	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	189	175	363	16
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	3	0	3	27
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	186	26	212	17
	Ocean Use Atlas for Hawaii	Aquaculture	85	0	85	21
	Ocean Use Atlas for Hawaii	Com Dive Fishing	701	135	835	8
	Ocean Use Atlas for Hawaii	Com Fishing Fixed	487	121	608	13
	Ocean Use Atlas for Hawaii	Com Fishing Mobile	850	251	1,101	4
	Ocean Use Atlas for Hawaii	Com Gathering Shore	35	2	37	24
	Ocean Use Atlas for Hawaii	Com Pelagic Fishing	1,488	311	1,799	1
	Ocean Use Atlas for Hawaii	Cruise Ships	811	128	939	6
	Ocean Use Atlas for Hawaii	Fishing Shore	82	8	90	20
	Ocean Use Atlas for Hawaii	Kayak Fishing	654	152	806	9
	Ocean Use Atlas for Hawaii	Military Operations	1,488	311	1,799	1
	Ocean Use Atlas for Hawaii	Mining Mineral Ext	38 ⁶	2	9	26
	Ocean Use Atlas for Hawaii	Motorized Boating	1,488	311	1,799	1
	Ocean Use Atlas for Hawaii	Ocean Dumping	124	10	134	19

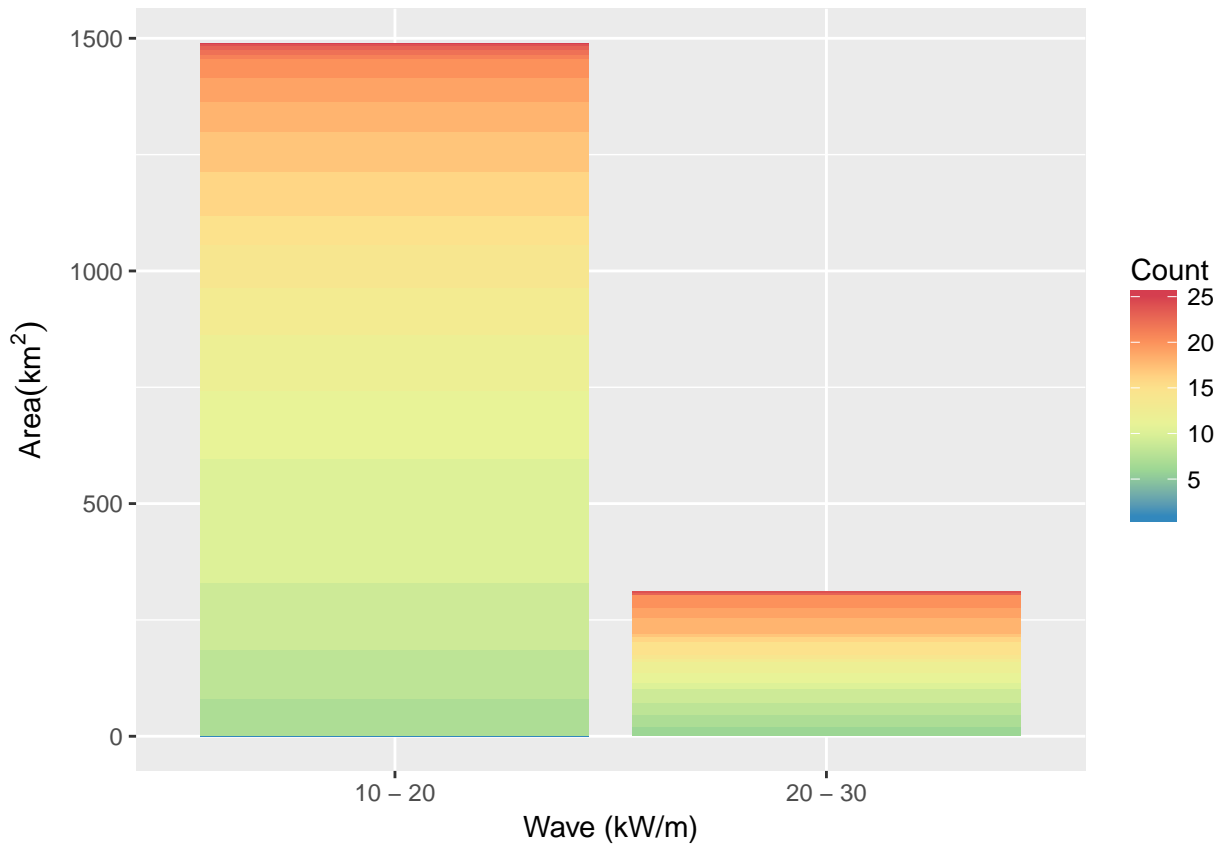


Figure 38: Area of Cumulative Ocean Use by Wave (kW/m) for Hawaii region. Cumulative use are counted and summarized by Wave (kW/m) and area.

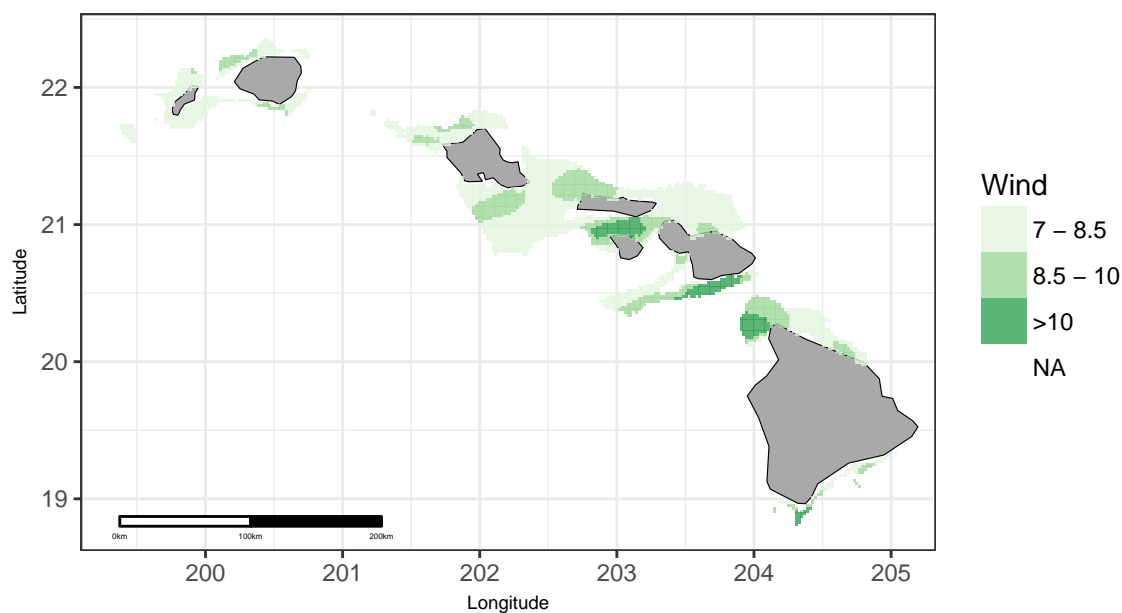


Figure 39: Map of viable wind in Hawaii region.

Hawaii: Map of Wind

Hawaii: Plot of Uses by Wind

Hawaii: Table of Uses by Wind

Table 17: Area (km²) of Ocean Use by Wind (m/s @ 90m) bin for Hawaii region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Wind (m/s @ 90m)				Total	Rank
Category	Layer	Component	7 - 8.5	8.5 - 10	>10			
	Total Area		10,601	3,999	1,217		15,818	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	1,441	453	304		2,199	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	2	0	0		2	28
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	1,369	284	39		1,691	11
	Ocean Use Atlas for Hawaii	Aquaculture	308	85	254		647	19
	Ocean Use Atlas for Hawaii	Com Dive Fishing	765	140	31		936	18
	Ocean Use Atlas for Hawaii	Com Fishing Fixed	1,344	135	0		1,479	12
	Ocean Use Atlas for Hawaii	Com Fishing Mobile	2,106	540	134		2,780	8
	Ocean Use Atlas for Hawaii	Com Gathering Shore	45	15	2		63	26
	Ocean Use Atlas for Hawaii	Com Pelagic Fishing	10,601	3,999	1,217		15,818	1
	Ocean Use Atlas for Hawaii	Cruise Ships	5,912	2,900	1,217		10,029	3
	Ocean Use Atlas for Hawaii	Fishing Shore	112	35	17		164	23
	Ocean Use Atlas for Hawaii	Kayak Fishing	1,793	829	385		3,008	6
	Ocean Use Atlas for Hawaii	Military Operations	10,601	3,999	1,217		15,818	1
	Ocean Use Atlas for Hawaii	Mining Mineral Ext	27	3	0		30	27
	Ocean Use Atlas for Hawaii	Motorized Boating	10,601	3,999	1,217		15,818	1
	Ocean Use Atlas for Hawaii	Ocean Dumping	460	56	2		518	20

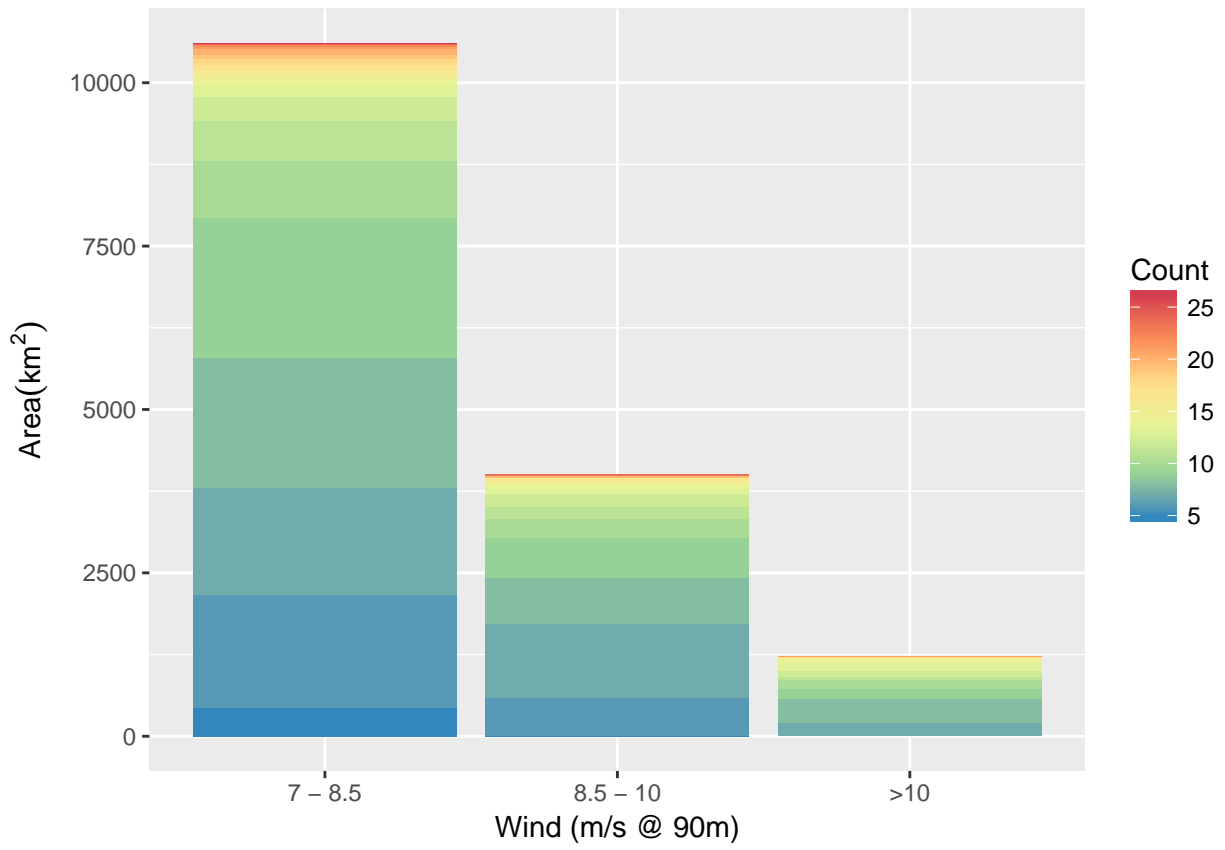


Figure 40: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for Hawaii region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

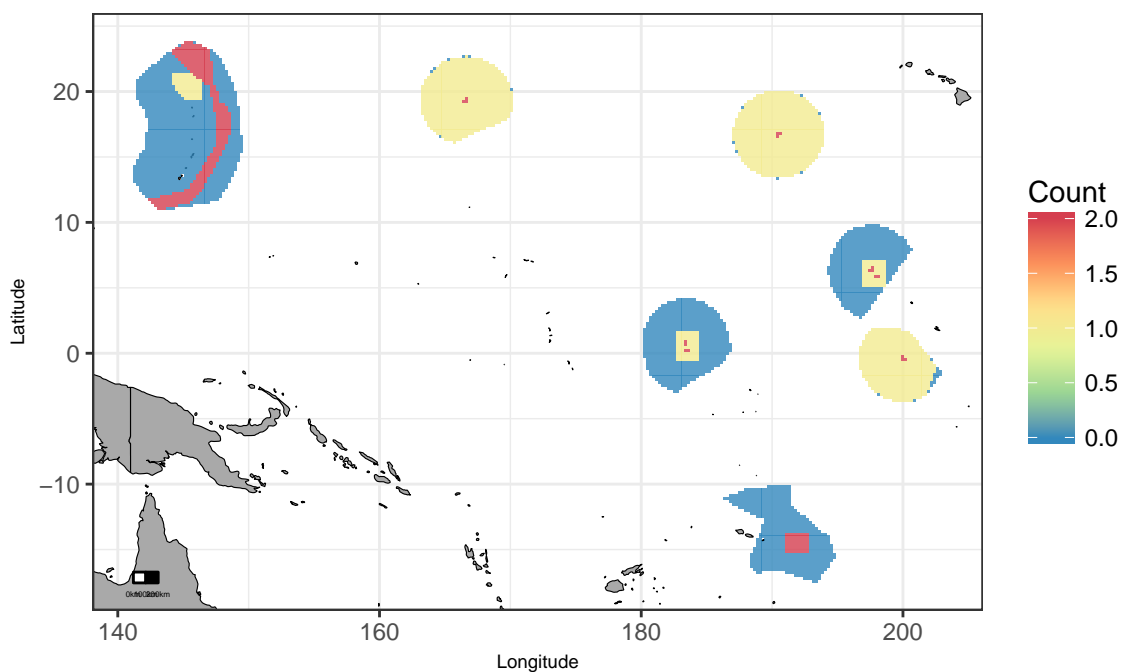


Figure 41: Map of cumulative ocean use in Pacific Islands region.

Pacific Islands

Pacific Islands: Map of Uses

Pacific Islands: Map of Depth

Pacific Islands: Plot of Uses by Depth

Pacific Islands: Table of Uses by Depth

Table 18: Area (km²) of Ocean Use by Depth (m) bin for Pacific Islands region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Depth (m)				Total	Rank
Category	Layer	Component	0 - 60	60 - 200	200 - 1,000			
	Total Area		888	1,294	10,982		13,164	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	American Samoa	1	1	0		2	7
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Guam	9	12	3		25	4
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Mariana Islands	7	1	0		7	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	Marine National Monuments	426	271	2,077		2,775	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	6	24	63		93	3
			42					
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	3	1	0		4	6

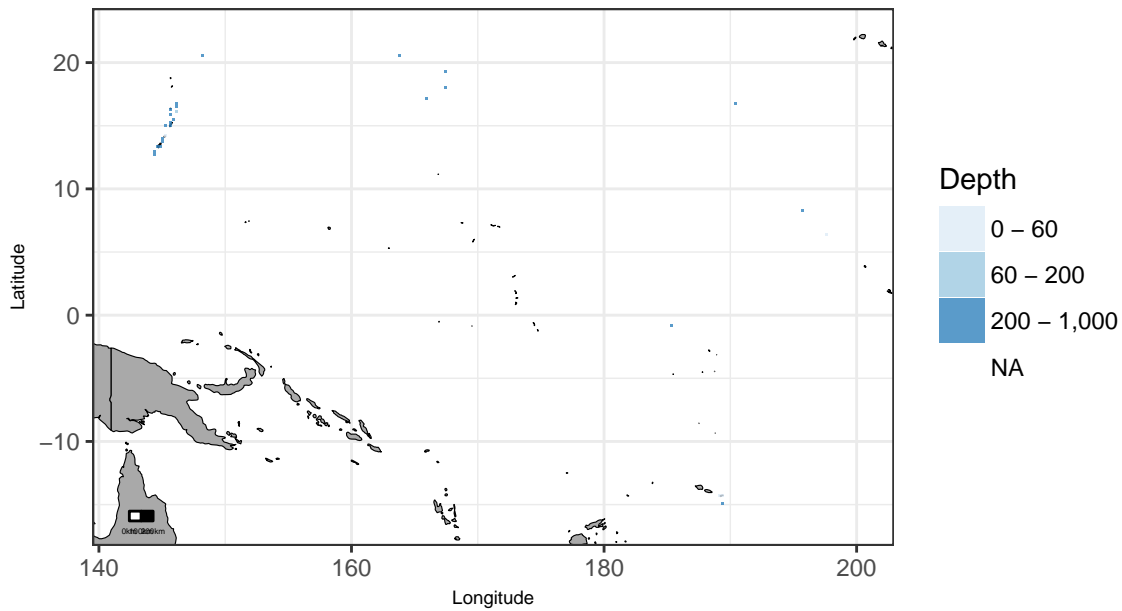


Figure 42: Map of viable depth in Pacific Islands region.

West

West: Map of Uses

West: Map of Depth

West: Plot of Uses by Depth

West: Table of Uses by Depth

Table 19: Area (km²) of Ocean Use by Depth (m) bins for West region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use		Area (km ²) by Depth (m)				Total	Rank
Category	Component	0-60	60-200	200-1,000	NA		
Total Area		22,052	42,302	89,266	174,138	0	
Government: Commercial Lanes	Active Oil & Gas Lanes	118	335	304	807	53	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	26	100	100	227	65	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	45	0	0	45	89	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	919	5,197	15,047	21,123	24	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	5,758	11,152	7,596	24,466	21	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	357	81	2	440	39	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	195	9	2	206	66	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	2,812	2,305	355	5,071	36	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	818	27	1	847	34	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	3,207	968	77	4,192	37	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	2,256	1,052	2,322	5,630	34	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	951	3,540	4,813	9,304	31	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	204	1	0	205	96	
Ocean Use: Transportation: Commercial Shipping	Shipping Lanes	215	971	1,296	2,482	39	
Ocean Use: Agriculture	Shellfish	3	0	0	3	71	
Ocean Use: Agriculture for California	Off Energy Pumps	3,104	10,951	5,260	19,289	26	
Ocean Use: Agriculture for California	Aggregates	1,229	702	142	1,972	42	
Ocean Use: Agriculture for California	Reefs	1,604	91	2	1,697	45	
Ocean Use: Agriculture for California	Cables	2,124	2,944	11,392	16,464	28	
Ocean Use: Agriculture for California	Cable Ropes	9,911	17,632	10,267	37,810	6	
Ocean Use: Agriculture for California	Cable Ropes	4,675	11,804	15,010	31,289	10	
Ocean Use: Agriculture for California	Cable Ropes	2,804	602	74	3,480	38	
Ocean Use: Agriculture for California	Cable Ropes	1,144	127	1	1,272	49	
Ocean Use: Agriculture for California	Cable Ropes	9,340	17,506	10,941	37,787	5	
Ocean Use: Agriculture for California	Hunting	3,368	5,594	10,019	18,981	17	
Ocean Use: Agriculture for California	Liquid Fueling	7,084	4,805	904	12,893	29	
Ocean Use: Agriculture for California	Military	9,876	18,121	10,217	38,214	4	
Ocean Use: Agriculture for California	Mining	111	0	0	111	68	
Ocean Use: Agriculture for California	Mineral Bearing	9,889	18,121	10,217	38,227	3	
Ocean Use: Agriculture for California	Oil	5,634	16,150	10,414	32,198	7	
Ocean Use: Agriculture for California	Polluting	7,889	5,391	3,528	16,813	27	

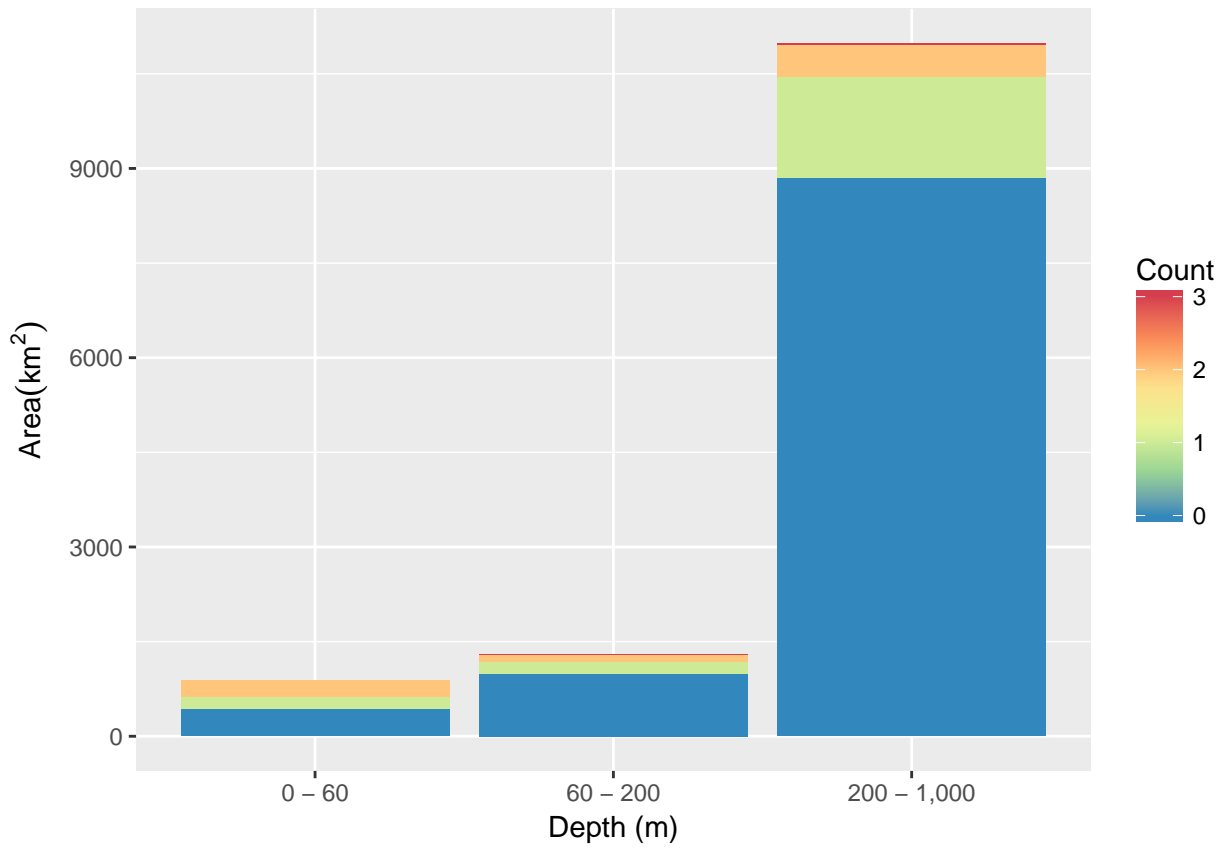


Figure 43: Area of Cumulative Ocean Use by Depth (m) for Pacific Islands region. Cumulative use are counted and summarized by Depth (m) and area.

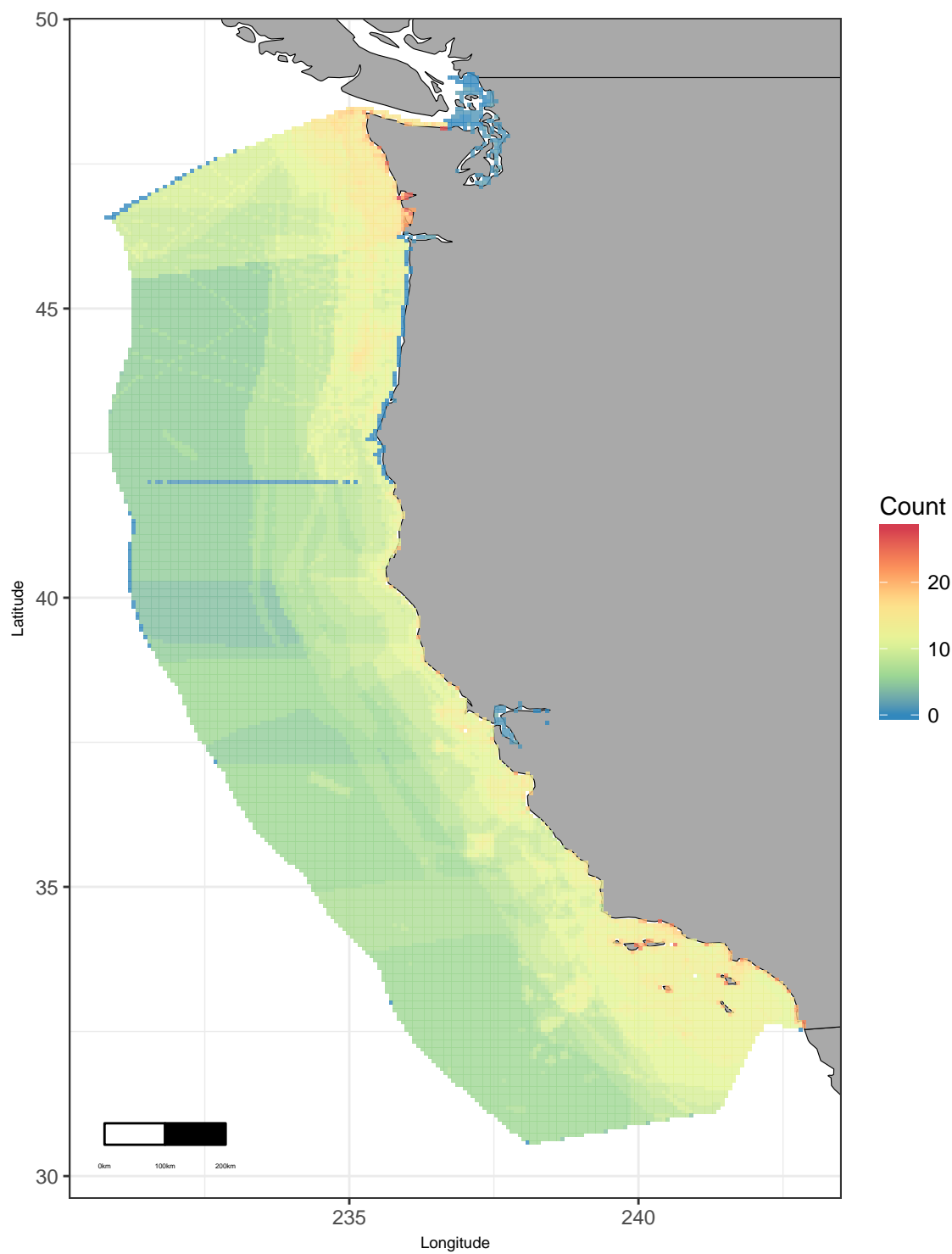


Figure 44: Map of cumulative ocean use in West region.

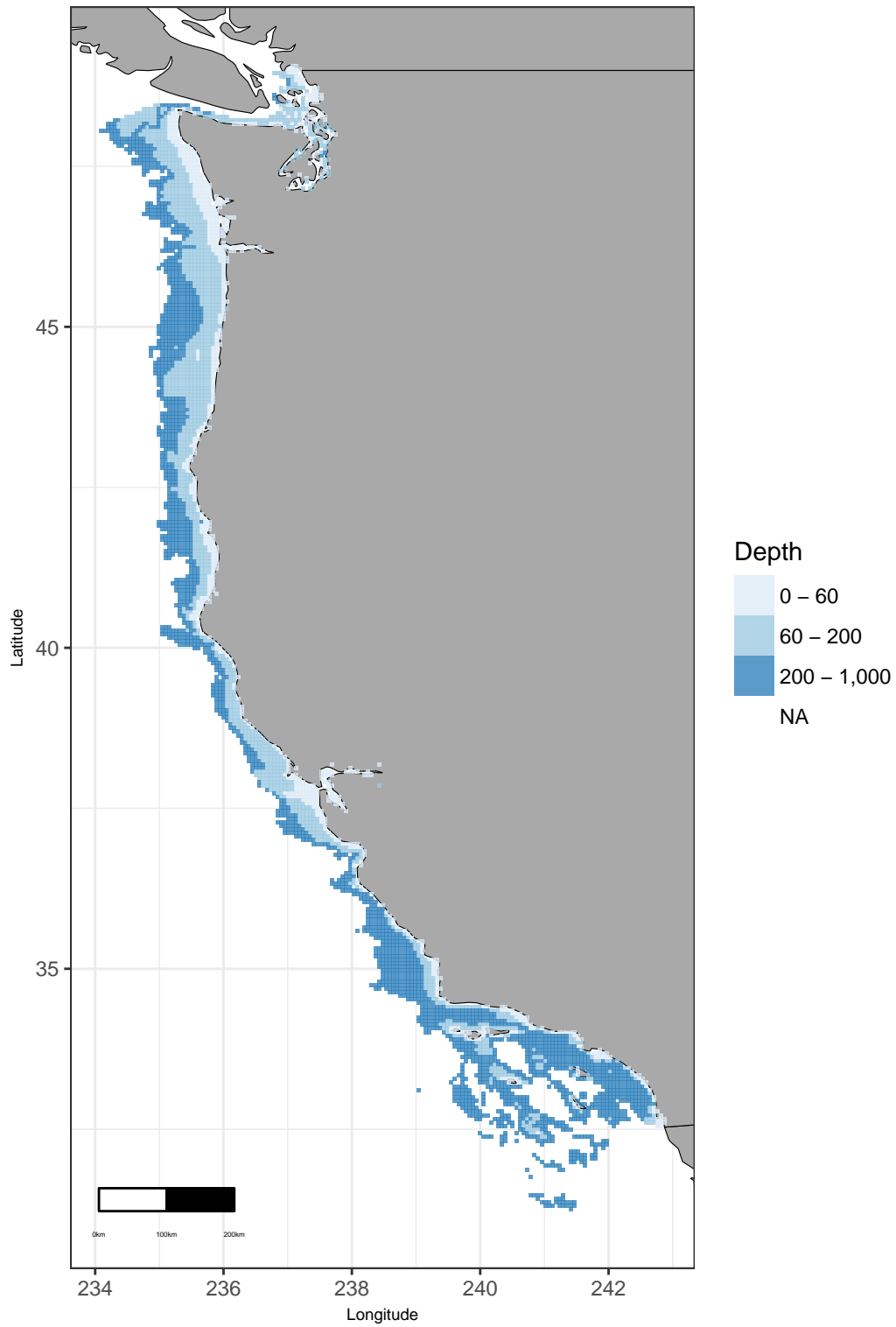


Figure 45: Map of viable depth in West region.

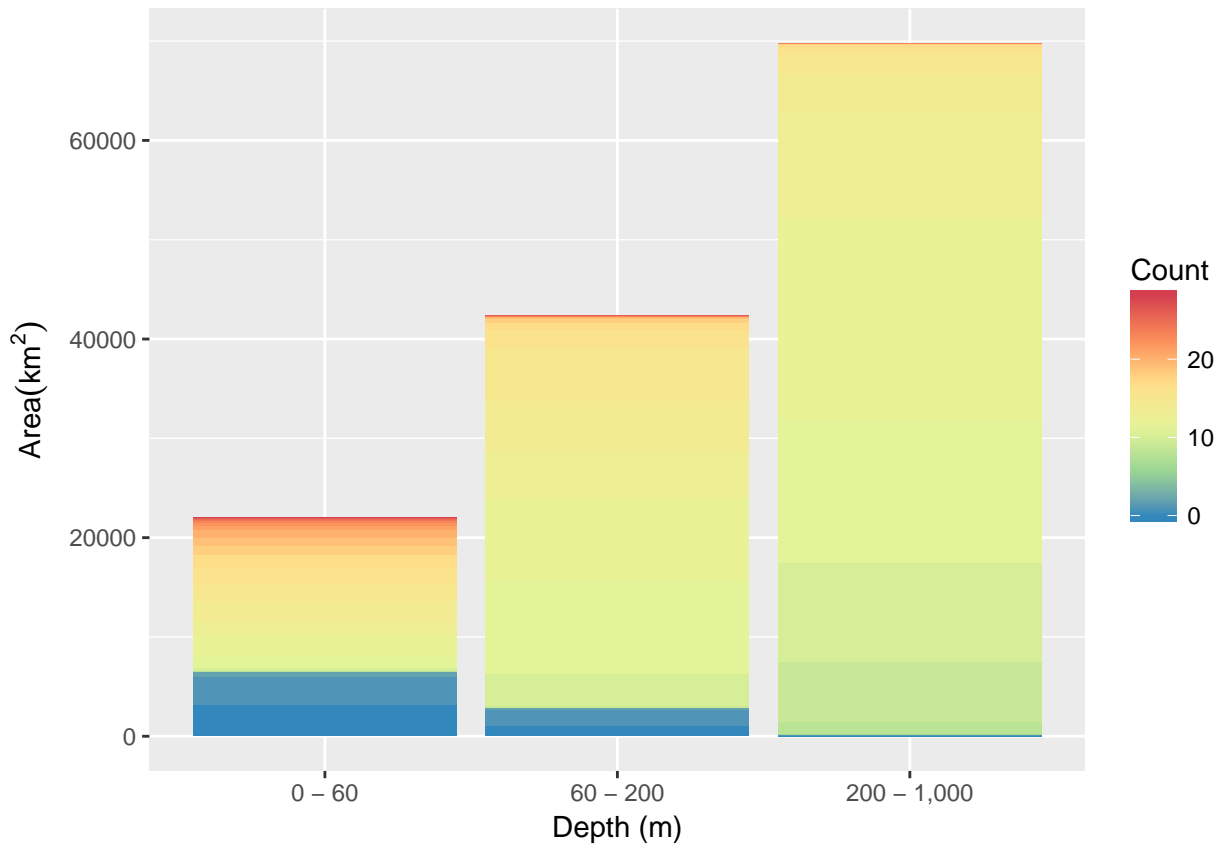


Figure 46: Area of Cumulative Ocean Use by Depth (m) for West region. Cumulative use are counted and summarized by Depth (m) and area.

West: Map of Tide

West: Plot of Uses by Tide

West: Table of Uses by Tide

Table 20: Area (km²) of Ocean Use by Tide (Win2) bin for West region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Ocean Use			Area (km ²) by Tide (Win2)				Total	Rank
Category	Layer	Component	500 - 1,000	1000 - 1,500	>1,500			
Total Area			82	20	26	131	0	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	1	1	0	2	18	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	1	0	0	1	20	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	2	0	0	2	16	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	█ 15 █	3 █	11 █	29	3	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Estuaries	█ 42 █	10 █	7 █	59	1	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Groundfish	1	0	0	1	26	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Seagrass	0	1	1	1	23	
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		█ 23 █	2 █	7 █	32	2	
Ocean Use Atlas for California	Alt Energy Future		█ 5	0	0	5	12	
Ocean Use Atlas for California	Aquaculture	1	1	0	1	21		
Ocean Use Atlas for California	Beach	█ 7	1	1	8	7		
Ocean Use Atlas for California	Com Benthic Fixed	█ 8	1	1	9	4		
Ocean Use Atlas for California	Com Dive	1	1	0	1	22		
Ocean Use Atlas for California	Com Pelagic	█ 8	1	1	9	4		
Ocean Use Atlas for California	Hunting	3	1	1	4	14		
Ocean Use Atlas for California	Kayak Fishing	█ 8	1	1	9	4		
Ocean Use Atlas for California	Military	█ 7	1	1	9	5		
Ocean Use Atlas for California	Mining	1	0	0	1	24		
Ocean Use Atlas for California	Motorized Boating	█ 8	1	1	9	4		
Ocean Use Atlas for California	Oil	█ 6	0	0	6	10		
Ocean Use Atlas for California	Paddling	█ 8	1	1	9	4		
Ocean Use Atlas for California	Rec Boat	█ 8	1	1	9	4		
Ocean Use Atlas for California	Rec Dive	█ 8	1	1	9	4		
Ocean Use Atlas for California	Rec Shore Harvest	█ 7	1	1	8	7		
Ocean Use Atlas for California	Sailing	█ 8	1	1	9	4		
Ocean Use Atlas for California	Scuba	3	1	0	3	15		
Ocean Use Atlas for California	Shipping	█ 7	0	0	7	8		
Ocean Use Atlas for California	Shore Fishing	█ 7	1	1	8	7		
Ocean Use Atlas for California	Surface Sports	█ 7	1	1	8	6		
Ocean Use Atlas for California	Swimming	1	1	0	2	17		
Ocean Use Atlas for California	Tidepooling	█ 6	1	0	7	9		
Ocean Use Atlas for California	Wildlife Viewing	█ 8	1	1	9	4		
Ocean Use Atlas for Oregon & Washington	Aquaculture	1	0	0	1	26		
Ocean Use Atlas for Oregon & Washington	Com Fishing Fixed	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Com Fishing Mobile	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Com Pelagic Fishing	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Cruise Ships	4	1	1	5	13		
Ocean Use Atlas for Oregon & Washington	Cultural Use	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Fishing Shore	1	0	0	1	25		
Ocean Use Atlas for Oregon & Washington	Hunting	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Marine Debris	1	0	0	1	27		
Ocean Use Atlas for Oregon & Washington	Military Operations	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Mining Mineral Est	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Motorized Boating	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Ocean Dumping	2	0	0	2	19		
Ocean Use Atlas for Oregon & Washington	Paddling	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Perm Research Areas	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Rec Dive Fishing	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Rec Fishing Ben Boats	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Rec Fishing Pel Boats	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Rec Gathering Shore	1	0	0	1	25		
Ocean Use Atlas for Oregon & Washington	Sailing	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Shipping	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Surface Board Sports	4	1	1	6	11		
Ocean Use Atlas for Oregon & Washington	Swimming	4	1	1	5	13		
Ocean Use Atlas for Oregon & Washington	Tide Pooling	1	0	0	1	28		
Ocean Use Atlas for Oregon & Washington	Wildlife Viewing Sea	4	1	1	6	11		

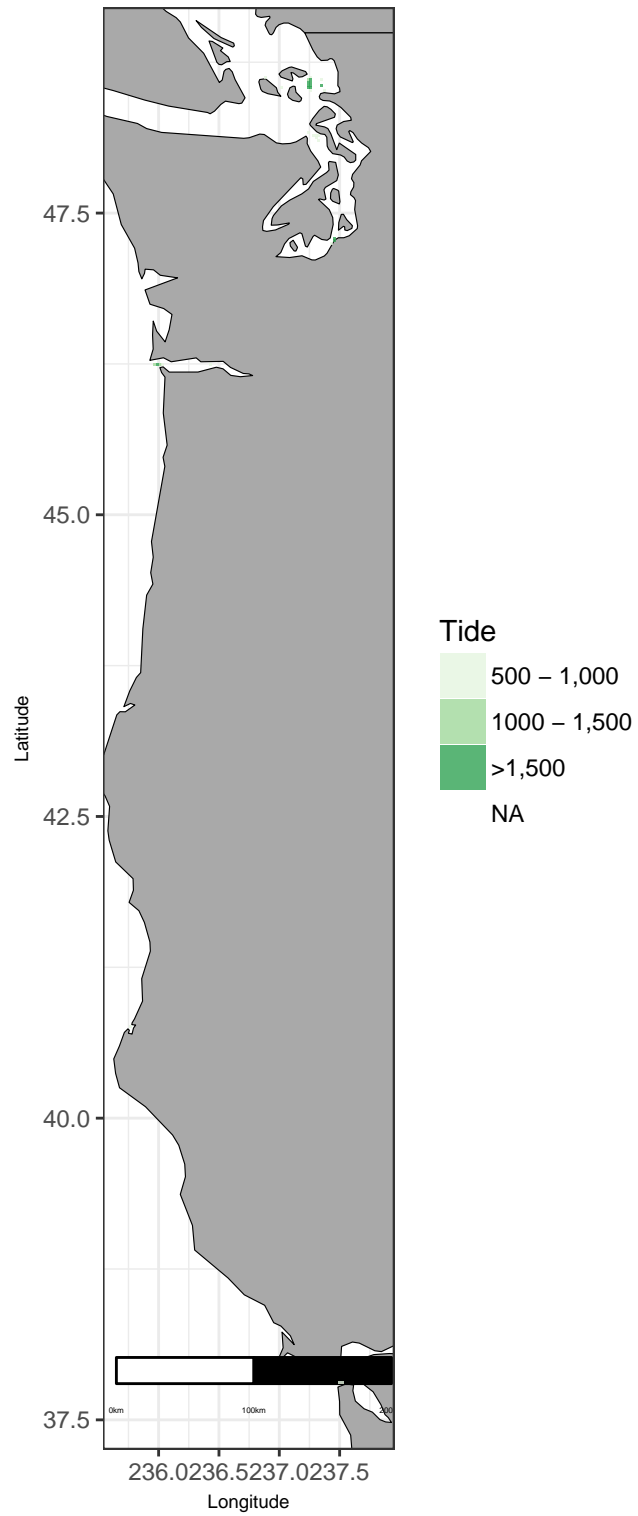


Figure 47: Map of viable tide in West region.

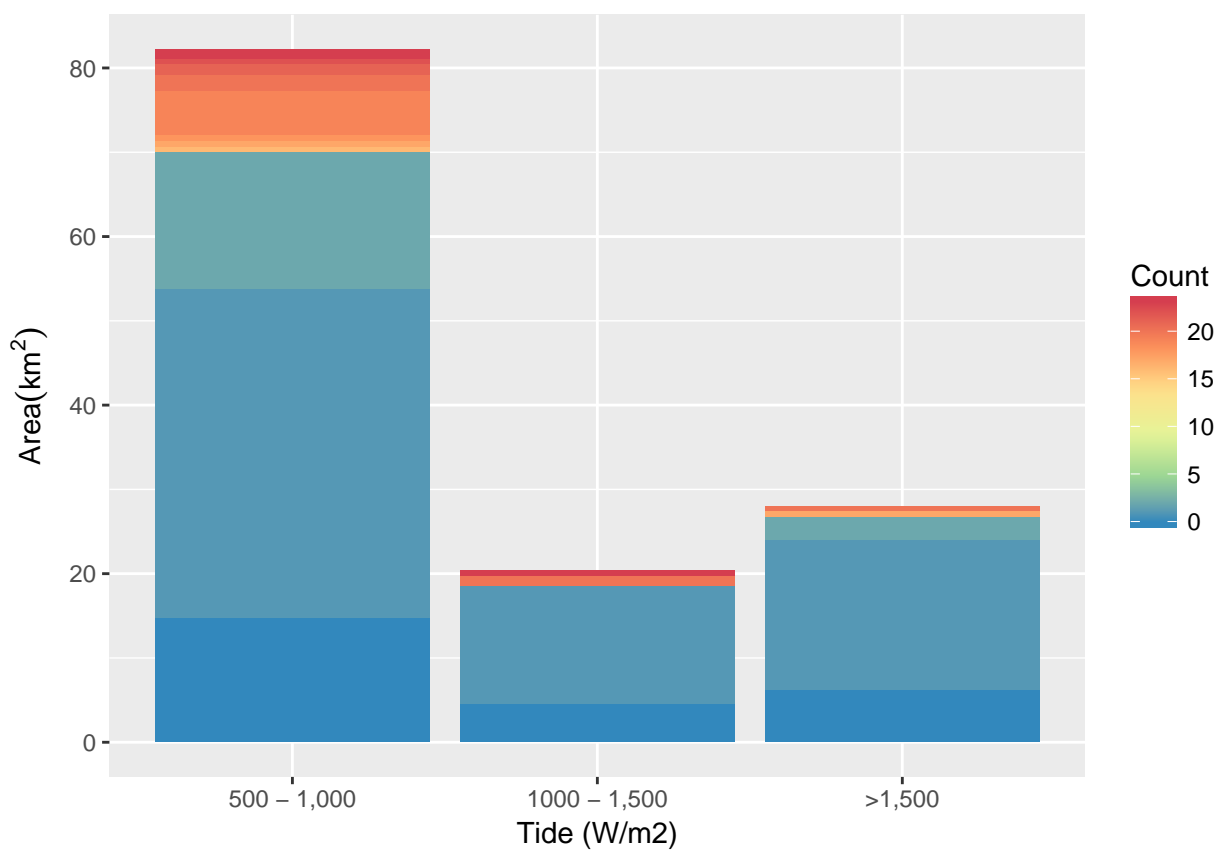


Figure 48: Area of Cumulative Ocean Use by Tide (W/m²) for West region. Cumulative use are counted and summarized by Tide (W/m²) and area.

West: Map of Wave

West: Plot of Uses by Wave

West: Table of Uses by Wave

Table 21: Area (km ²) of Ocean Use by Wave (Wave) bin for West region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.						
Ocean Use		Area (km ²) by Wave (Wave)				
Category	Layer	Component	0-20	20-30	>30	Total Rank
Total Area			6,680	10,608	12,295	49,583 0
Government: Commercial Leases	Active Oil & Gas Leases		0	128	13	140 49
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	391	1,742	2,872	5,004 22
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	2,463	4,399	7,884	14,745 12
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	51	18	0	69 54
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	616	888	238	1,742 31
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Canopy Kelp	271	156	18	445 45
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Echinacea	7	33	0	40 57
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Groundfish	172	1,284	902	2,358 29
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Rocky Beach	348	997	2,334	3,680 23
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Seagrass	2	14	0	16 60
Ocean Use: Transportation: Commercial Shipping	Shipping Lanes		112	252	174	538 39
Ocean Use: Aesthetics	Shellfish		1	0	0	1 62
	Oil Energy		1,864	4,289	6,429	12,578 14
	Agaculture		30	0	0	30 58
Ocean Use: Aesthetics for California	Beach		323	208	8	537 40
Ocean Use: Aesthetics for California	Cables		485	735	640	1,860 30
Ocean Use: Aesthetics for California	Com Benthic Field		2,416	3,10	7,219	19,780 7
Ocean Use: Aesthetics for California	Com Benthic Mobile		2,494	5,634	5,937	14,065 13
Ocean Use: Aesthetics for California	Com Dive		557	492	65	1,114 35
Ocean Use: Aesthetics for California	Com Kelp		384	399	73	857 37
Ocean Use: Aesthetics for California	Com Pelagic		4,200	3,74	7,022	19,572 8
Ocean Use: Aesthetics for California	Hunting		942	1,449	158	2,549 26
Ocean Use: Aesthetics for California	Kayak Fishing		2,666	3,711	1,836	8,213 19
Ocean Use: Aesthetics for California	Military		2,497	3,11	7,633	20,404 5
Ocean Use: Aesthetics for California	Mining		39	11	0	50 55
Ocean Use: Aesthetics for California	Motorized Boating		2,497	3,11	7,633	20,404 5
Ocean Use: Aesthetics for California	Oil		2,542	5,526	6,957	16,025 11
Ocean Use: Aesthetics for California	Paddling		2,775	3,512	1,322	7,609 20
Ocean Use: Aesthetics for California	Rac Boat		2,299	3,27	7,219	19,976 6
Ocean Use: Aesthetics for California	Rac Dive		2,698	2,868	438	5,201 21
Ocean Use: Aesthetics for California	Rac Shore Harvest		1,173	1,551	166	2,891 24
Ocean Use: Aesthetics for California	Sailing		2,497	3,11	7,633	20,404 5
Ocean Use: Aesthetics for California	Scuba		1,068	1,046	280	2,393 28
Ocean Use: Aesthetics for California	Shipping		1,662	4,537	4,392	10,591 17
Ocean Use: Aesthetics for California	Shore Fishing		332	224	10	567 38
Ocean Use: Aesthetics for California	Surface Sports		1,682	1,030	172	2,884 25
Ocean Use: Aesthetics for California	Swimming		286	134	0	400 46
Ocean Use: Aesthetics for California	Tidepooling		295	183	6	463 44
Ocean Use: Aesthetics for California	Wildlife Viewing		2,206	3,140	7,373	19,499 9
Ocean Use: Aesthetics for Oregon & Washington	Agaculture		2	0	0	2 61
Ocean Use: Aesthetics for Oregon & Washington	Com Dive		16	2	0	18 59
Ocean Use: Aesthetics for Oregon & Washington	Com Fishing Field		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Com Fishing Mobile		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Com Gathering Shore		2	42	0	44 56
Ocean Use: Aesthetics for Oregon & Washington	Com Pelagic Fishing		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Cruise Ships		29	24	9,678	9,731 18
Ocean Use: Aesthetics for Oregon & Washington	Cultural Use		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Fishing Shore		16	42	1	80 52
Ocean Use: Aesthetics for Oregon & Washington	Hunting		144	1,210	10,803	11,857 16
Ocean Use: Aesthetics for Oregon & Washington	Kayak Fishing		95	341	101	536 41
Ocean Use: Aesthetics for Oregon & Washington	Marine Debris		58	377	1,270	1,605 32
Ocean Use: Aesthetics for Oregon & Washington	Military Operations		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Mining Mineral Est		34	152	63	249 48
Ocean Use: Aesthetics for Oregon & Washington	Motorized Boating		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Ocean Dumping		6	299	11,719	12,024 15
Ocean Use: Aesthetics for Oregon & Washington	Offshore Oil Energy		2	40	268	319 47
Ocean Use: Aesthetics for Oregon & Washington	Paddling		134	683	142	959 36
Ocean Use: Aesthetics for Oregon & Washington	Peru Research Area		144	1,212	15,642	16,998 10
Ocean Use: Aesthetics for Oregon & Washington	Rac Dive		60	666	554	1,280 33
Ocean Use: Aesthetics for Oregon & Washington	Rac Fishing Rac Boat		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Rac Fishing Pel Boat		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Rac Gathering Shore		23	78	1	99 50
Ocean Use: Aesthetics for Oregon & Washington	Sailing		149	1,289	1,095	25,433 1
Ocean Use: Aesthetics for Oregon & Washington	Scuba Snorkeling		52	662	541	1,254 34
Ocean Use: Aesthetics for Oregon & Washington	Shipping		109	451	654	22,214 3
Ocean Use: Aesthetics for Oregon & Washington	Shore Use		15	59	1	74 53
Ocean Use: Aesthetics for Oregon & Washington	Surface Board Sports		92	396	28	517 42
Ocean Use: Aesthetics for Oregon & Washington	Swimming		92	396	28	516 43
Ocean Use: Aesthetics for Oregon & Washington	Tide Pooling		21	61	1	83 51
Ocean Use: Aesthetics for Oregon & Washington	Underwater Cables		50	113	2,282	2,444 27
Ocean Use: Aesthetics for Oregon & Washington	Wildlife Viewing Sea		149	1,289	1,095	25,433 1

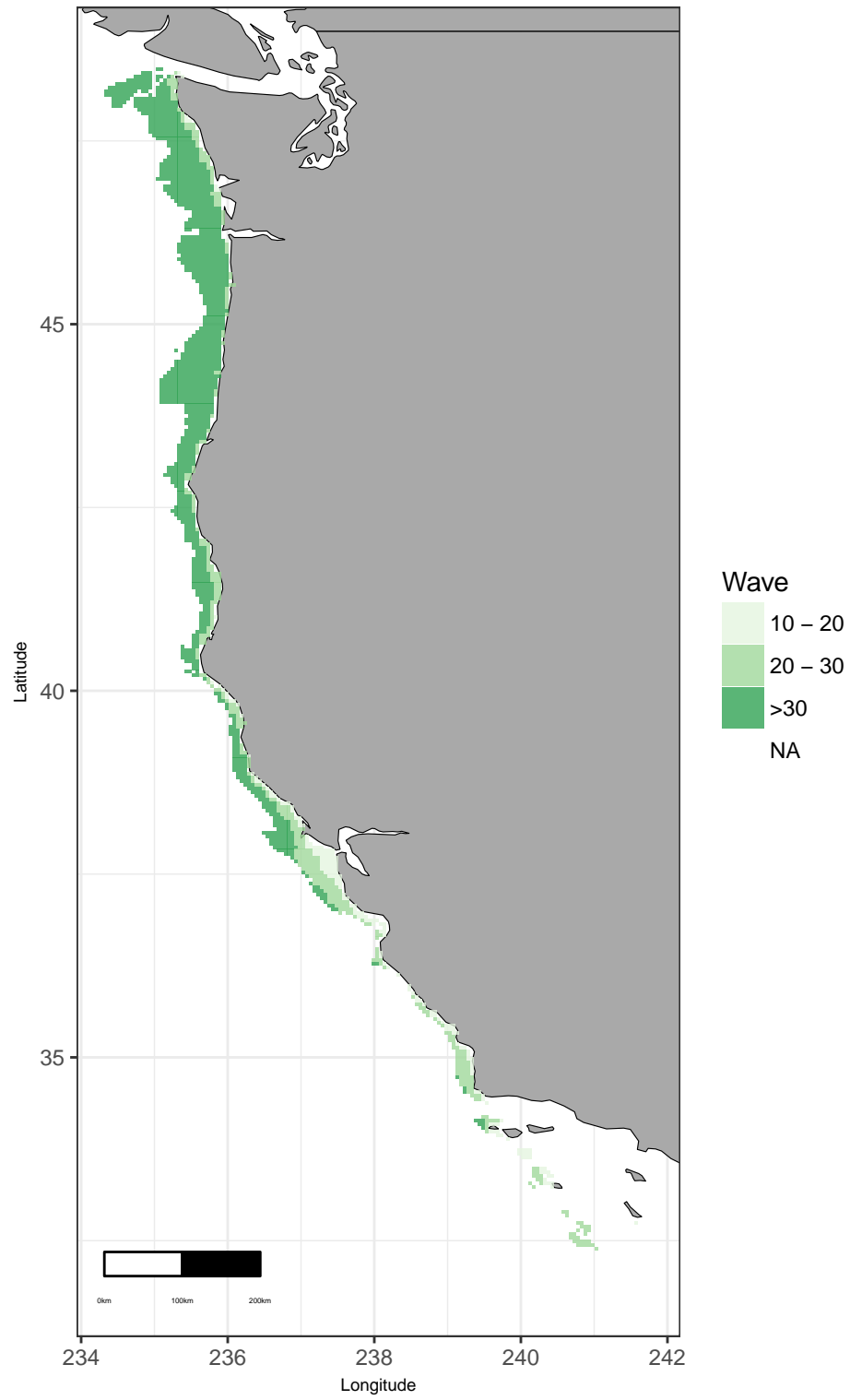


Figure 49: Map of viable wave in West region.

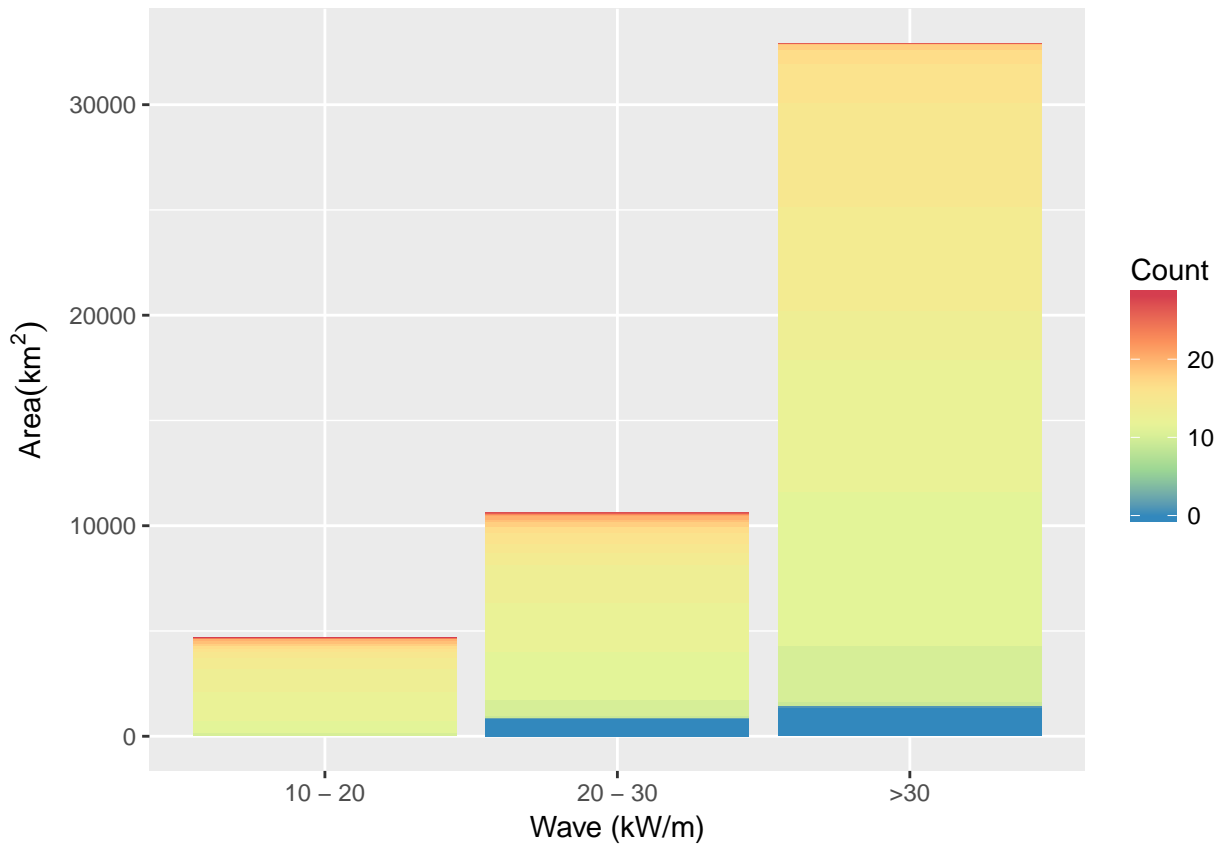


Figure 50: Area of Cumulative Ocean Use by Wave (kW/m) for West region. Cumulative use are counted and summarized by Wave (kW/m) and area.

West: Map of Wind

West: Plot of Uses by Wind

West: Table of Uses by Wind

Table 22: Area (km²) of Ocean Use by Wind (m/s @ Wind) for West region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin.

Category	Layer	Component	Area (km²) by Wind (m/s @ Wind)				Total	Rank
			7-8.5	8.5-10	>10	95-99		
Governance: Commercial Lanes	Total Area		18,312	33,008	4,231	196,501	0	
	Active Oil & Gas Lanes		1	212	14	0	226	53
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	10,171	3,645	9	13,826	25	
	Marine Protected Areas	National Marine Sanctuaries	16,754	2,879	0	19,634	20	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	208	66	0	274	49	
	Marine Protected Areas	National Wildlife Refuge System	4	0	0	4	65	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	1,512	491	5	2,008	33	
	Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Cannery Kelp	138	29	0	167	55
Essential Fish Habitat		Eumecetes	387	0	0	387	46	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Groundfish	2,611	942	0	3,553	31	
	Essential Fish Habitat	Rocky Beach	4,132	2,097	132	6,081	27	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Seagrass	106	0	0	106	59	
	Ocean Use: Transportation: Commercial Shipping	Shipping Lanes		659	243	0	904	41
Ocean Use Adjacent to California		All Energy Future	11,048	5,379	36	16,462	22	
Ocean Use Adjacent to California	Aggregations		24	0	0	24	64	
	Ocean Use Adjacent to California	Beach	244	33	0	278	48	
Ocean Use Adjacent to California	Cables		6,446	561	0	7,007	26	
	Ocean Use Adjacent to California	Com Benthic Food	28,916	14,445	1,977	45,338	6	
Ocean Use Adjacent to California	Com Benthic Mobile		21,692	11,215	1,962	34,869	14	
	Ocean Use Adjacent to California	Com Dive	954	143	0	1,077	37	
Ocean Use Adjacent to California	Com Kelp		114	10	0	125	57	
	Ocean Use Adjacent to California	Com Pelagic	10,379	14,883	1,977	47,239	4	
Ocean Use Adjacent to California	Hunting		10,183	5,248	0	15,431	24	
	Ocean Use Adjacent to California	Kayak Fishing	3,899	734	30	4,662	29	
Ocean Use Adjacent to California	Military		10,698	15,243	1,977	48,018	1	
	Ocean Use Adjacent to California	Mining	32	0	0	32	63	
Ocean Use Adjacent to California	Material Bunting		10,698	15,243	1,977	48,018	1	
	Ocean Use Adjacent to California	Oil	29,699	15,136	1,976	46,811	5	
Ocean Use Adjacent to California	Paddling		3,830	827	54	4,710	28	
	Ocean Use Adjacent to California	Rec Boat	10,516	14,942	1,977	47,435	3	
Ocean Use Adjacent to California	Rec Dive		3,693	242	0	3,335	32	
	Ocean Use Adjacent to California	Rec Shore Harvest	10,265	5,280	0	15,515	23	
Ocean Use Adjacent to California	Sailing		10,698	15,312	1,977	47,986	2	
	Ocean Use Adjacent to California	Scuba	1,519	239	0	1,798	34	
Ocean Use Adjacent to California	Shipping		27,881	11,922	249	39,052	13	
	Ocean Use Adjacent to California	Shore Fishing	193	6	0	199	54	
Ocean Use Adjacent to California	Surface Sports		1,321	227	0	1,548	36	
	Ocean Use Adjacent to California	Swimming	72	0	0	72	62	
Ocean Use Adjacent to California	Tidepooling		219	23	0	242	51	
	Ocean Use Adjacent to Oregon & Washington	Wildlife Viewing	27,693	14,671	1,962	39,326	12	
Ocean Use Adjacent to Oregon & Washington	Aggregations		266	0	0	266	50	
	Ocean Use Adjacent to Oregon & Washington	Com Dive Fishing	1	0	0	1	67	
Ocean Use Adjacent to Oregon & Washington	Com Fishing Food		25,336	16,056	2,163	43,554	7	
	Ocean Use Adjacent to Oregon & Washington	Com Fishing Mobile	23,324	16,030	2,163	43,517	9	
Ocean Use Adjacent to Oregon & Washington	Com Gathering Shore		237	0	0	237	62	
	Ocean Use Adjacent to Oregon & Washington	Com Pelagic Fishing	25,336	16,056	2,163	43,554	7	
Ocean Use Adjacent to Oregon & Washington	Cruise Ships		12,866	9,948	409	23,223	19	
	Ocean Use Adjacent to Oregon & Washington	Cultural Use	25,336	16,056	2,163	43,554	7	
Ocean Use Adjacent to Oregon & Washington	Fishing Shores		86	0	0	86	60	
	Ocean Use Adjacent to Oregon & Washington	Hunting	17,950	0	0	17,950	21	
Ocean Use Adjacent to Oregon & Washington	Kayak Fishing		476	0	0	476	43	
	Ocean Use Adjacent to Oregon & Washington	Marine Debris	1,622	0	0	1,622	35	
Ocean Use Adjacent to Oregon & Washington	Military Operations		25,336	16,056	2,163	43,554	7	
	Ocean Use Adjacent to Oregon & Washington	Mining Mineral Est	533	0	0	533	42	
Ocean Use Adjacent to Oregon & Washington	Material Bunting		19,728	12,202	1,976	33,908	15	
	Ocean Use Adjacent to Oregon & Washington	Ocean Dredging	18,184	6,202	0	24,386	17	
Ocean Use Adjacent to Oregon & Washington	Offshore All Energy		260	118	0	377	47	
	Ocean Use Adjacent to Oregon & Washington	Paddling	984	0	0	984	39	
Ocean Use Adjacent to Oregon & Washington	Prime Research Areas		19,044	5,027	1	24,071	18	
	Ocean Use Adjacent to Oregon & Washington	Rec Dive Fishing	1,032	0	0	1,032	38	
Ocean Use Adjacent to Oregon & Washington	Rec Fishing Rec Boat		24,833	12,613	2,163	39,609	11	
	Ocean Use Adjacent to Oregon & Washington	Rec Fishing Pel Boats	25,336	16,056	2,163	43,554	7	
Ocean Use Adjacent to Oregon & Washington	Rec Gathering Shore		126	0	0	126	56	
	Ocean Use Adjacent to Oregon & Washington	Sailing	25,336	16,055	2,163	43,554	8	
Ocean Use Adjacent to Oregon & Washington	Scuba Scuba/Boat		962	0	0	962	40	
	Ocean Use Adjacent to Oregon & Washington	Shipping	22,248	16,056	2,163	40,467	10	
Ocean Use Adjacent to Oregon & Washington	Shore Use		79	0	0	79	61	
	Ocean Use Adjacent to Oregon & Washington	Surface Board Sports	464	0	0	464	44	
Ocean Use Adjacent to Oregon & Washington	Swimming		406	0	0	406	45	
	Ocean Use Adjacent to Oregon & Washington	Tide Pooling	119	0	0	119	58	
Ocean Use Adjacent to Oregon & Washington	Underwater Cables		3,047	1,217	0	4,264	30	
	Ocean Use Adjacent to Oregon & Washington	Underwater Pipelines	1	0	0	1	66	
Ocean Use Adjacent to Oregon & Washington	Wildlife Viewing Sea		16,741	9,954	855	27,550	16	

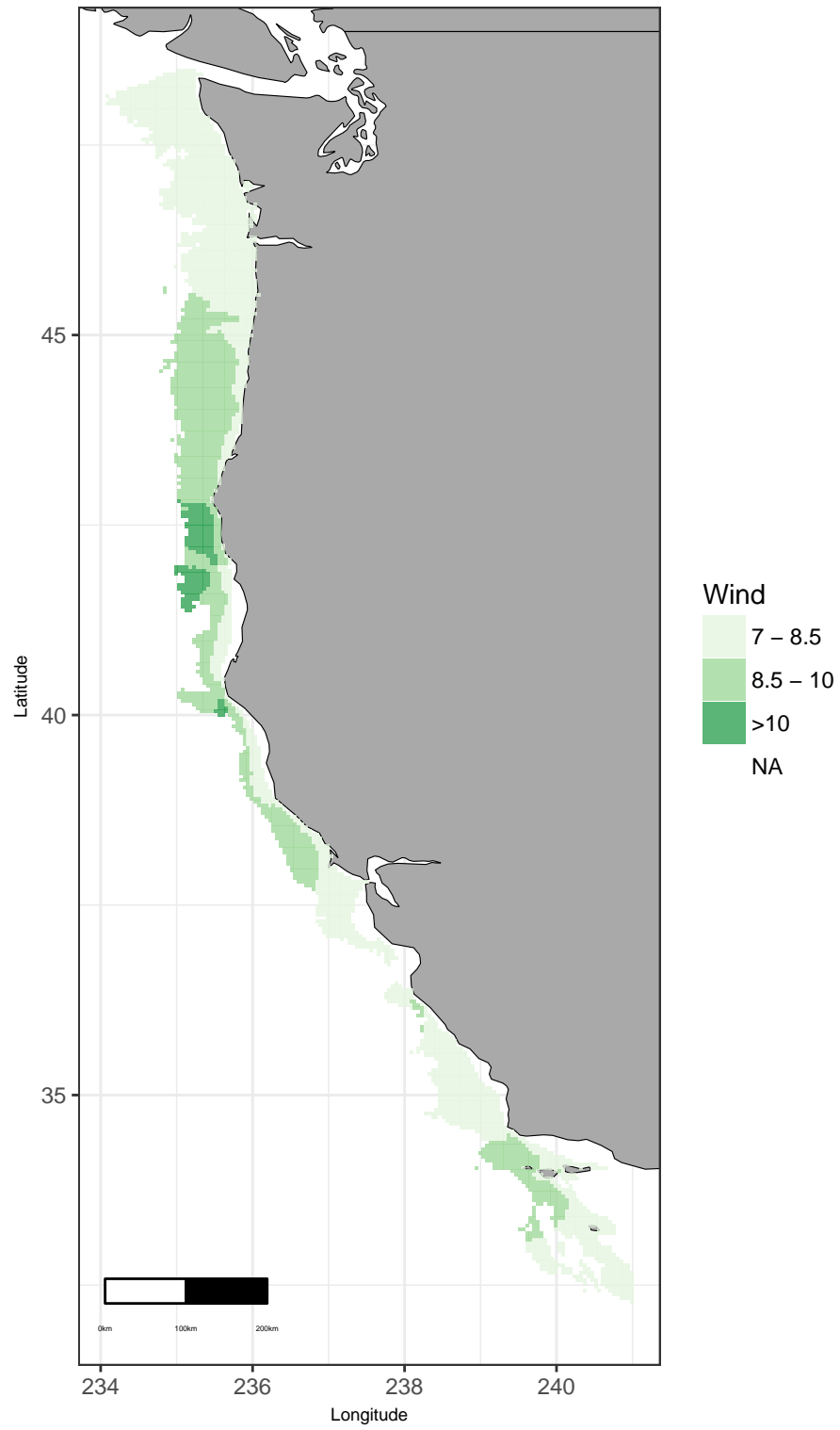


Figure 51: Map of viable wind in West region.

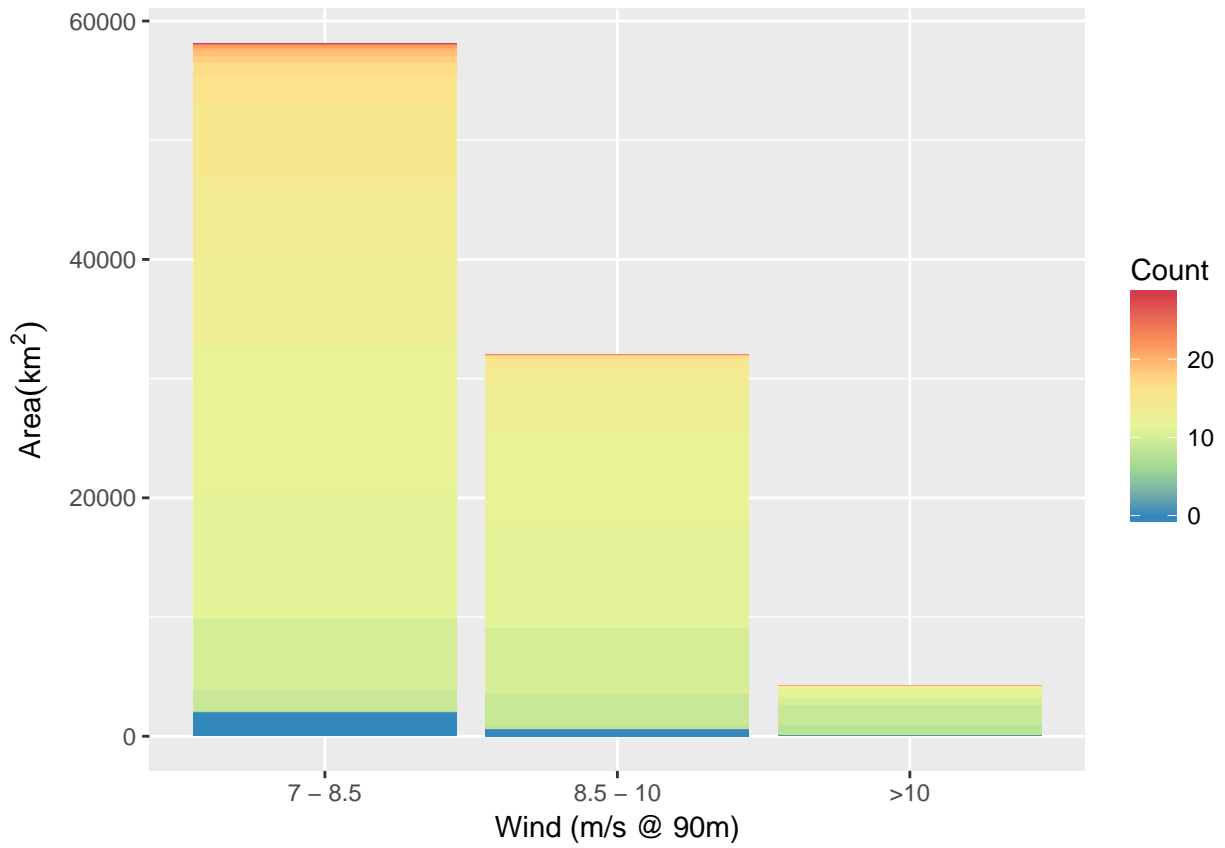


Figure 52: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for West region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.