

# Ocean Uses and Marine Renewable Energy

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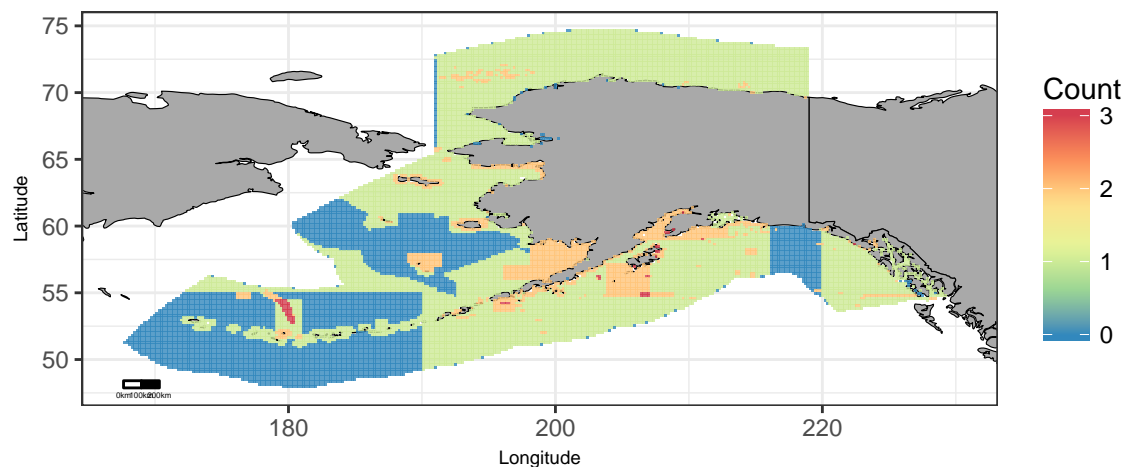


Figure 1: Map of cumulative ocean use in Alaska region.

## Ocean Use Datasets

Existence of ocean use datasets across regions.

	Source	Dataset	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/m <sup>2</sup> )								
11	NREL	Wave (kW/m)								
12	NREL	Wind (m/s @ 90m)								

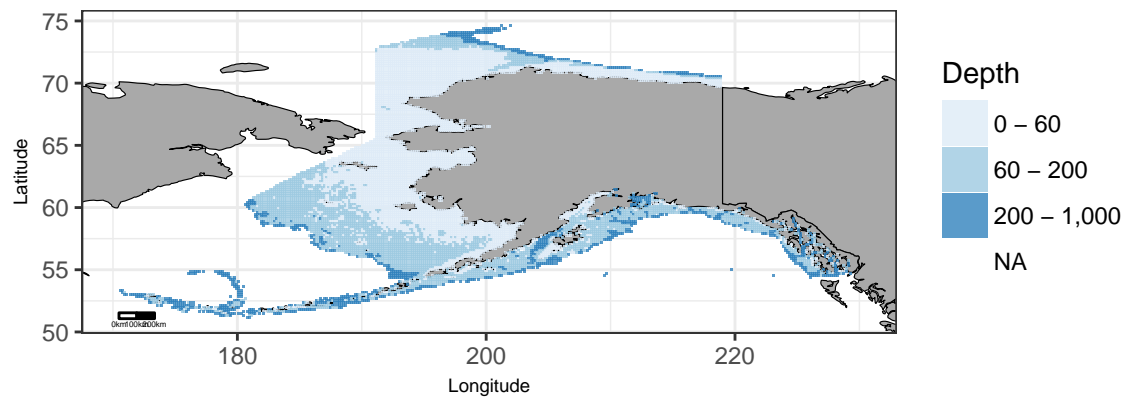


Figure 2: Map of viable depth in Alaska region.

## Alaska

### Alaska: Map of Uses

### Alaska: Map of Depth

### Alaska: Plot of Uses by Depth

### Alaska: Table of Uses by Depth

Table 1: Area (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)								
Category	Dataset	Layer	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	4	0	0		517		517		10
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Skate	0		113		165		279		11

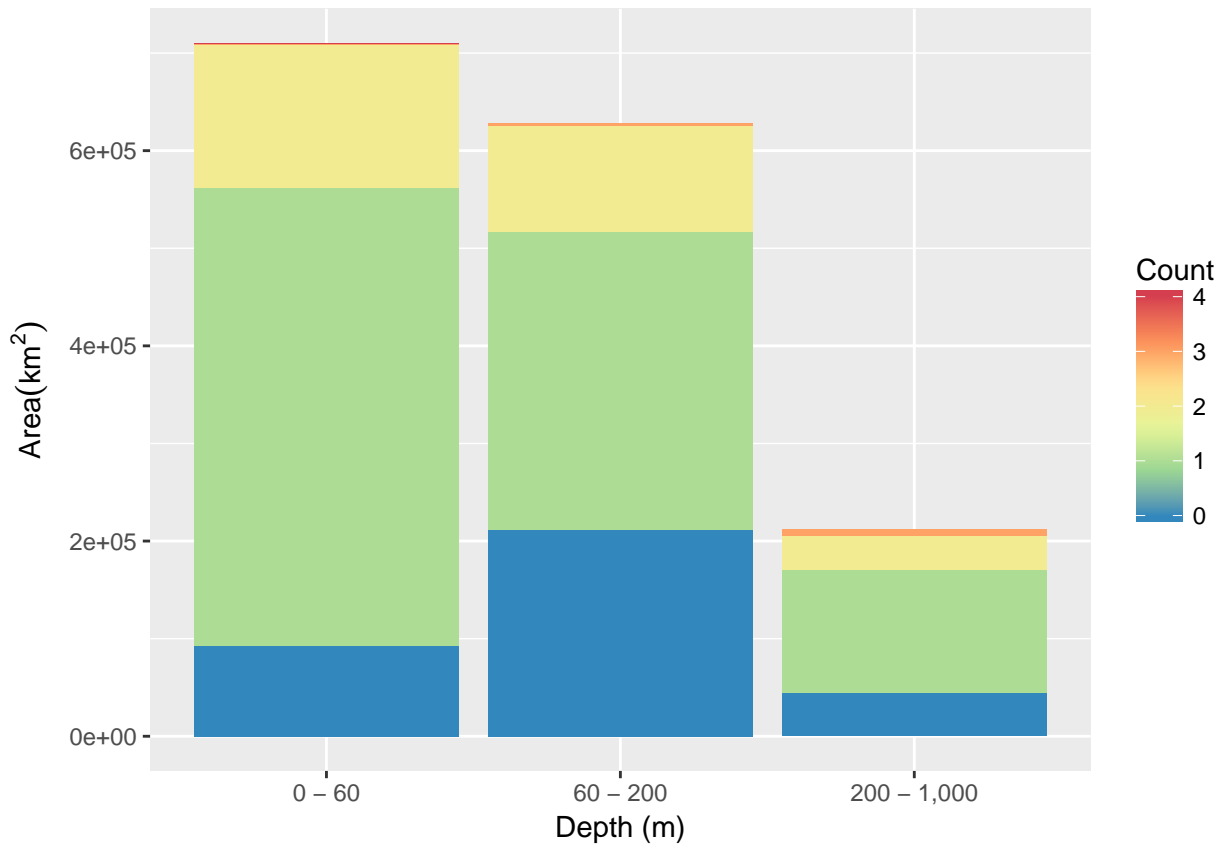


Figure 3: Area of Cumulative Ocean Use by Depth (m) for Alaska region. Cumulative use are counted and summarized by Depth (m) and area.

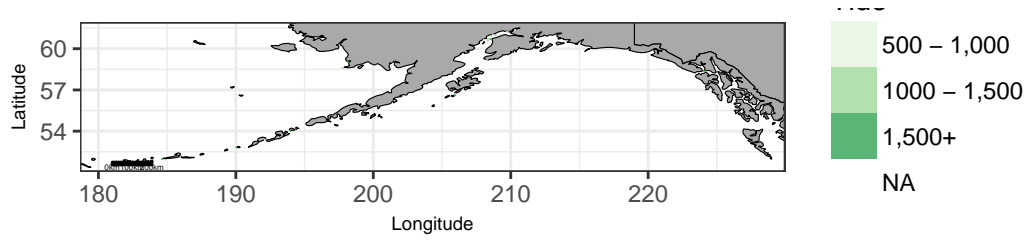


Figure 4: Map of viable tide in Alaska region.

## Alaska: Map of Tide

## Alaska: Plot of Uses by Tide

## Alaska: Table of Uses by Tide

Table 2: Area (km<sup>2</sup>) 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 Tide (W/m2) bin.

Ocean Use			Area (km <sup>2</sup> ) by Tide (W/m2)				Total	Rank
Category	Dataset	Layer	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

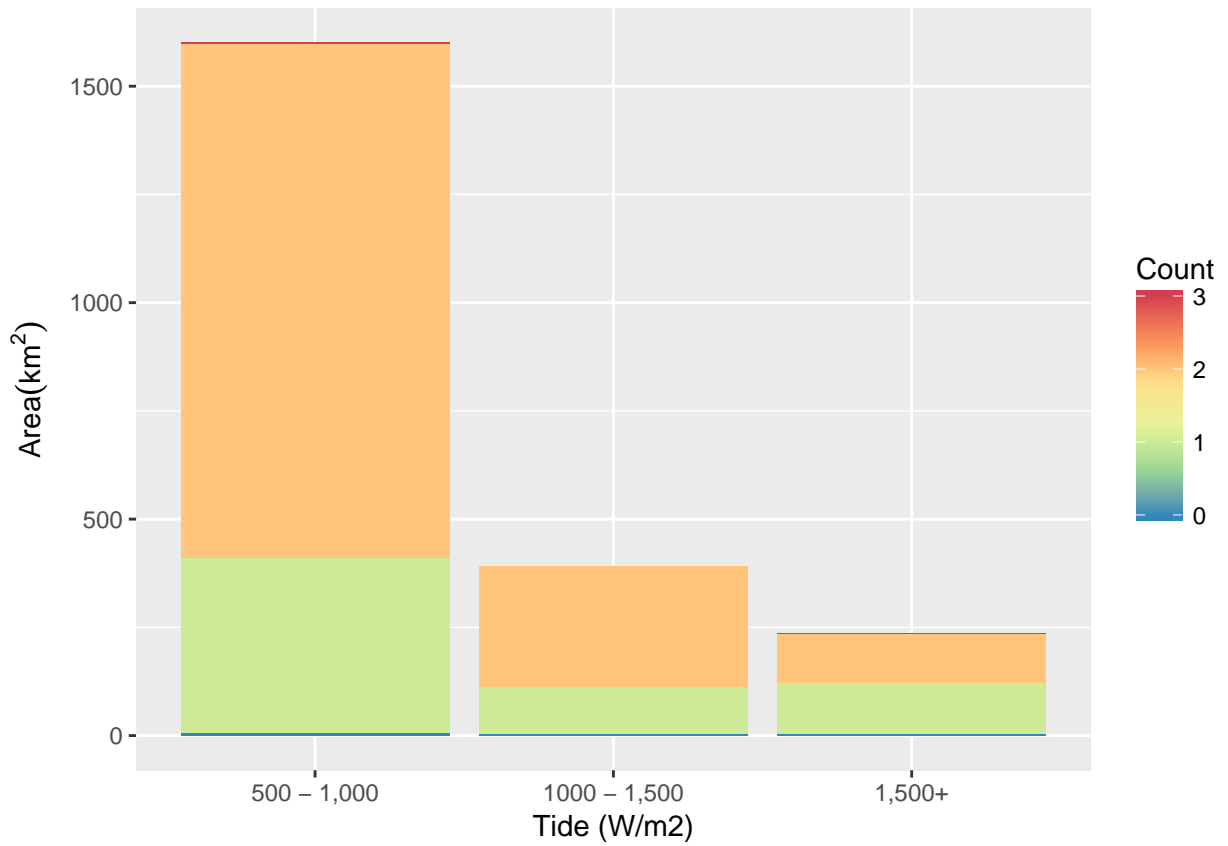


Figure 5: Area of Cumulative Ocean Use by Tide (W/m²) for Alaska region. Cumulative use are counted and summarized by Tide (W/m²) and area.

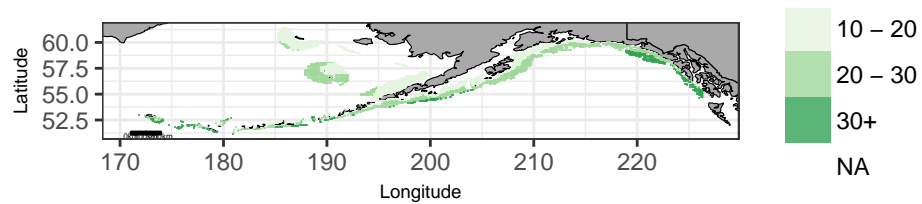


Figure 6: Map of viable wave in Alaska region.

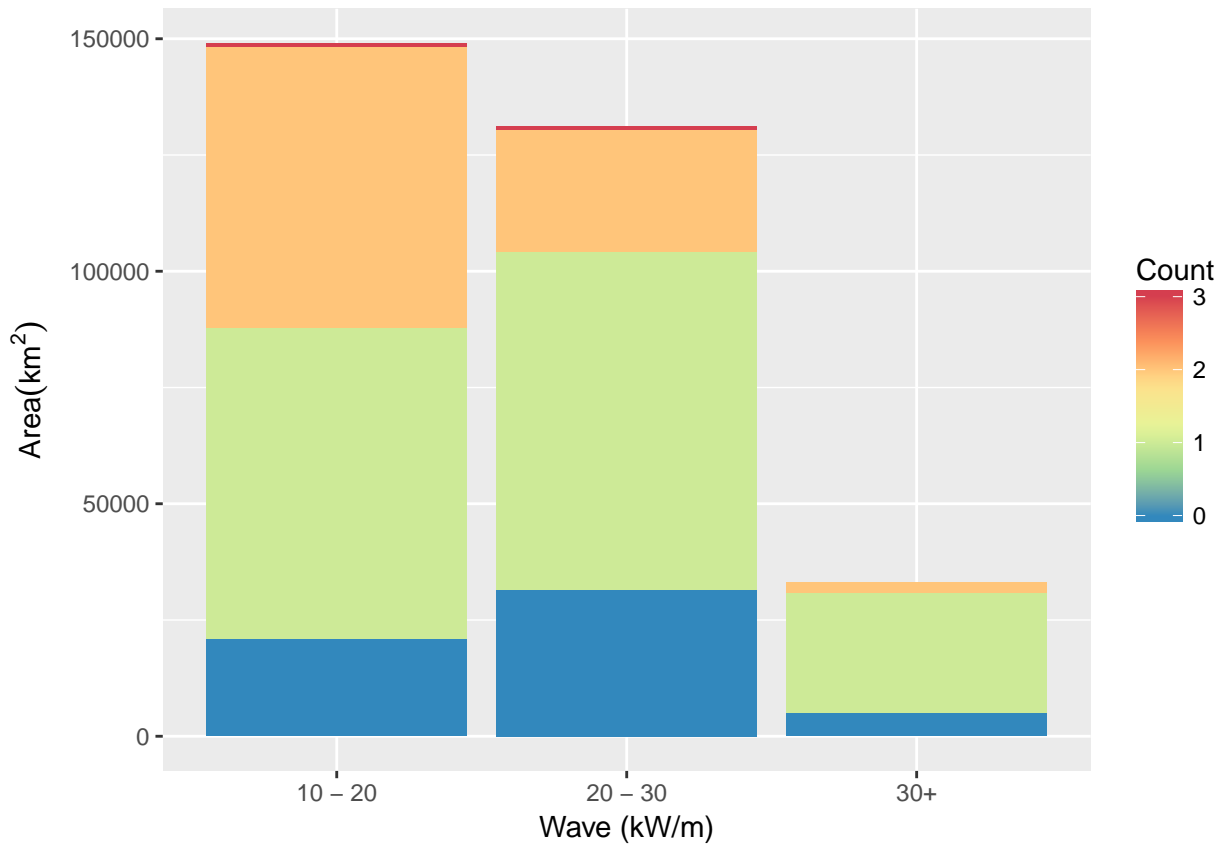


Figure 7: Area of Cumulative Ocean Use by Wave (kW/m) for Alaska region. Cumulative use are counted and summarized by Wave (kW/m) and area.



## Alaska: Map of Wave

## Alaska: Plot of Uses by Wave

## Alaska: Table of Uses by Wave

Table 3: Area (km<sup>2</sup>) 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 Wave (kW/m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Wave (kW/m)				Rank
Category	Dataset	Layer	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

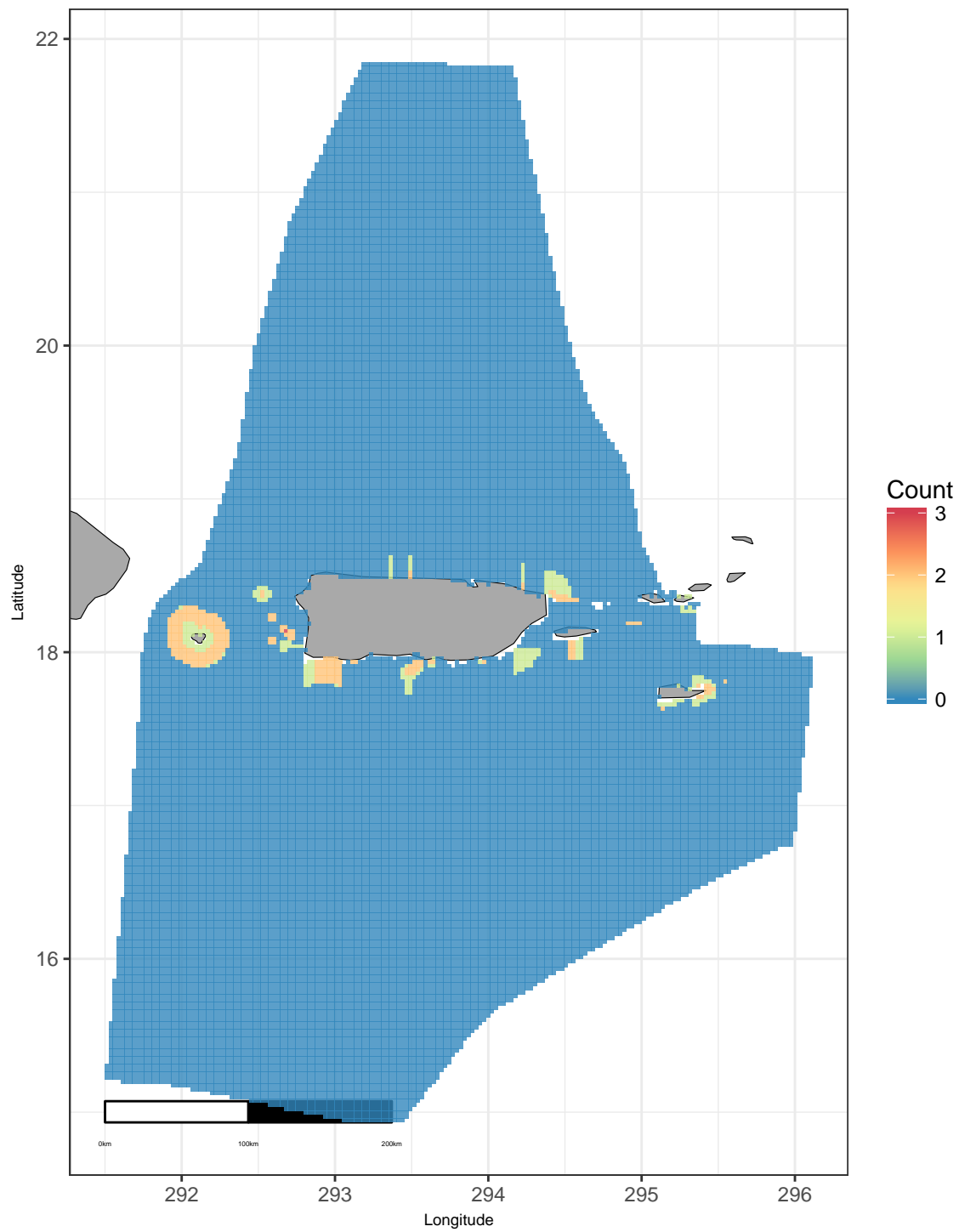


Figure 8: Map of cumulative ocean use in Atlantic Islands region.

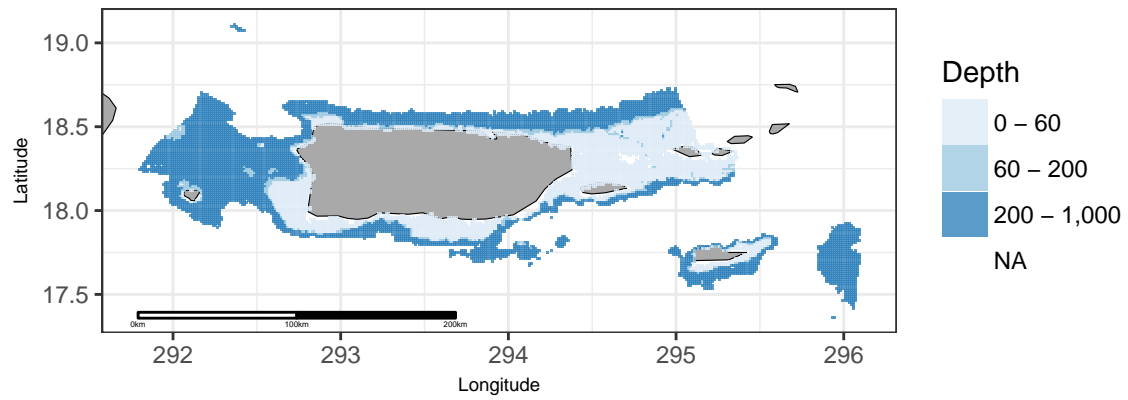


Figure 9: Map of viable depth in Atlantic Islands region.

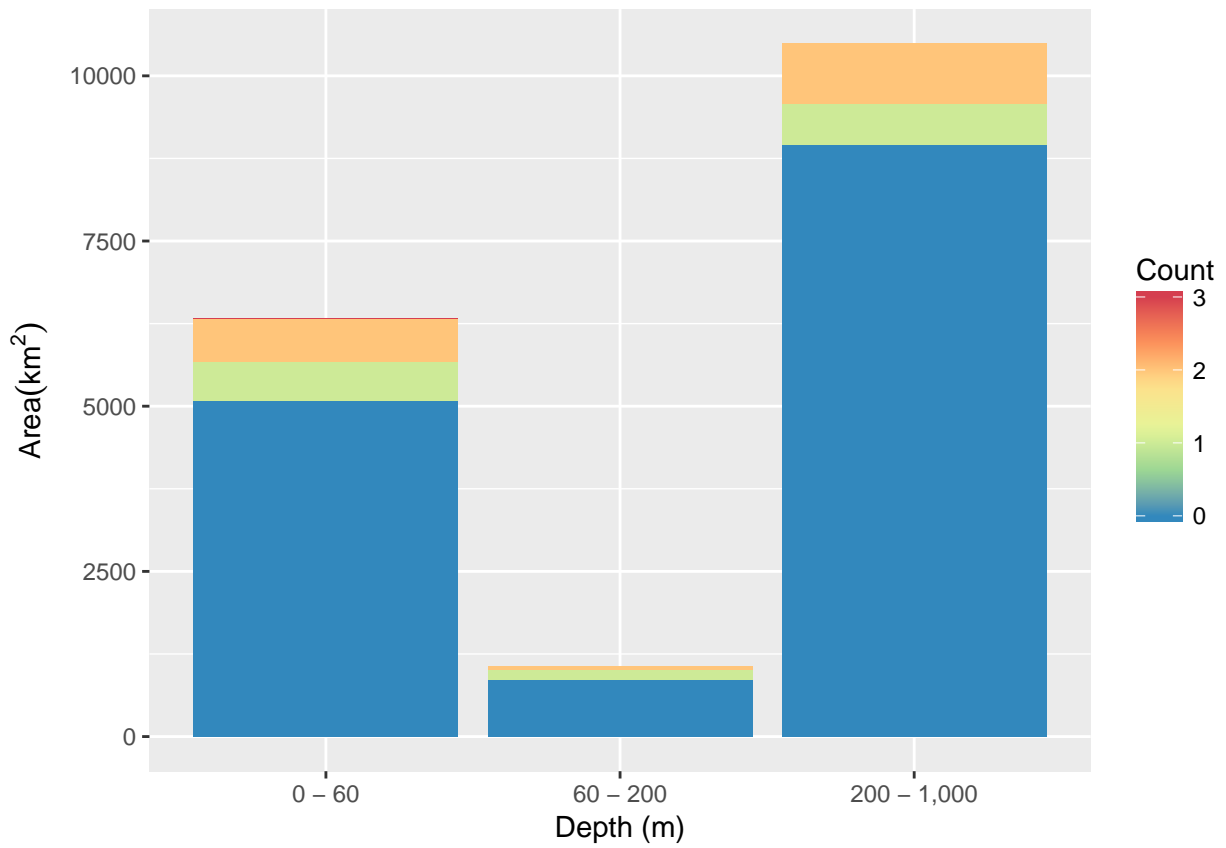


Figure 10: Area of Cumulative Ocean Use by Depth (m) for Atlantic Islands region. Cumulative use are counted and summarized by Depth (m) and area.

## 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 (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)								
Category	Dataset	Layer	0 - 60		60 - 200		200 - 1,000		Total	Rank	
	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 (km<sup>2</sup>) 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 Wave (kW/m) bin.

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

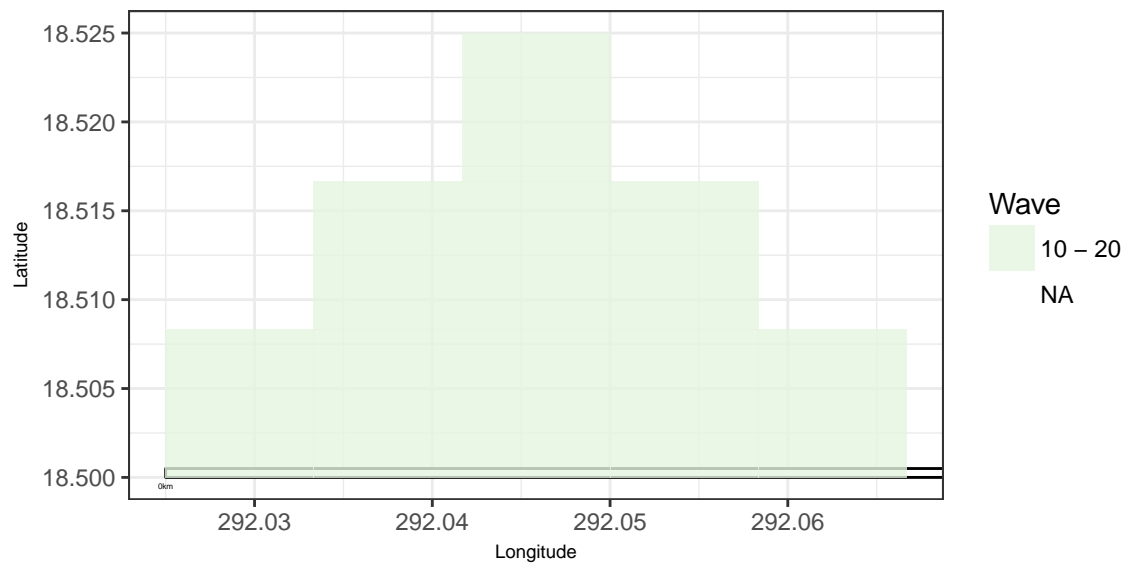


Figure 11: Map of viable wave in Atlantic Islands region.

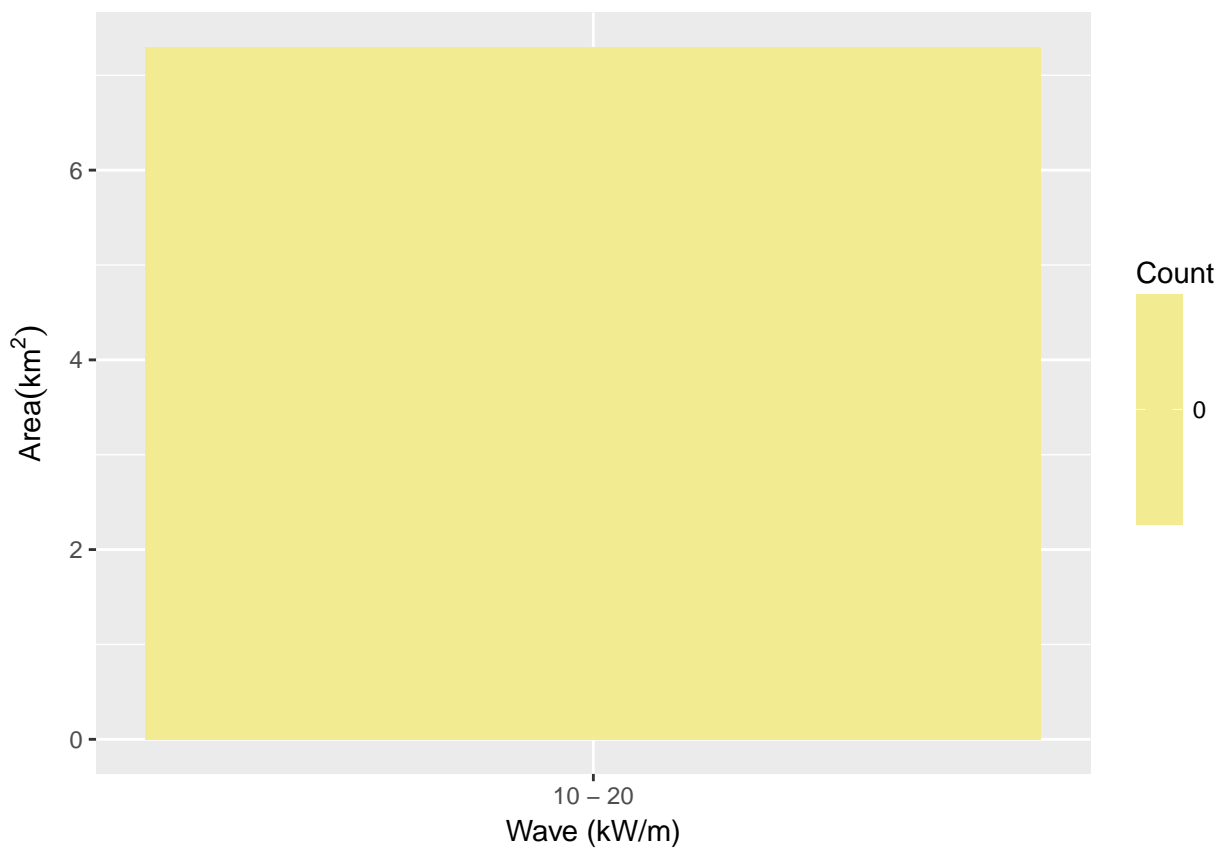


Figure 12: Area of Cumulative Ocean Use by Wave (kW/m) for Atlantic Islands region. Cumulative use are counted and summarized by Wave (kW/m) and area.

## East

### East: Map of Uses

### East: Map of Depth

### East: Plot of Uses by Depth

### East: Table of Uses by Depth

Table 6: Area (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)				Rank
Category	Dataset	Layer	0 - 60	60 - 200	200 - 1,000	Total	
	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

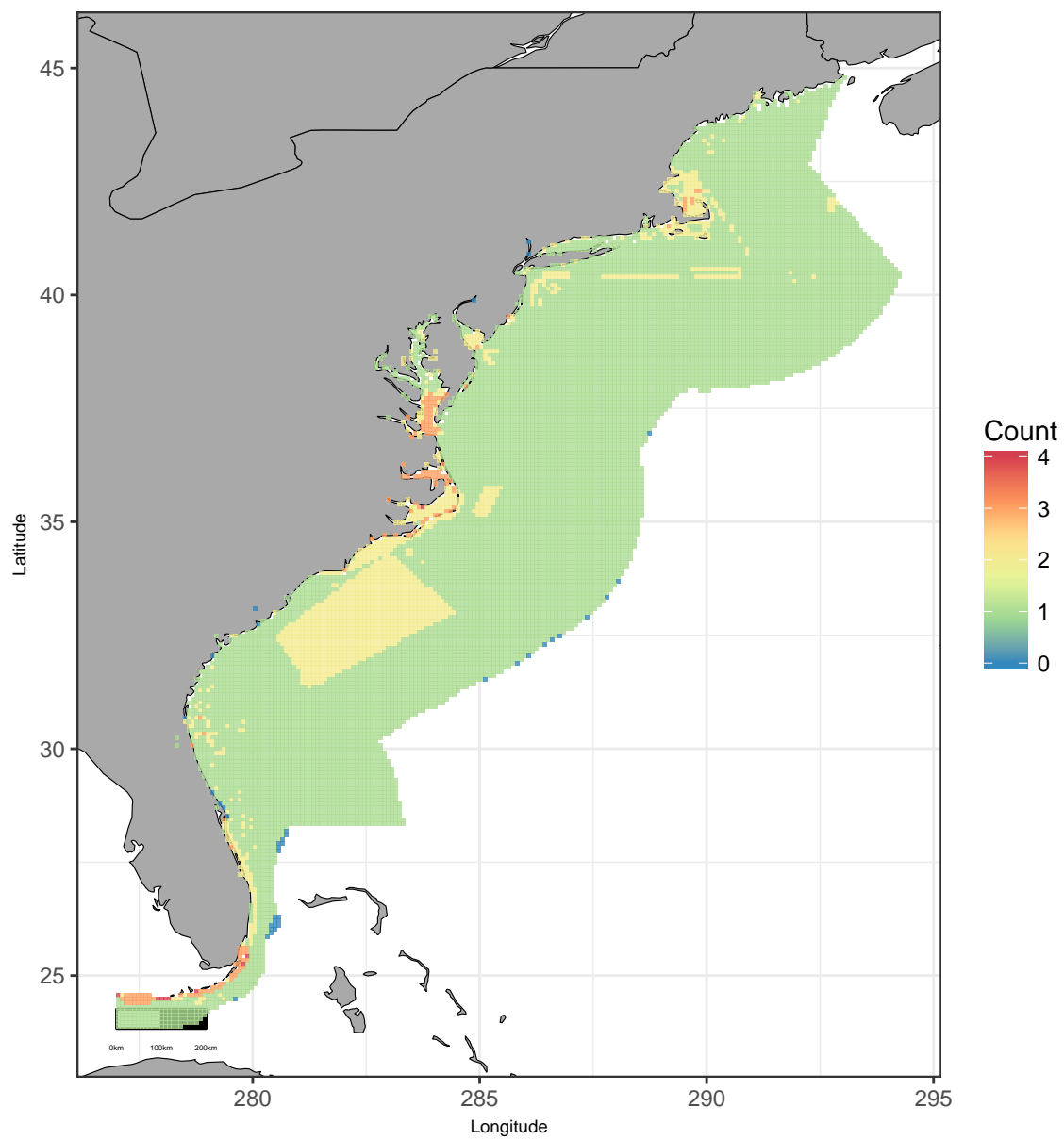


Figure 13: Map of cumulative ocean use in East region.

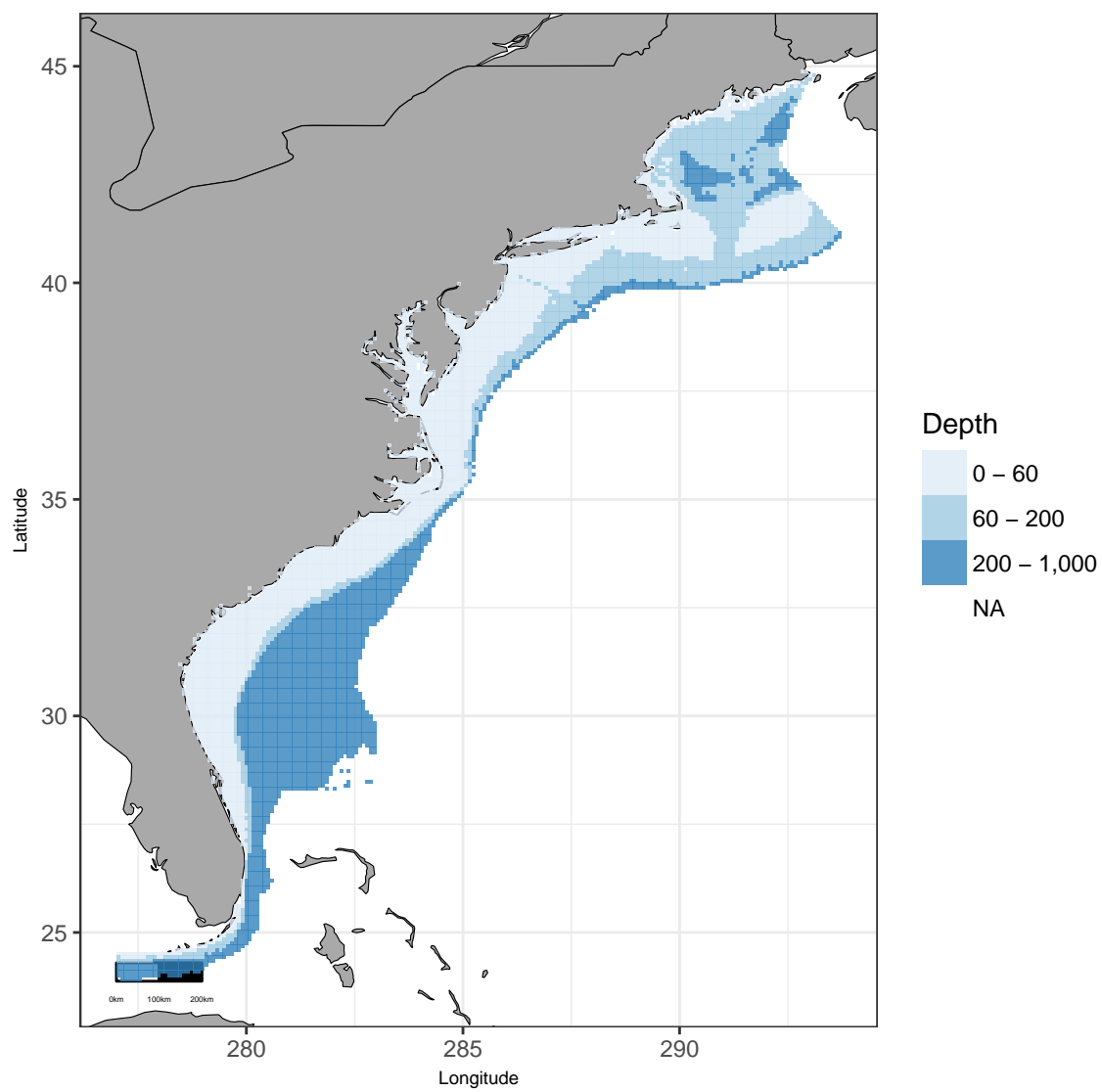


Figure 14: Map of viable depth in East region.



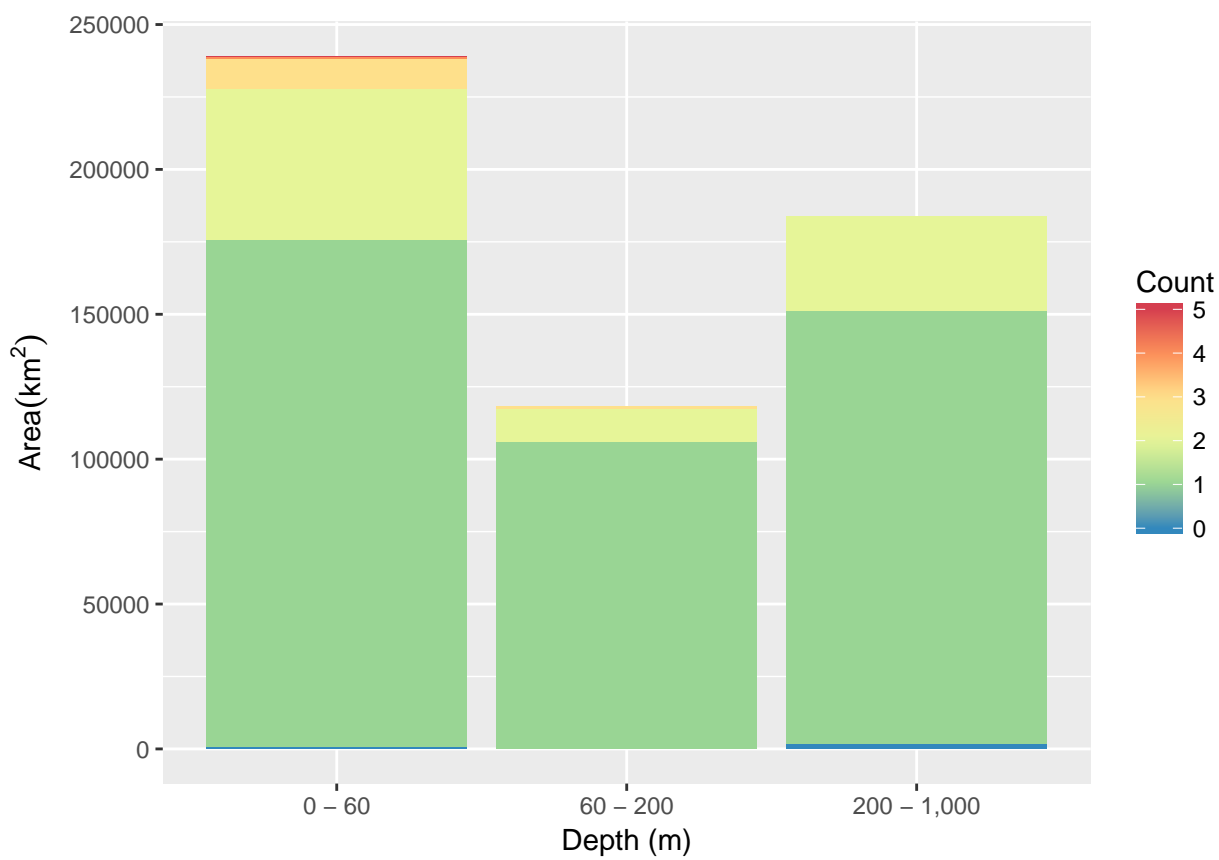


Figure 15: Area of Cumulative Ocean Use by Depth (m) for East region. Cumulative use are counted and summarized by Depth (m) and area.

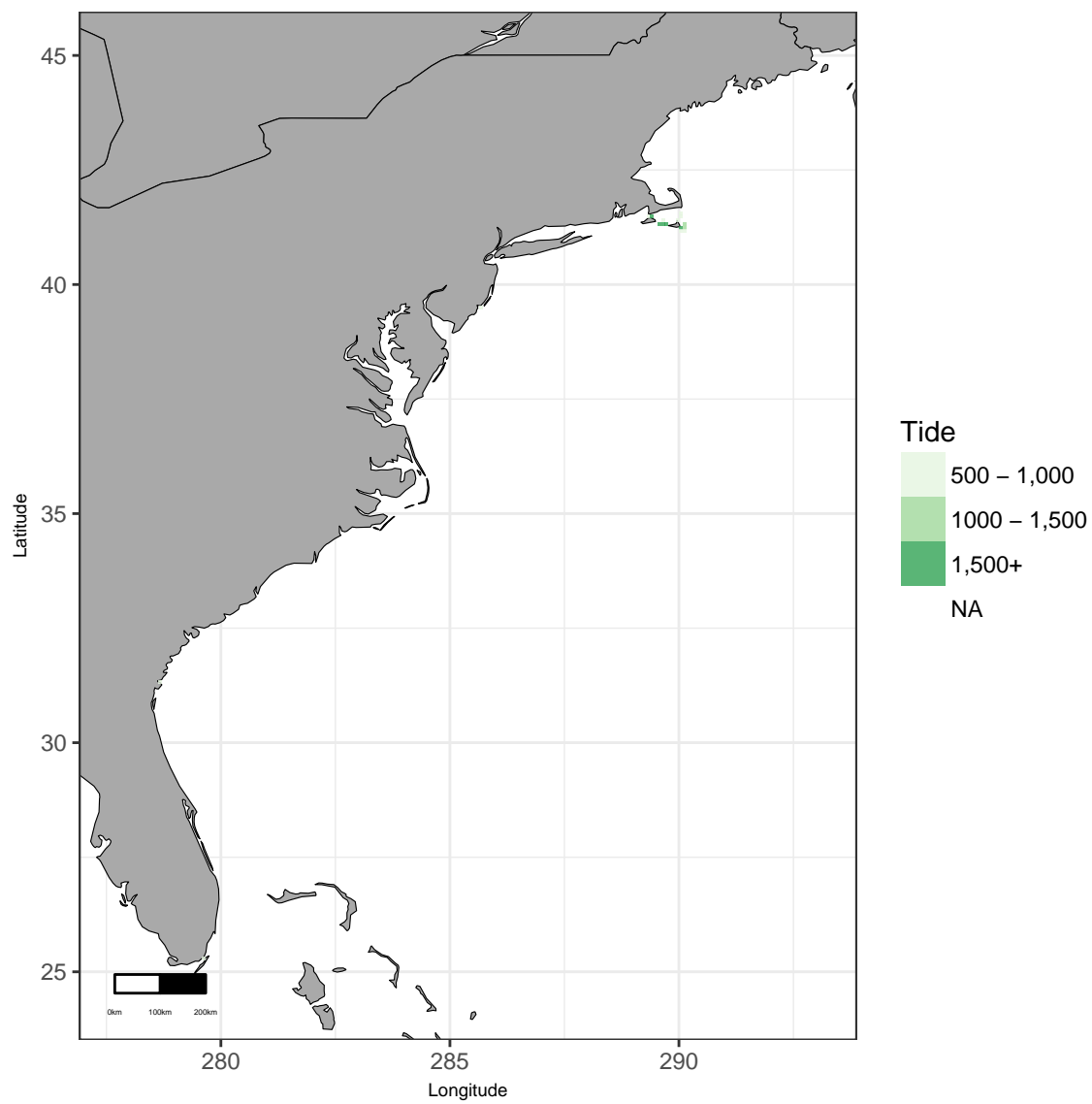


Figure 16: Map of viable tide in East region.

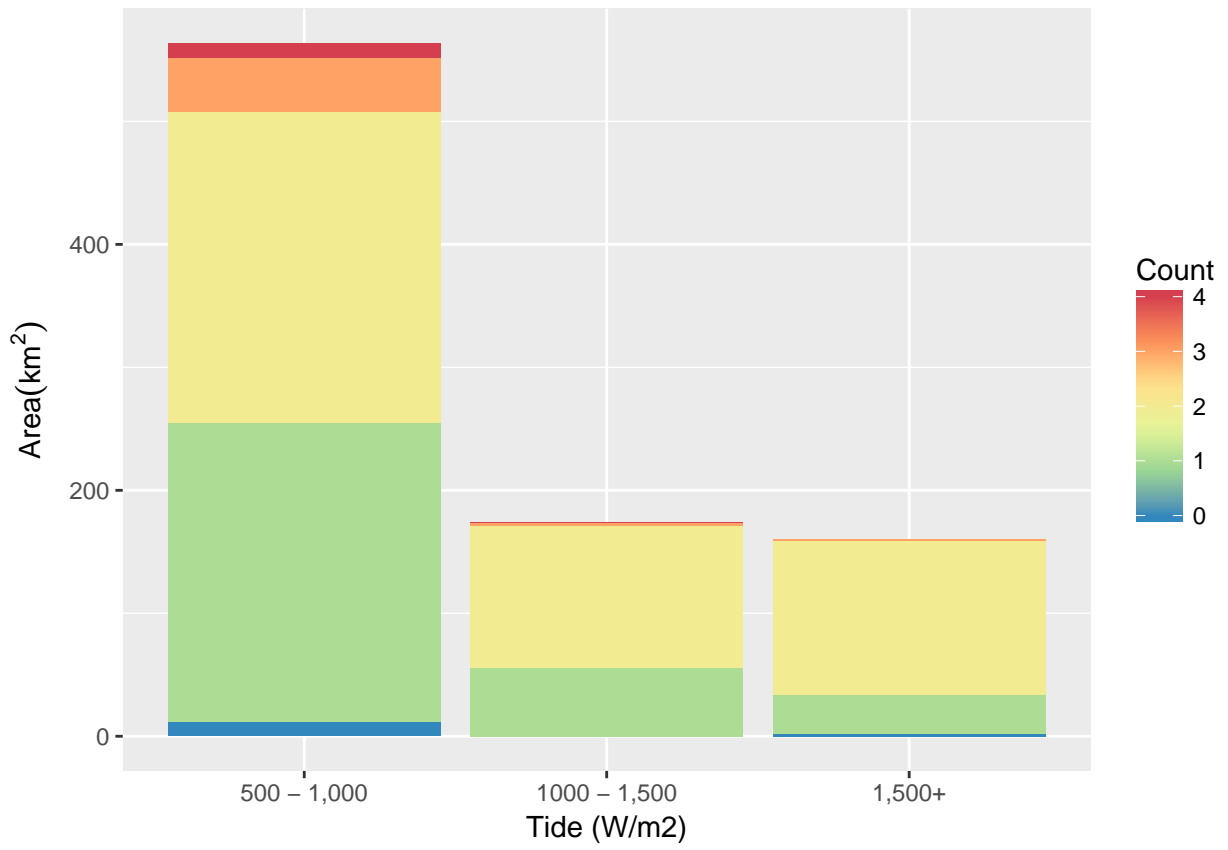


Figure 17: Area of Cumulative Ocean Use by Tide (W/m²) for East region. Cumulative use are counted and summarized by Tide (W/m²) and area.

## East: Map of Tide

## East: Plot of Uses by Tide

## East: Table of Uses by Tide

Table 7: Area (km<sup>2</sup>) 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 Tide (W/m2) bin.

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

## East: Map of Wave

## East: Plot of Uses by Wave

## East: Table of Uses by Wave

Table 8: Area (km<sup>2</sup>) 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 Wave (kW/m) bin.

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

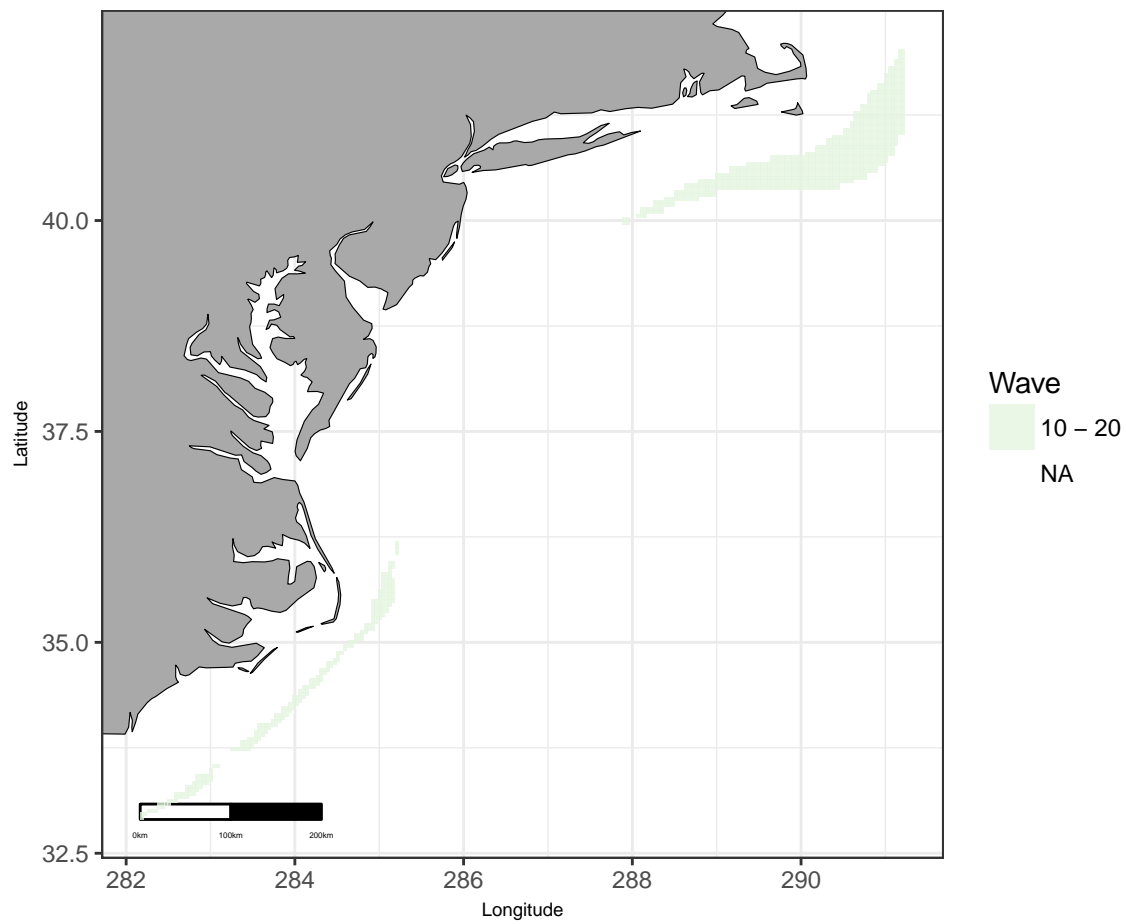


Figure 18: Map of viable wave in East region.

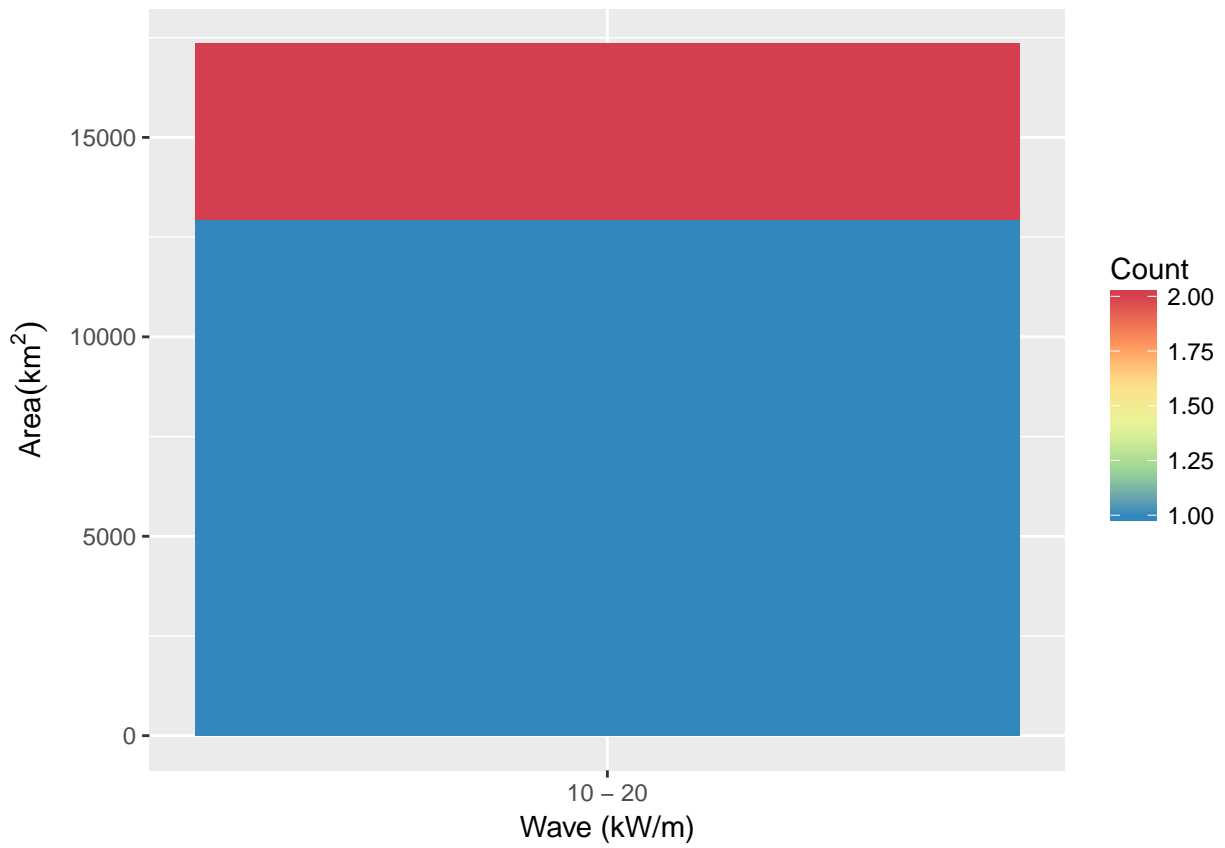


Figure 19: Area of Cumulative Ocean Use by Wave (kW/m) for East region. Cumulative use are counted and summarized by Wave (kW/m) and area.

## East: Map of Wind

## East: Plot of Uses by Wind

## East: Table of Uses by Wind

Table 9: Area (km<sup>2</sup>) 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 Wind (m/s @ 90m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Wind (m/s @ 90m)				
Category	Dataset	Layer	7	8	9+	Total	Rank
	Total Area		47,050	116,179	74,625	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	335	40	0	375	6
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	46,434	116,135	74,625	237,194	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	61	828	1,354	2,244	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	199	68	0	268	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System	255	19	8	283	8
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	5,640	5,245	916	11,801	3
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	10,820	28,321	0	39,141	2
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		711	3,338	4,323	8,372	4
	Aquaculture	Finfish	3	0	0	3	10
	Aquaculture	Other	1	1	0	2	11
	Aquaculture	Shellfish	317	3	0	320	7

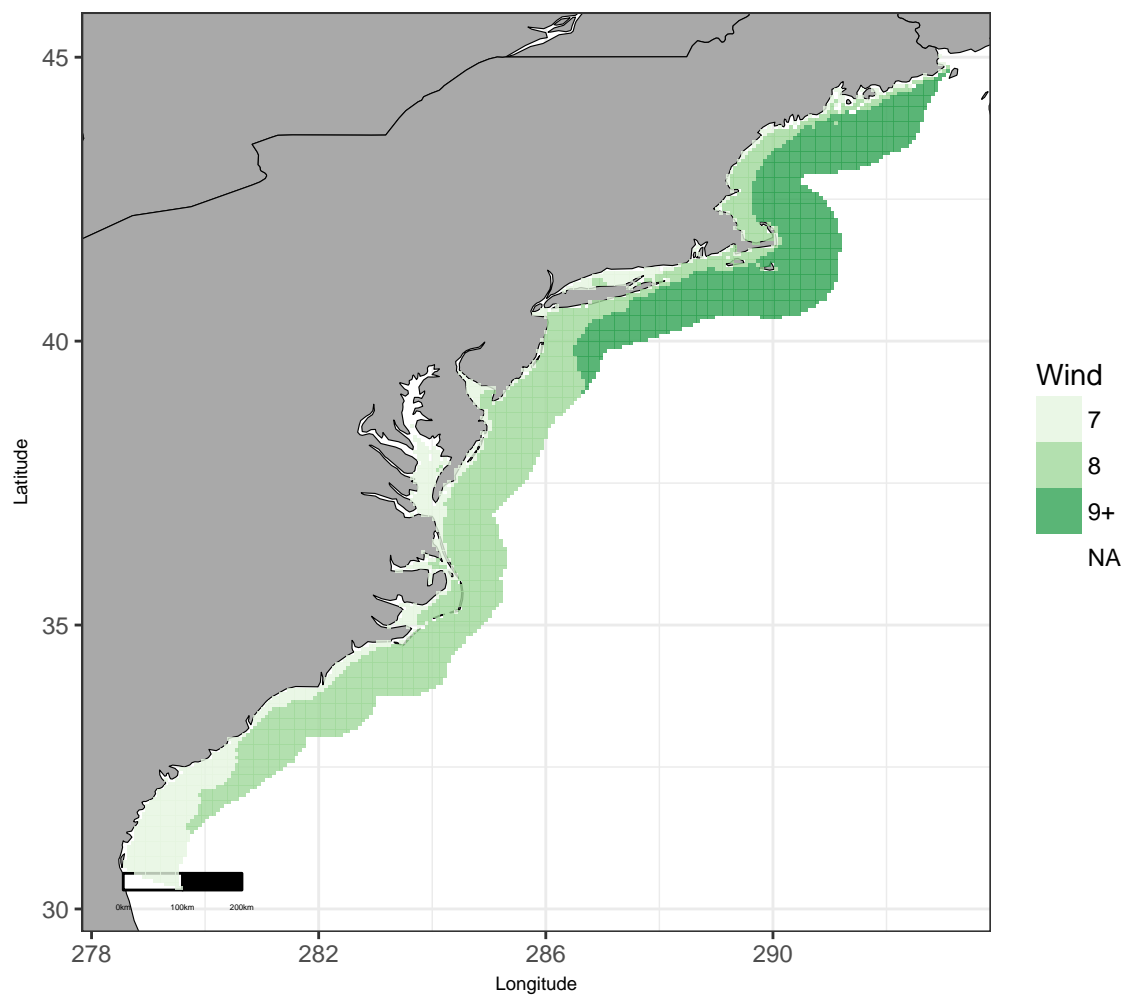


Figure 20: Map of viable wind in East region.



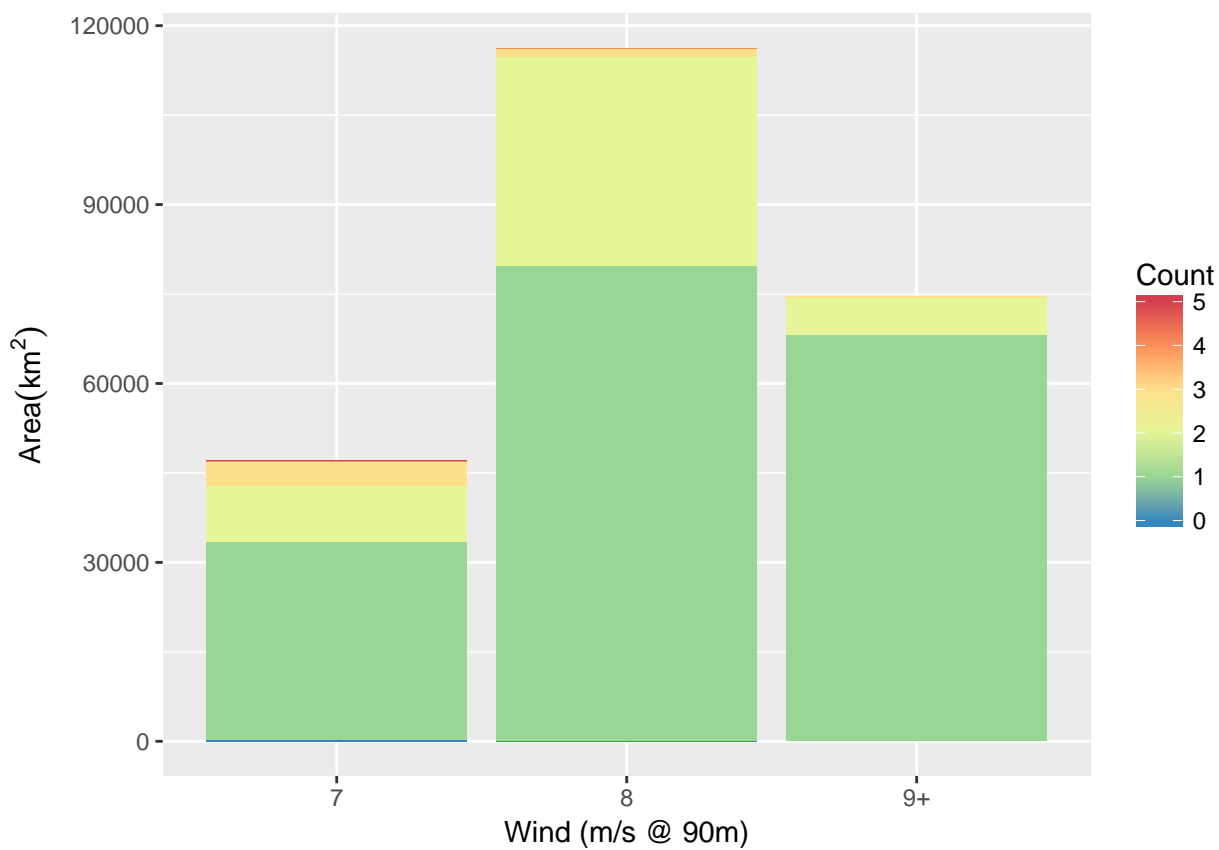


Figure 21: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for East region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

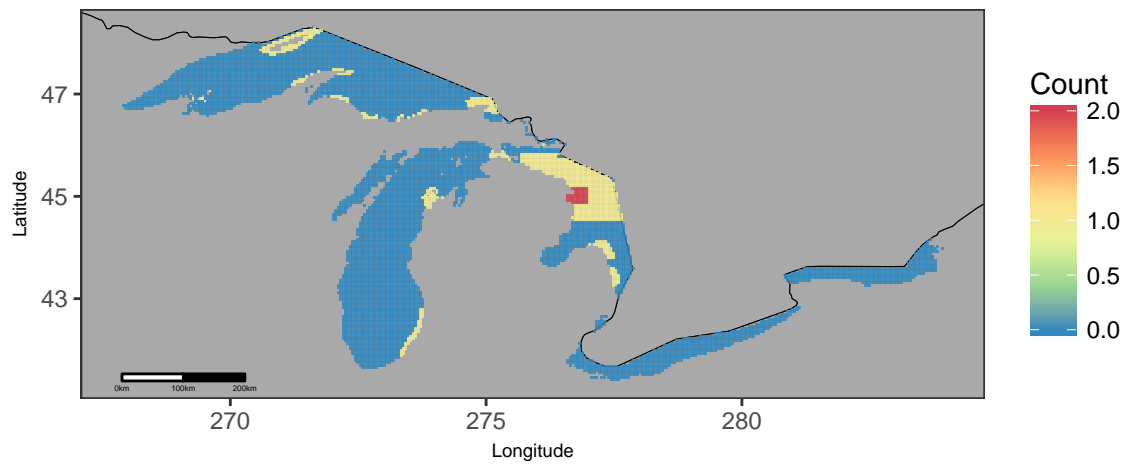


Figure 22: Map of cumulative ocean use in Great Lakes region.

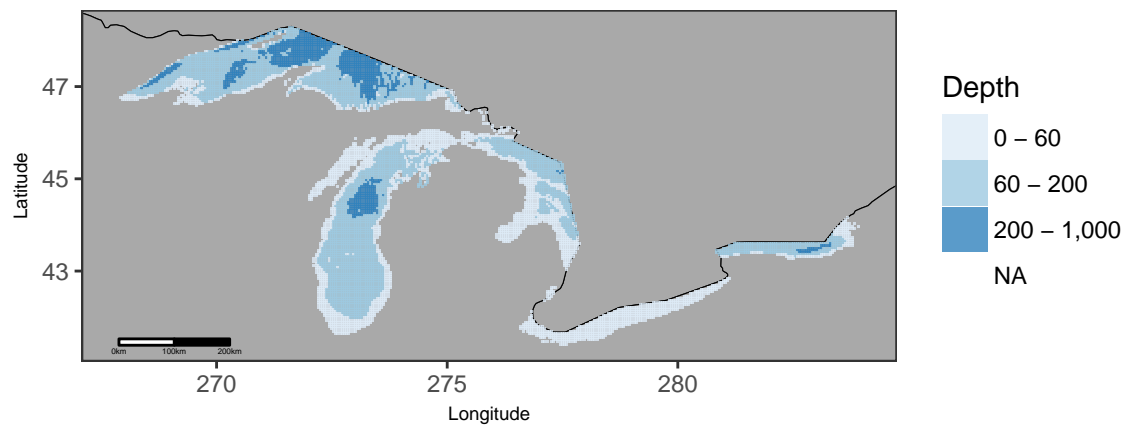


Figure 23: Map of viable depth in Great Lakes region.

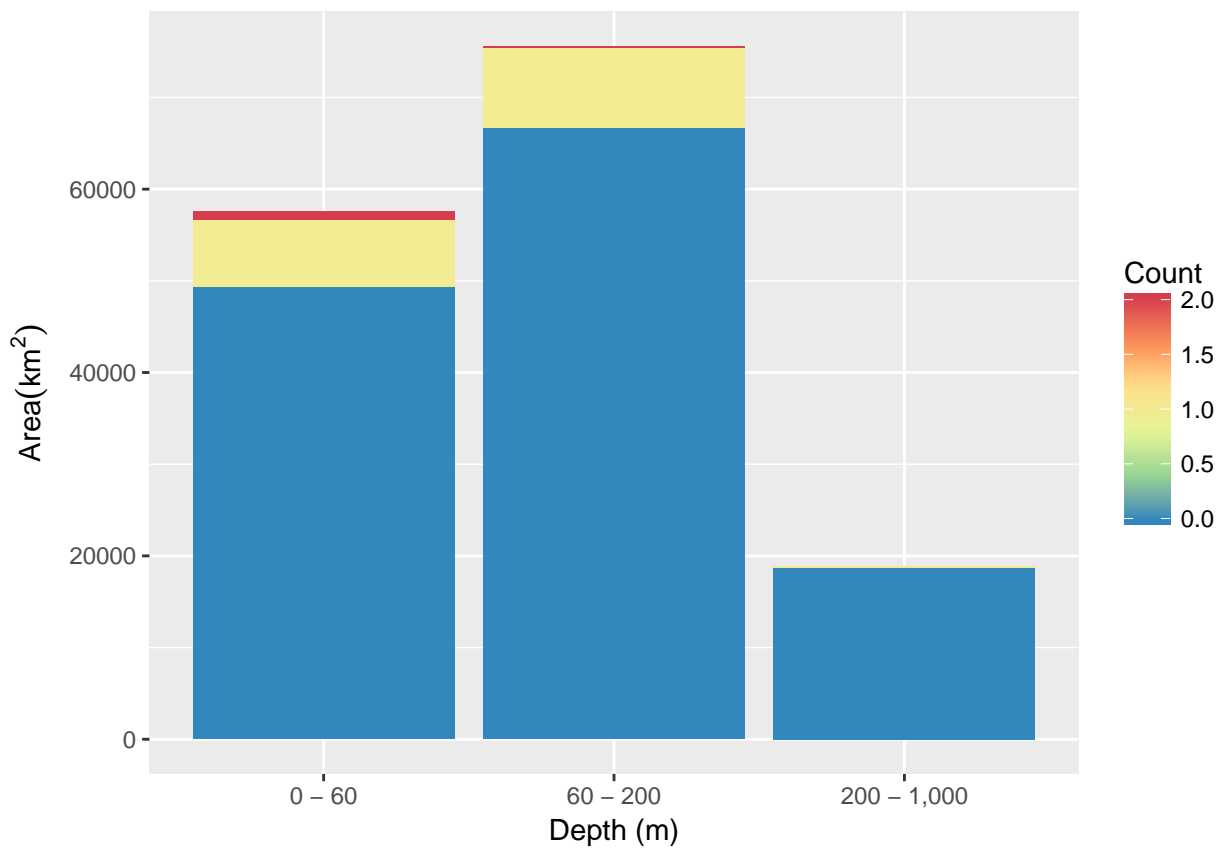


Figure 24: Area of Cumulative Ocean Use by Depth (m) for Great Lakes region. Cumulative use are counted and summarized by Depth (m) and area.

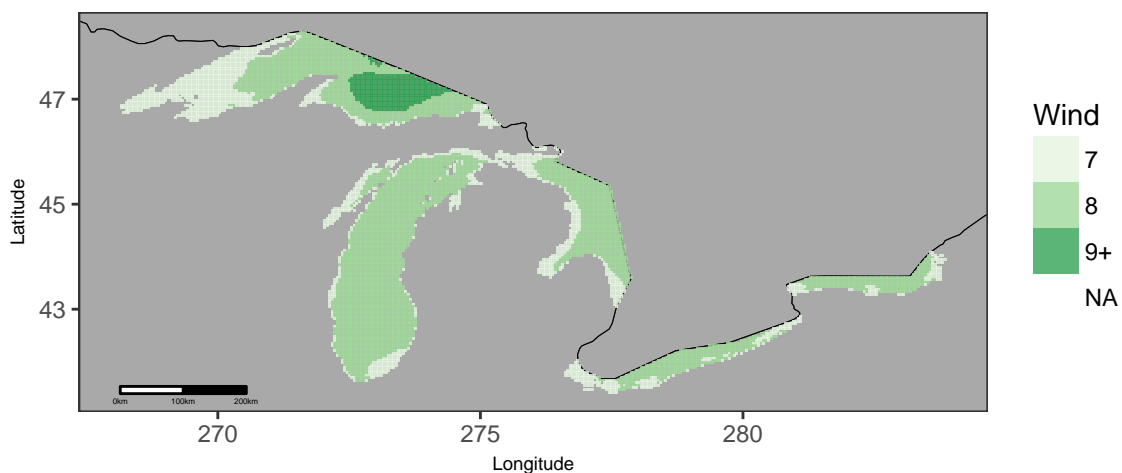


Figure 25: Map of viable wind in Great Lakes region.

## 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 (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)				Total	Rank
Category	Dataset	Layer	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

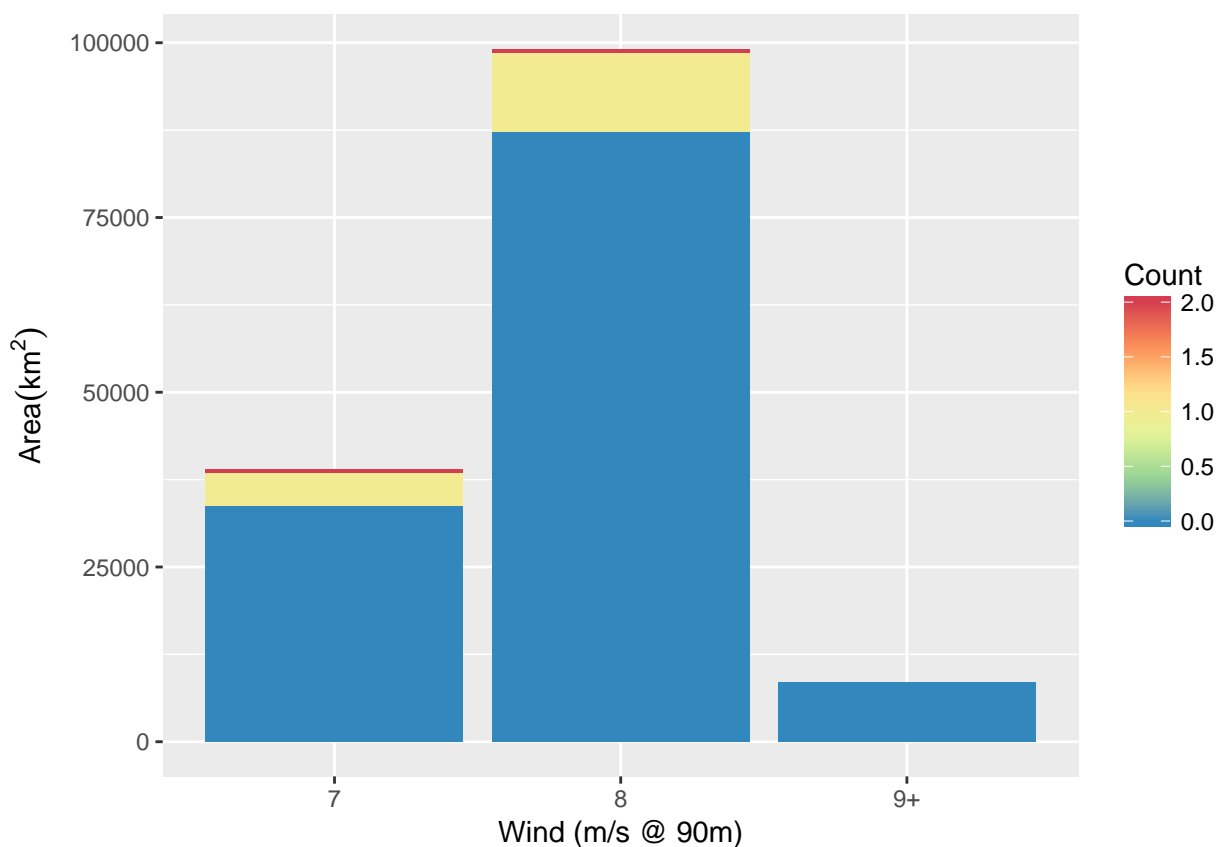


Figure 26: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for Great Lakes region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

## Great Lakes: Map of Wind

## Great Lakes: Plot of Uses by Wind

## Great Lakes: Table of Uses by Wind

Table 11: Area (km<sup>2</sup>) 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 Wind (m/s @ 90m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Wind (m/s @ 90m)				Total	Rank
Category	Dataset	Layer	7	8	9+			
	Total Area		38,947	99,120	8,534		146,601	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	2,131	8,669	0		10,801	1
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	867	673	0		1,540	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	2,712	3,060	0		5,772	2

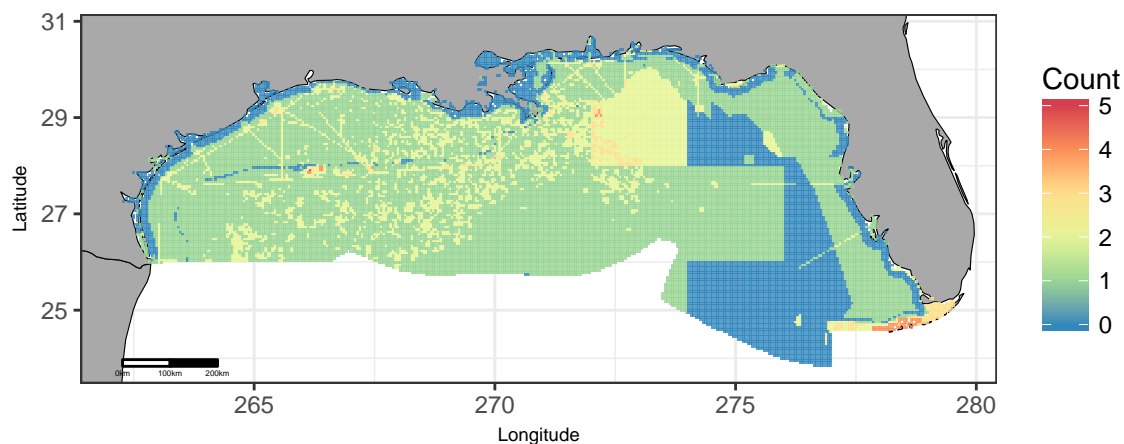


Figure 27: Map of cumulative ocean use in Gulf of Mexico region.

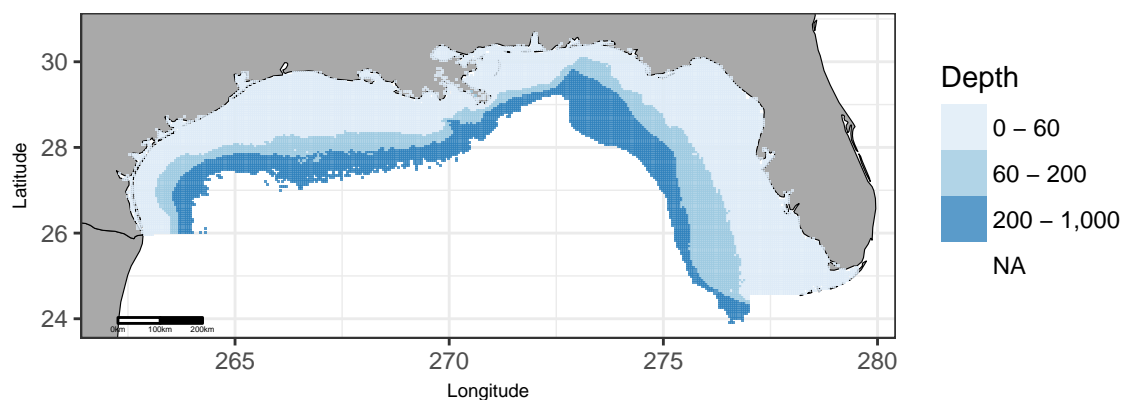


Figure 28: Map of viable depth in Gulf of Mexico region.

## 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 (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)				Total	Rank
Category	Dataset	Layer	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						

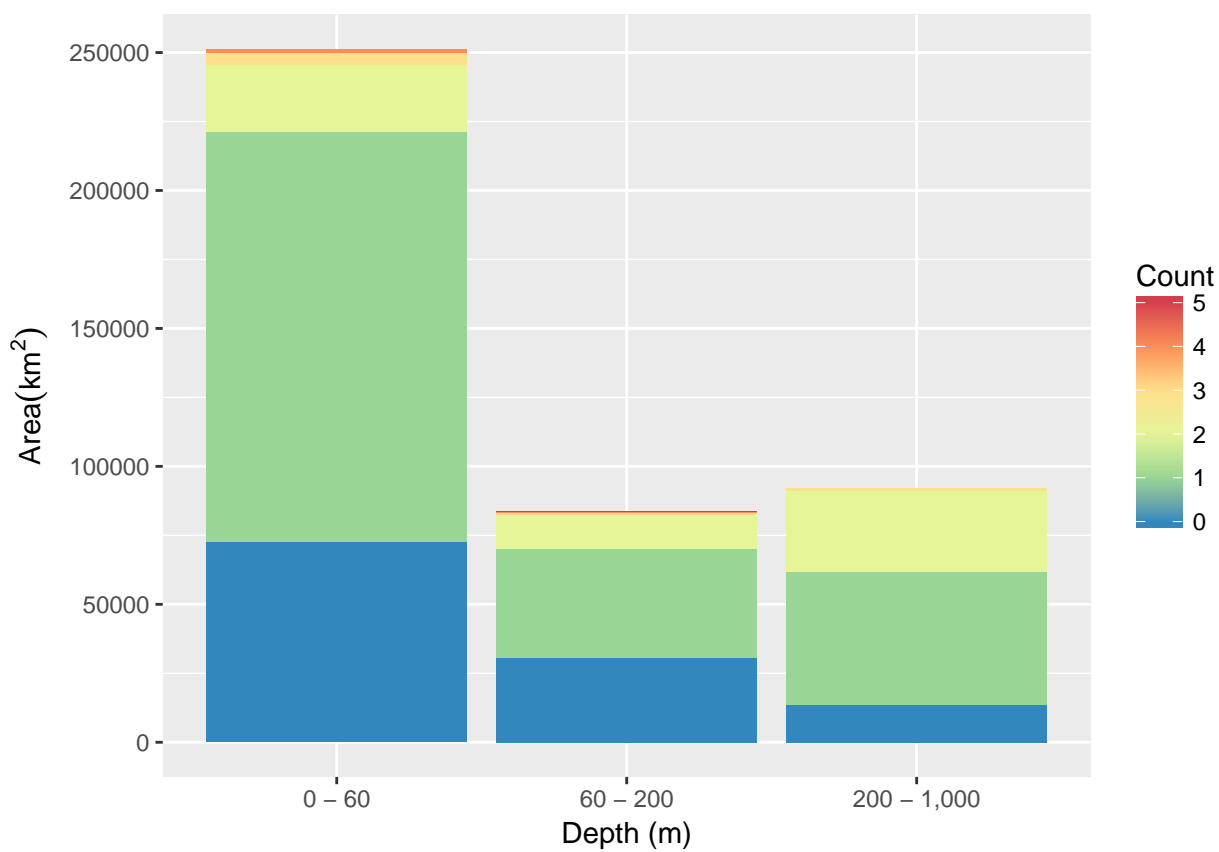


Figure 29: Area of Cumulative Ocean Use by Depth (m) for Gulf of Mexico region. Cumulative use are counted and summarized by Depth (m) and area.

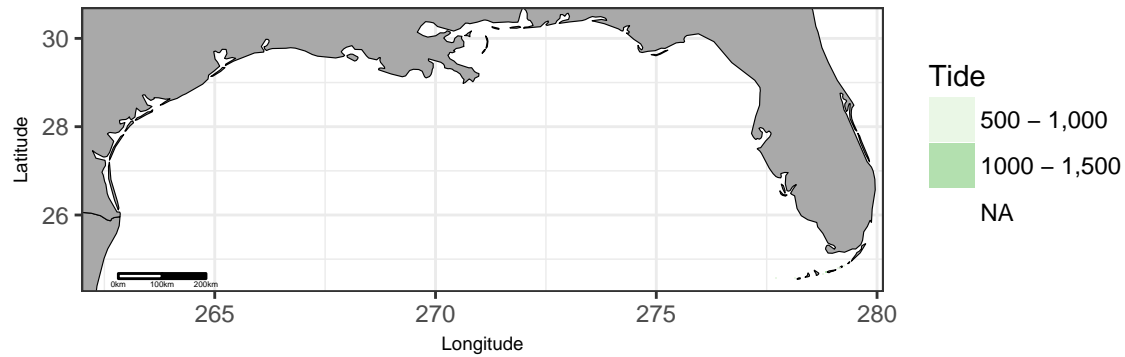


Figure 30: Map of viable tide in Gulf of Mexico region.

## 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 (km<sup>2</sup>) 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 Tide (W/m2) bin.

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

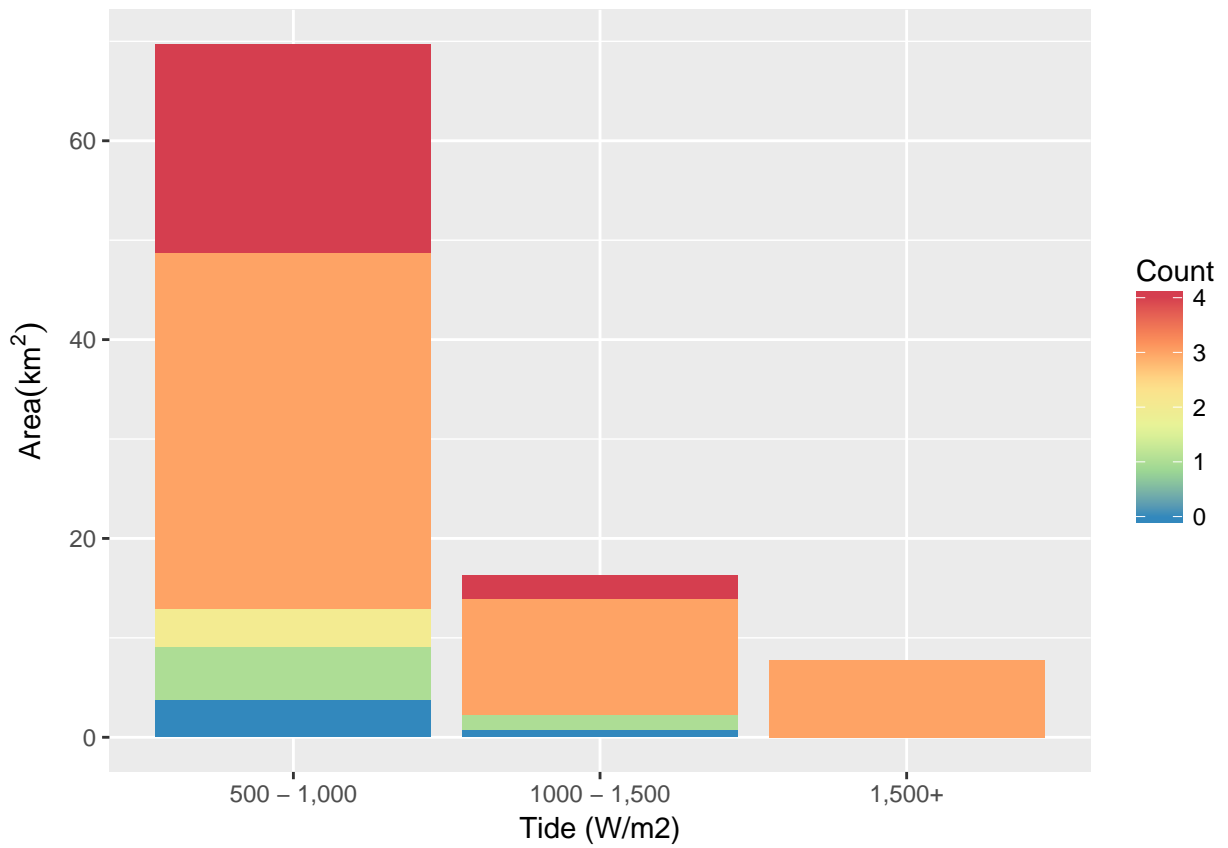


Figure 31: Area of Cumulative Ocean Use by Tide (W/m<sup>2</sup>) for Gulf of Mexico region. Cumulative use are counted and summarized by Tide (W/m<sup>2</sup>) and area.

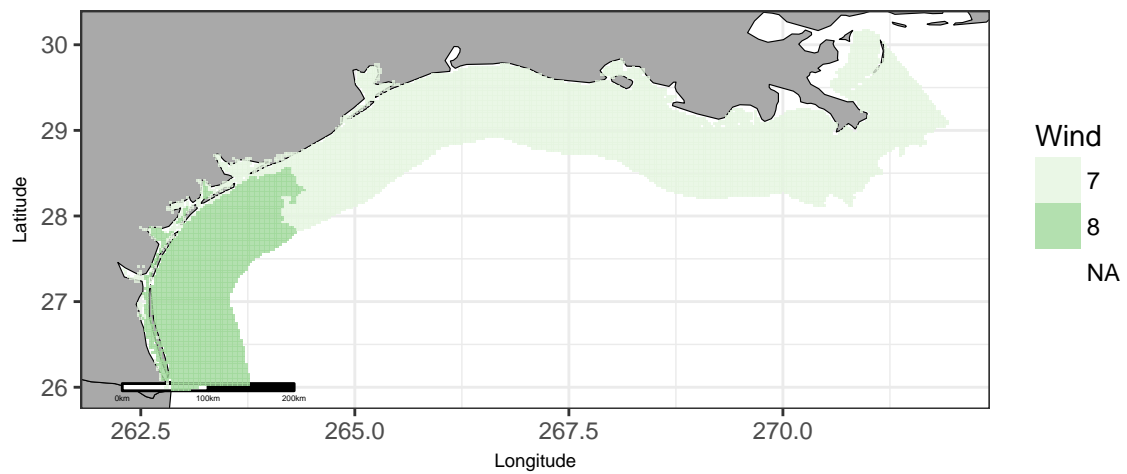


Figure 32: Map of viable wind in Gulf of Mexico region.



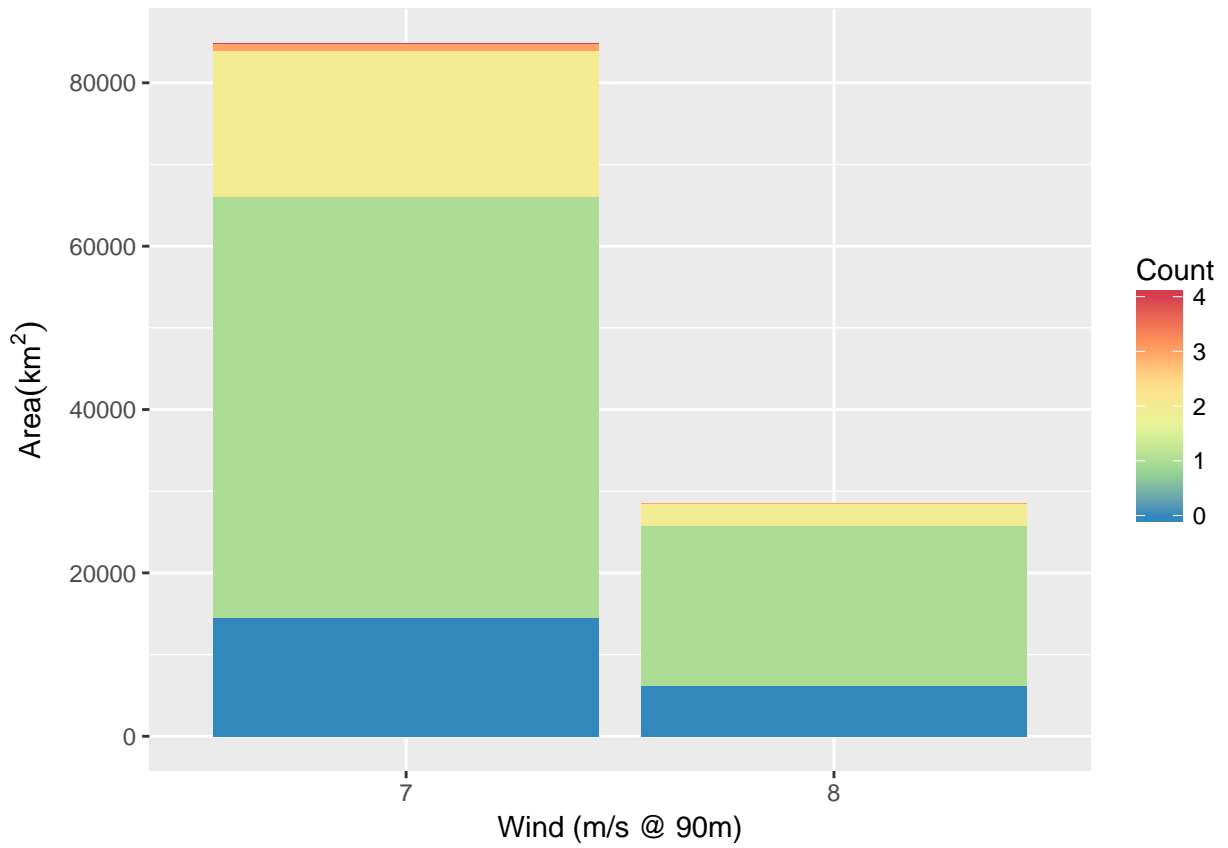


Figure 33: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for Gulf of Mexico region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

## 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 (km<sup>2</sup>) 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 Wind (m/s @ 90m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Wind (m/s @ 90m)						
Category	Dataset	Layer	7		8		Total	Rank	
	Total Area		<div><div></div></div> 84,823		<div><div></div></div> 28,521		<div><div></div></div> 113,343	0	
Governance: Commercial Leases	Active Oil & Gas Leases		<div><div></div></div> 14,401		<div><div></div></div> 242	<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	<div><div></div></div> 0		<div><div></div></div> 618	6	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Estuarine Research Reserve System		<div><div></div></div> 358		<div><div></div></div> 62		<div><div></div></div> 420	8
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Fisheries Service	<div><div></div></div> 58,833		<div><div></div></div> 18,244		<div><div></div></div> 77,077	1	
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service		<div><div></div></div> 78		<div><div></div></div> 162		<div><div></div></div> 239	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Wildlife Refuge System		<div><div></div></div> 109		<div><div></div></div> 539		<div><div></div></div> 648	5
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA		<div><div></div></div> 519	<div><div></div></div> 0		<div><div></div></div> 519	7	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	EFH	<div><div></div></div> 9,670	<div><div></div></div>	<div><div></div></div> 2,763	<div><div></div></div>	<div><div></div></div> 12,433	3	
Ocean Uses: Transportation: Commercial Shipping	Shipping Lanes		<div><div></div></div> 5,490	<div><div></div></div>	<div><div></div></div> 3,037	<div><div></div></div>	<div><div></div></div> 8,527	4	

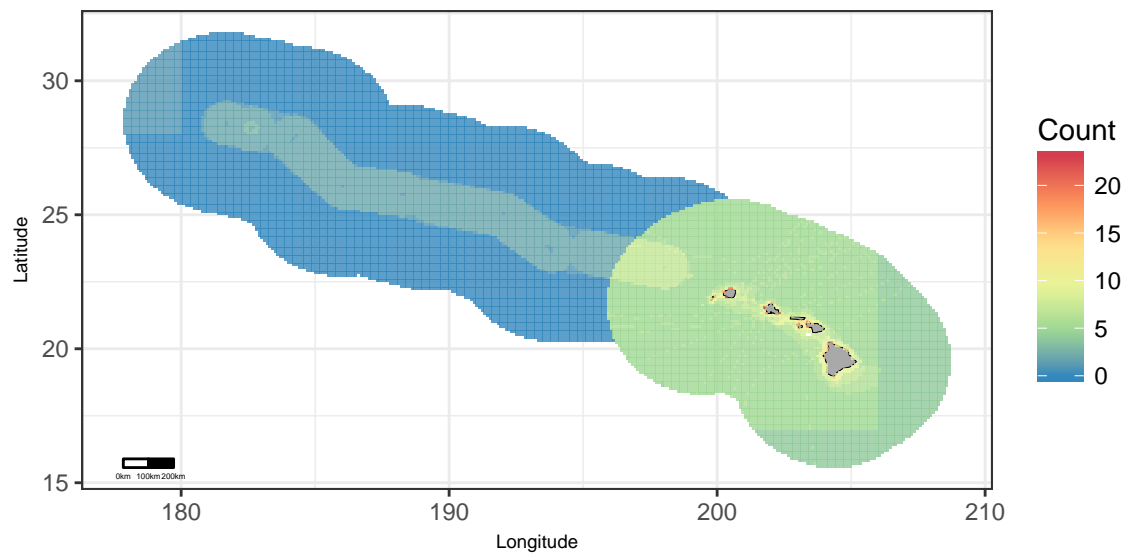


Figure 34: Map of cumulative ocean use in Hawaii region.

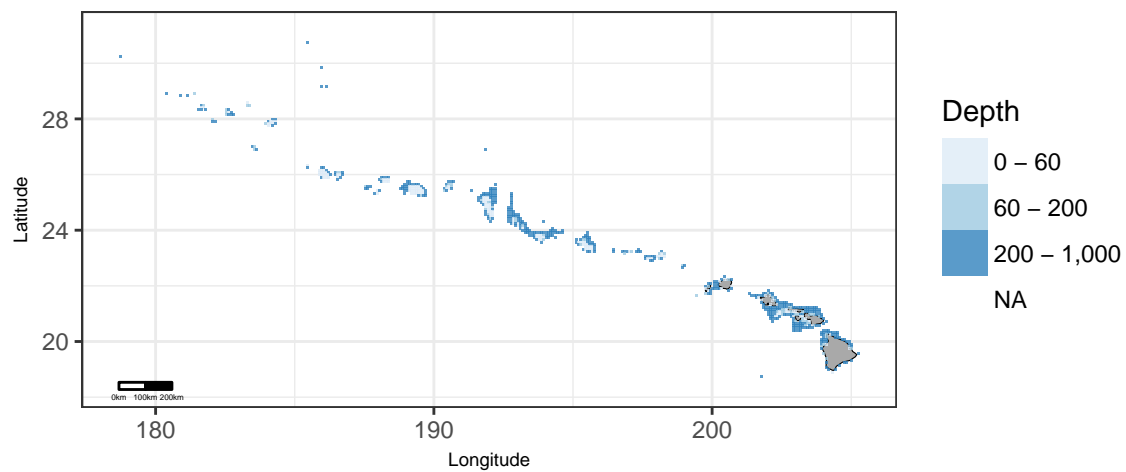


Figure 35: Map of viable depth in Hawaii region.

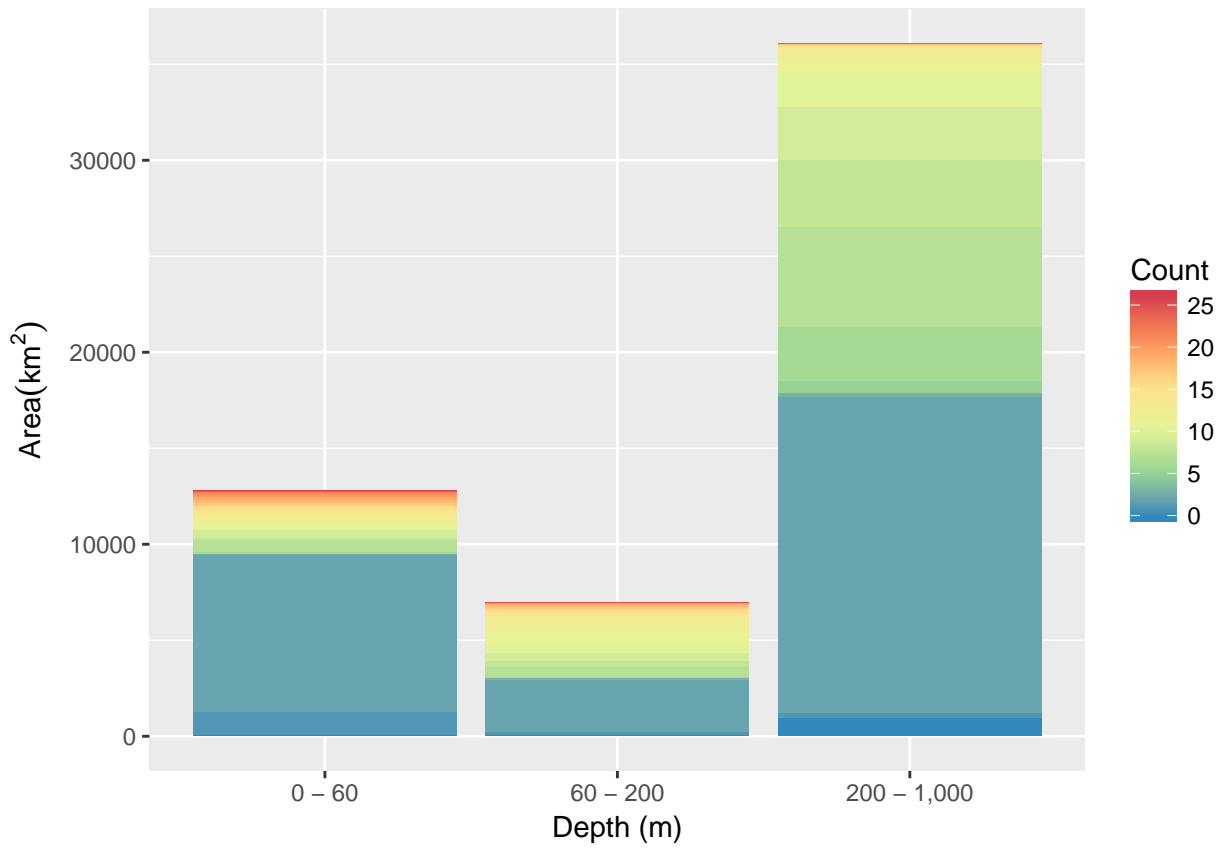


Figure 36: Area of Cumulative Ocean Use by Depth (m) for Hawaii region. Cumulative use are counted and summarized by Depth (m) and area.

# Hawaii

## Hawaii: Map of Uses

## Hawaii: Map of Depth

## Hawaii: Plot of Uses by Depth

## Hawaii: Table of Uses by Depth

Table 15: Area (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)				Rank
Category	Dataset	Layer	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 Boating	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

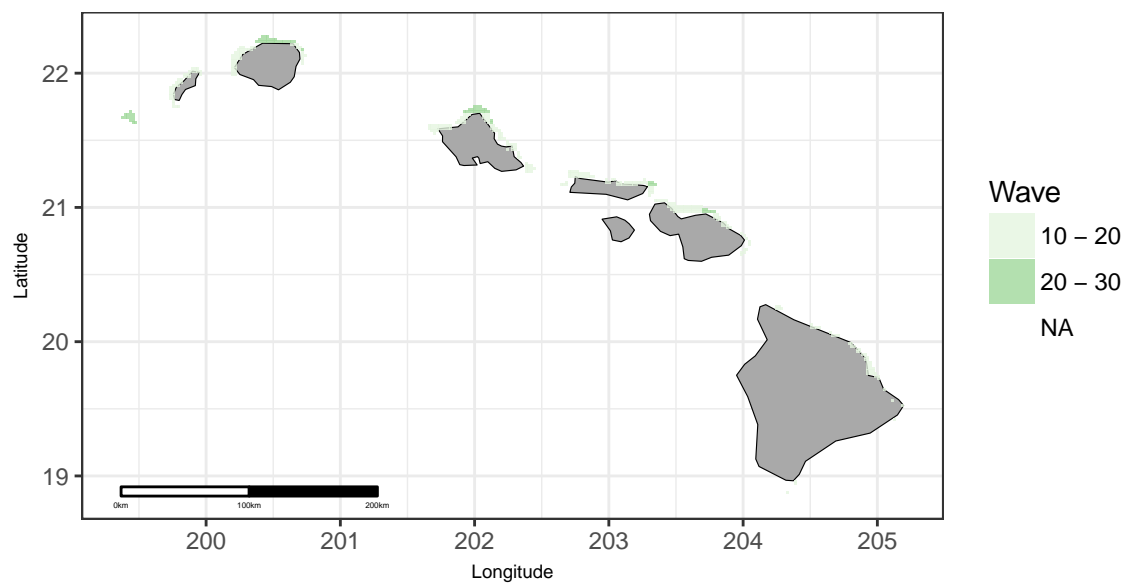


Figure 37: Map of viable wave in Hawaii region.

## Hawaii: Map of Wave

## Hawaii: Plot of Uses by Wave

## Hawaii: Table of Uses by Wave

Table 16: Area (km<sup>2</sup>) 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 Wave (kW/m) bin.

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

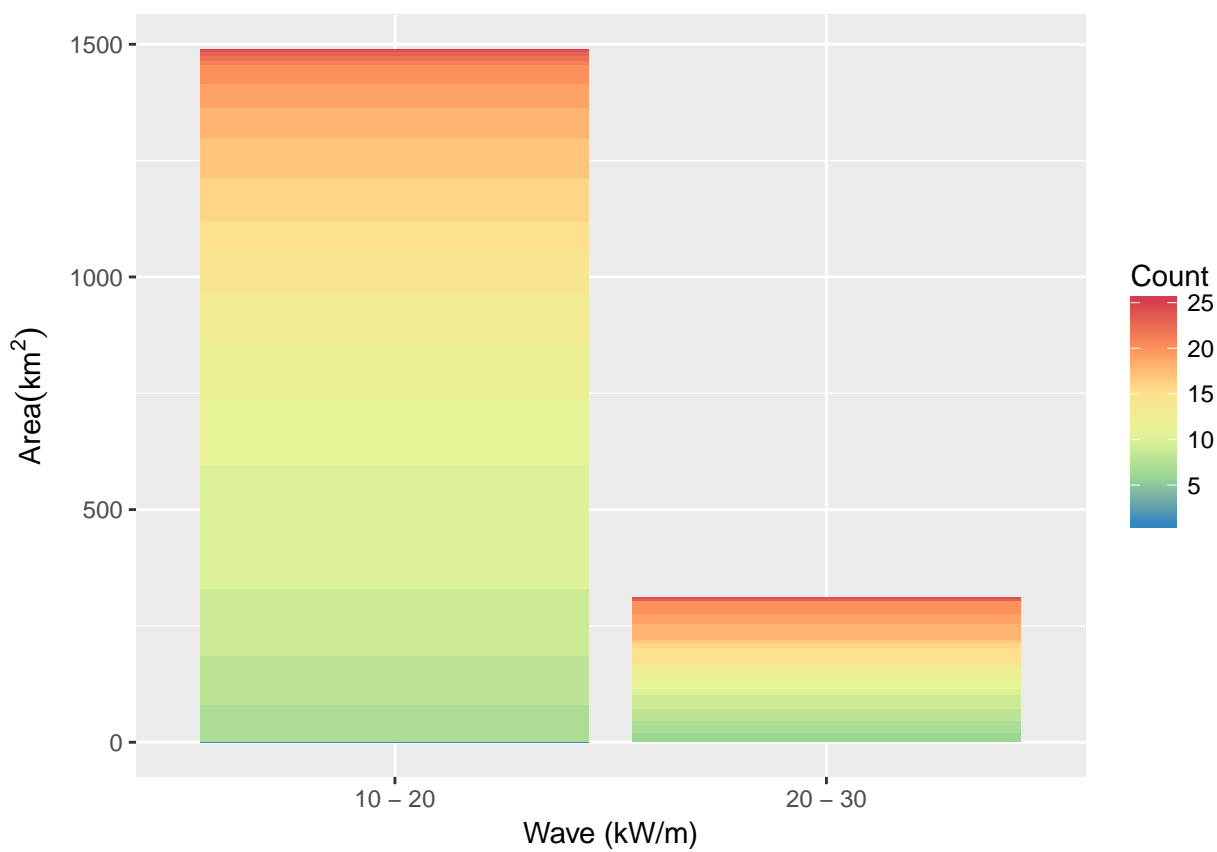


Figure 38: Area of Cumulative Ocean Use by Wave (kW/m) for Hawaii region. Cumulative use are counted and summarized by Wave (kW/m) and area.

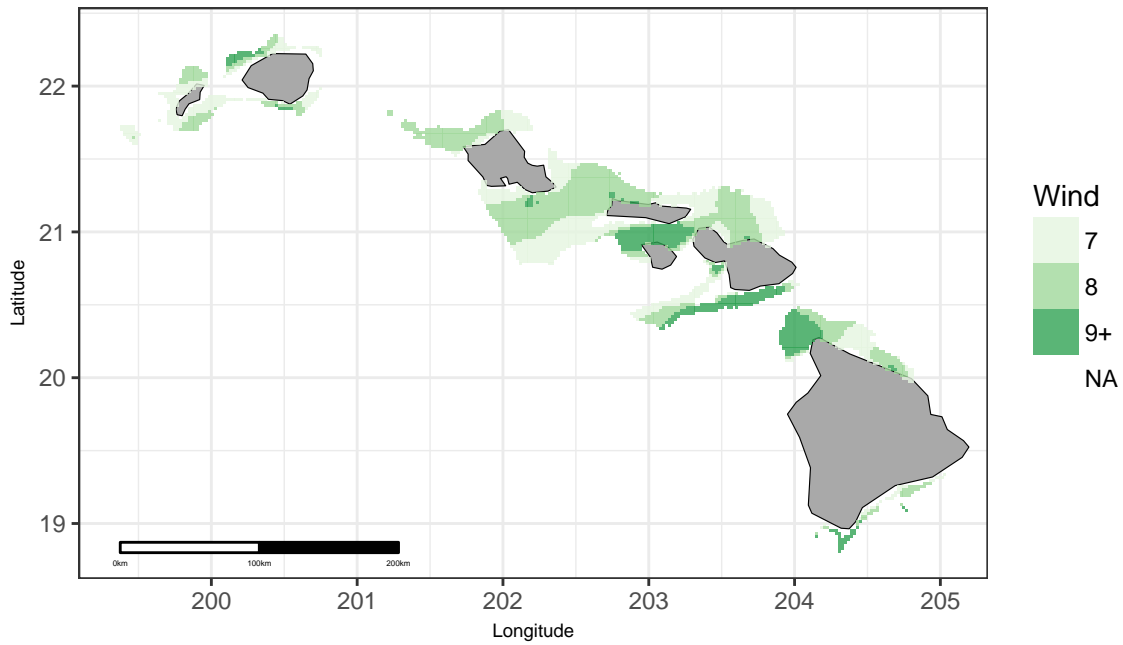


Figure 39: Map of viable wind in Hawaii region.

## Hawaii: Map of Wind

## Hawaii: Plot of Uses by Wind

## Hawaii: Table of Uses by Wind

Table 17: Area (km<sup>2</sup>) 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 Wind (m/s @ 90m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Wind (m/s @ 90m)				
Category	Dataset	Layer	7	8	9+	Total	Rank
	Total Area		6,095	7,178	2,546	15,818	0
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Marine Sanctuaries	1,084	548	566	2,199	9
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	1	1	0	2	28
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	State MPA	1,024	482	186	1,691	11
	Ocean Use Atlas for Hawaii	Aquaculture	268	62	317	647	19
	Ocean Use Atlas for Hawaii	Com Dive Fishing	549	301	87	936	18
	Ocean Use Atlas for Hawaii	Com Fishing Fixed	804	666	10	1,479	12
	Ocean Use Atlas for Hawaii	Com Fishing Mobile	1,387	1,104	289	2,780	8
	Ocean Use Atlas for Hawaii	Com Gathering Shore	27	23	12	63	26
	Ocean Use Atlas for Hawaii	Com Pelagic Fishing	6,095	7,178	2,546	15,818	1
	Ocean Use Atlas for Hawaii	Cruise Ships	3,513	4,006	2,510	10,029	3
	Ocean Use Atlas for Hawaii	Fishing Shore	73	56	35	164	23
	Ocean Use Atlas for Hawaii	Kayak Fishing	1,149	1,131	728	3,008	6
	Ocean Use Atlas for Hawaii	Military Operations	6,095	7,178	2,546	15,818	1
	Ocean Use Atlas for Hawaii	Mining Mineral Ext	24	6	0	30	27
	Ocean Use Atlas for Hawaii	Motorized Boating	6,095	7,178	2,546	15,818	1
	Ocean Use Atlas for Hawaii	Ocean	203	213	2	518	20



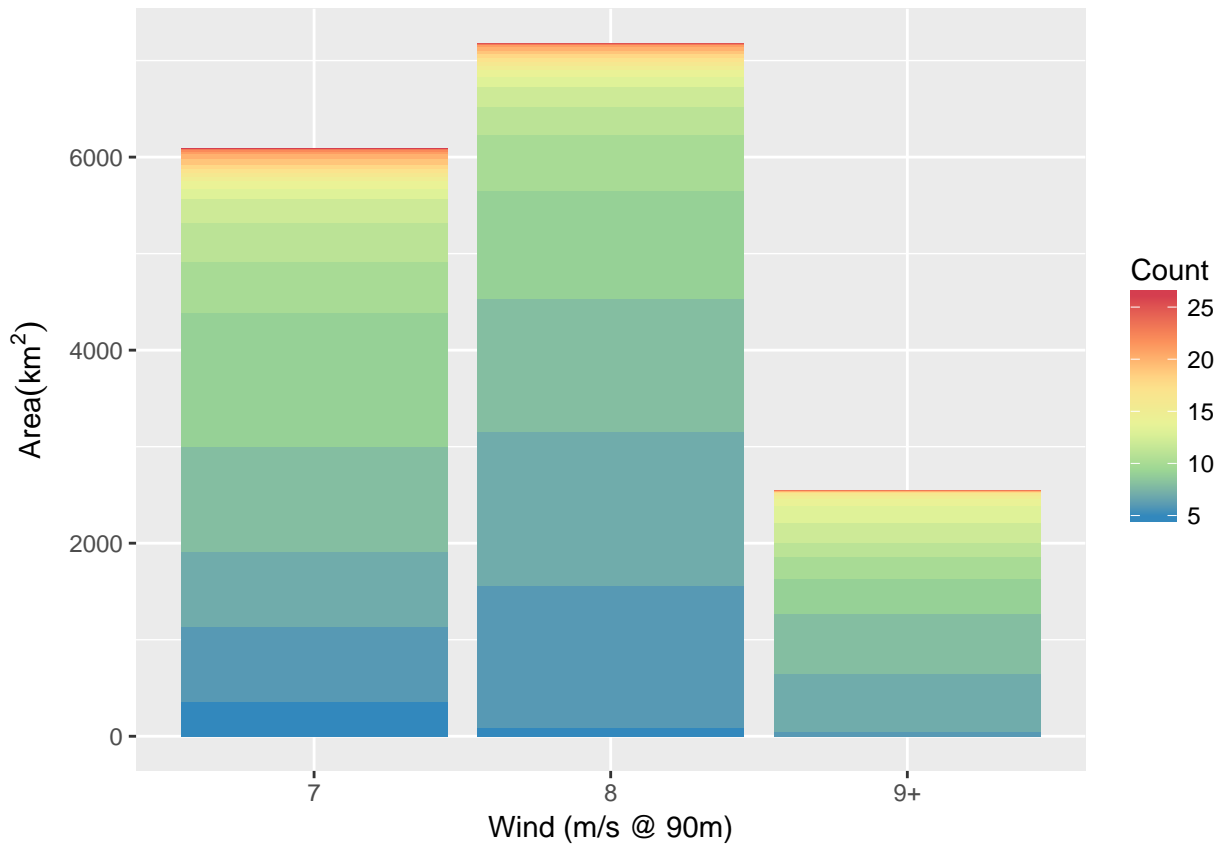


Figure 40: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for Hawaii region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.

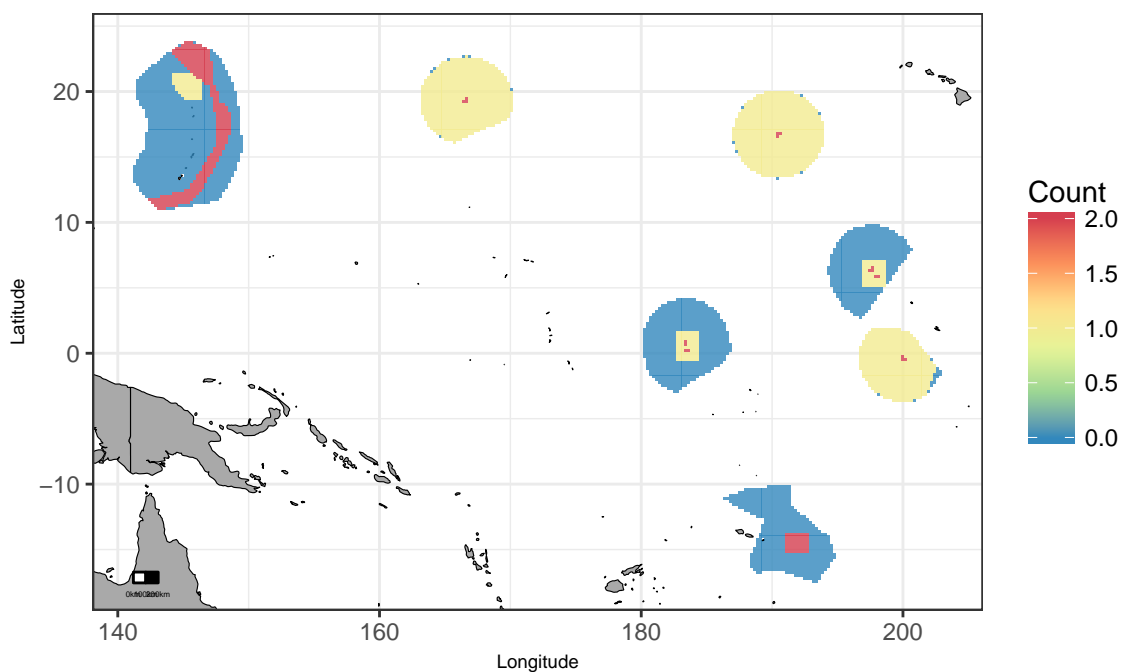


Figure 41: Map of cumulative ocean use in Pacific Islands region.

## 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 (km<sup>2</sup>) 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 (m) bin.

Ocean Use			Area (km <sup>2</sup> ) by Depth (m)				Total	Rank
Category	Dataset	Layer	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
Governance: Marine Protected Areas (MPAs)	Marine Protected Areas	National Park Service	3	1	0		4	6

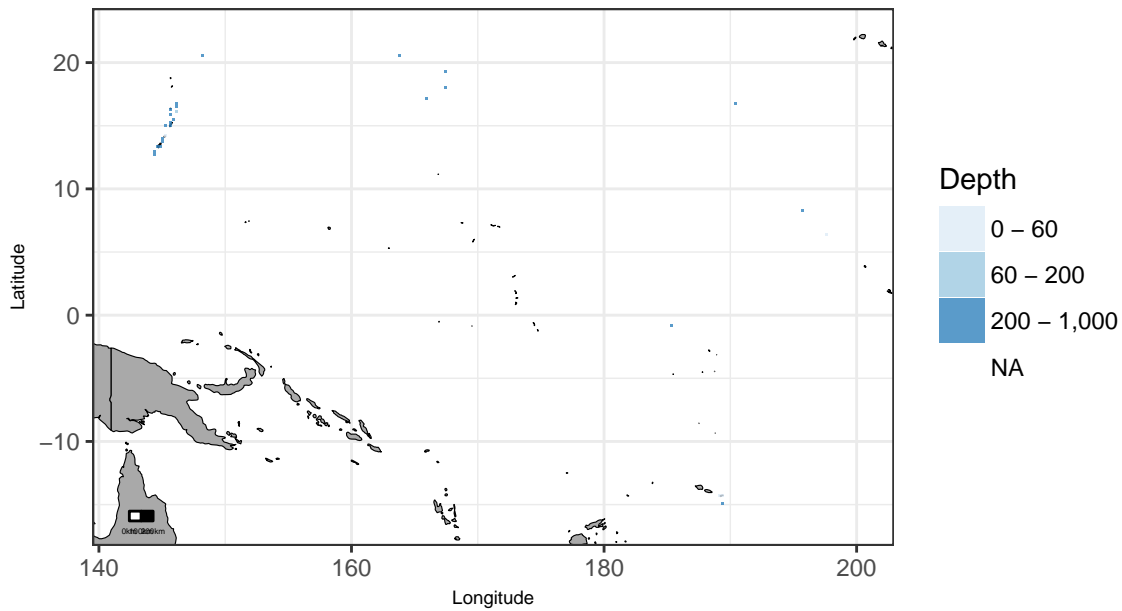


Figure 42: Map of viable depth in Pacific Islands region.

West

West: Map of Uses

West: Map of Depth

West: Plot of Uses by Depth

West: Table of Uses by Depth

Table 19: Area (km<sup>2</sup>) of Ocean Use by Depth (m) bin for West region. Width of gray horizontal bars from left of cell indicate percent area occupied in given depth bin bin.

Ocean Use		Area (km <sup>2</sup> ) by Depth (m)					Total	Rank
Category	Subcategory	0-60	60-200	200-1,000	1,000+	NA		
Total Area		22,852	42,300	89,766	174,158	0		
Government: Connected Lands	Active Oil & Gas Leases	118	335	394	867	0	85	53
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	26	100	100	227	0	85	65
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	45	0	0	45	0	69	69
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	919	5,197	15,047	21,223	0	24	24
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	5,758	11,152	7,596	24,446	0	21	21
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	357	81	2	440	0	39	39
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	195	9	2	206	0	66	66
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	2,812	2,305	355	5,071	0	36	36
Living Resources: Biological Occurrence: Fish	Essential Fish Habitat	818	27	1	847	0	34	34
Living Resources: Biological Occurrence: Fish	Essential Fish Habitat	3,207	968	77	4,192	0	37	37
Living Resources: Biological Occurrence: Fish	Essential Fish Habitat	2,256	1,052	2,322	5,630	0	34	34
Living Resources: Biological Occurrence: Fish	Essential Fish Habitat	951	3,540	4,813	9,304	0	31	31
Living Resources: Biological Occurrence: Fish	Essential Fish Habitat	204	1	0	205	0	96	96
Ocean Use: Transportation: Commercial Shipping	Shipping Lanes	215	971	1,296	2,482	0	39	39
Ocean Use: Transportation: Commercial Shipping	Shipping Lanes	3	0	0	3	0	71	71
Ocean Use: Adm for California	Oil Energy Pumps	3,104	10,951	5,260	19,289	0	26	26
Ocean Use: Adm for California	Appearances	1,229	702	142	1,972	0	42	42
Ocean Use: Adm for California	Beach	1,604	91	2	1,697	0	45	45
Ocean Use: Adm for California	Cables	2,124	2,944	11,392	16,464	0	28	28
Ocean Use: Adm for California	Coin Booths	9,511	17,532	10,267	37,310	0	6	6
Ocean Use: Adm for California	Coin Booths	4,675	11,804	15,000	31,279	0	10	10
Ocean Use: Adm for California	Coin Booths	2,804	602	74	3,480	0	38	38
Ocean Use: Adm for California	Coin Kiosk	1,144	127	1	1,272	0	49	49
Ocean Use: Adm for California	Coin Pumps	9,340	17,506	10,941	37,787	0	5	5
Ocean Use: Adm for California	Boating	3,348	5,594	10,019	18,961	0	17	17
Ocean Use: Adm for California	Boat Parking	7,084	4,805	904	12,893	0	29	29
Ocean Use: Adm for California	Boat Parking	9,876	18,121	10,267	38,264	0	1	1
Ocean Use: Adm for California	Boat Parking	111	0	0	111	0	68	68
Ocean Use: Adm for California	Boat Parking	9,849	18,121	10,267	38,237	0	3	3
Ocean Use: Adm for California	Boat Parking	5,634	16,150	10,414	32,198	0	7	7
Ocean Use: Adm for California	Boat Parking	7,889	5,391	3,524	16,813	0	27	27

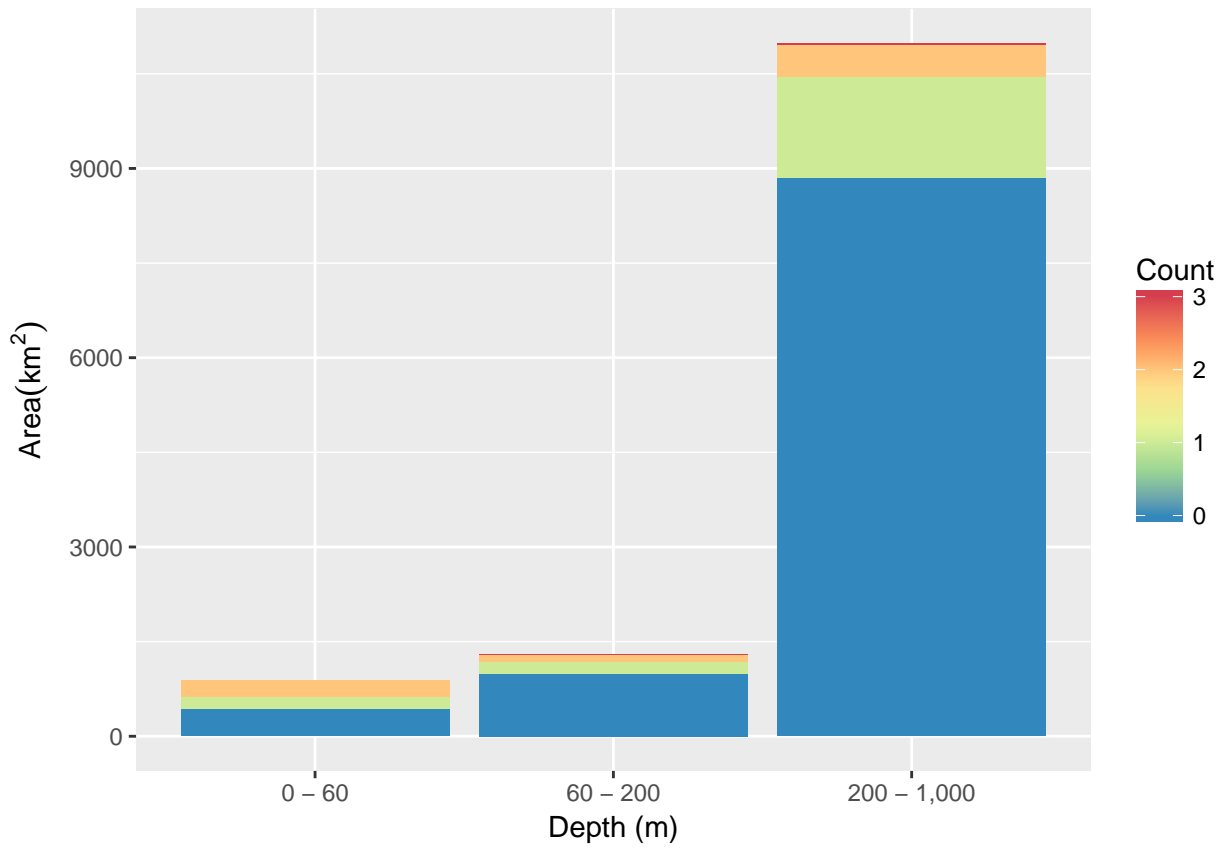


Figure 43: Area of Cumulative Ocean Use by Depth (m) for Pacific Islands region. Cumulative use are counted and summarized by Depth (m) and area.

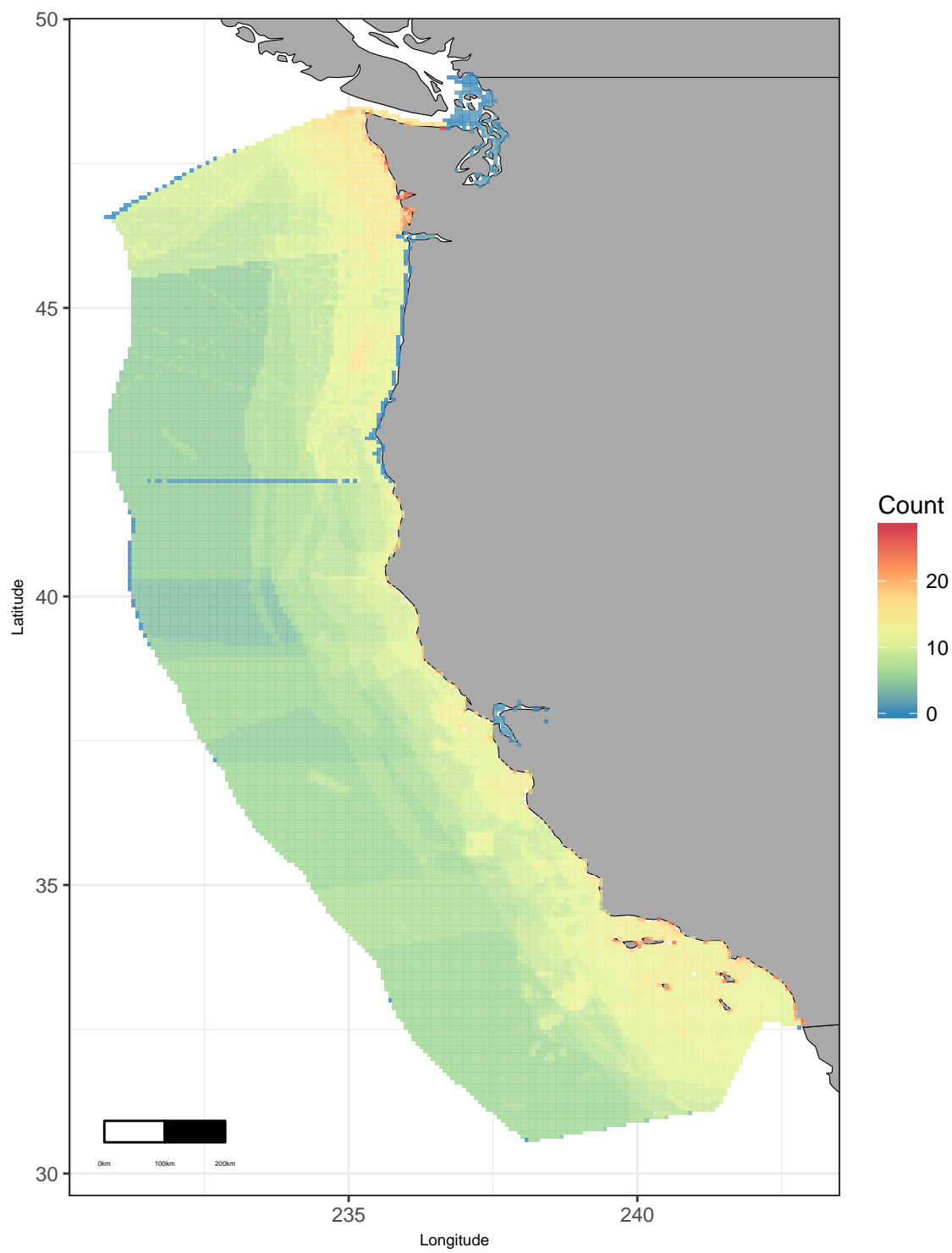


Figure 44: Map of cumulative ocean use in West region.

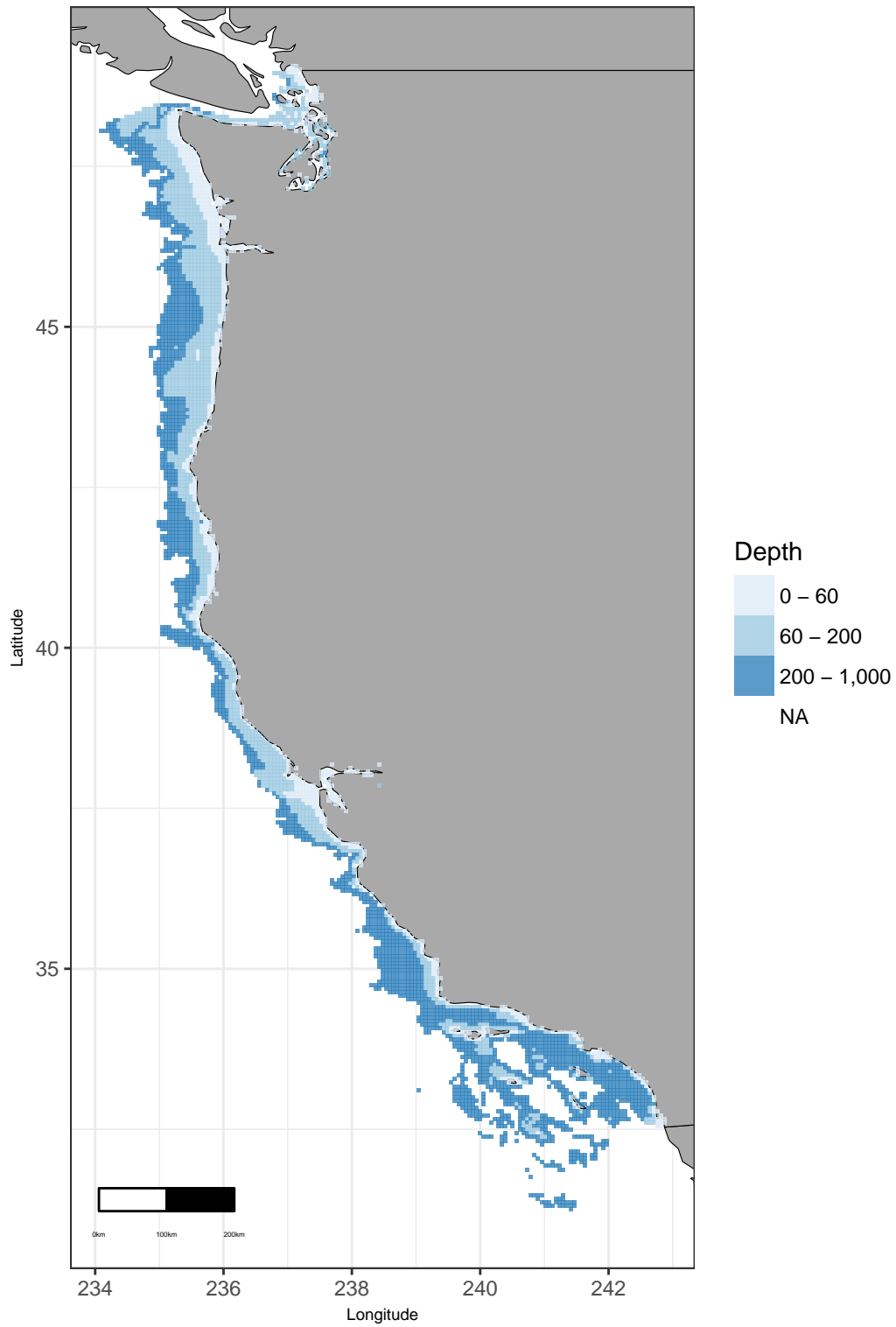


Figure 45: Map of viable depth in West region.

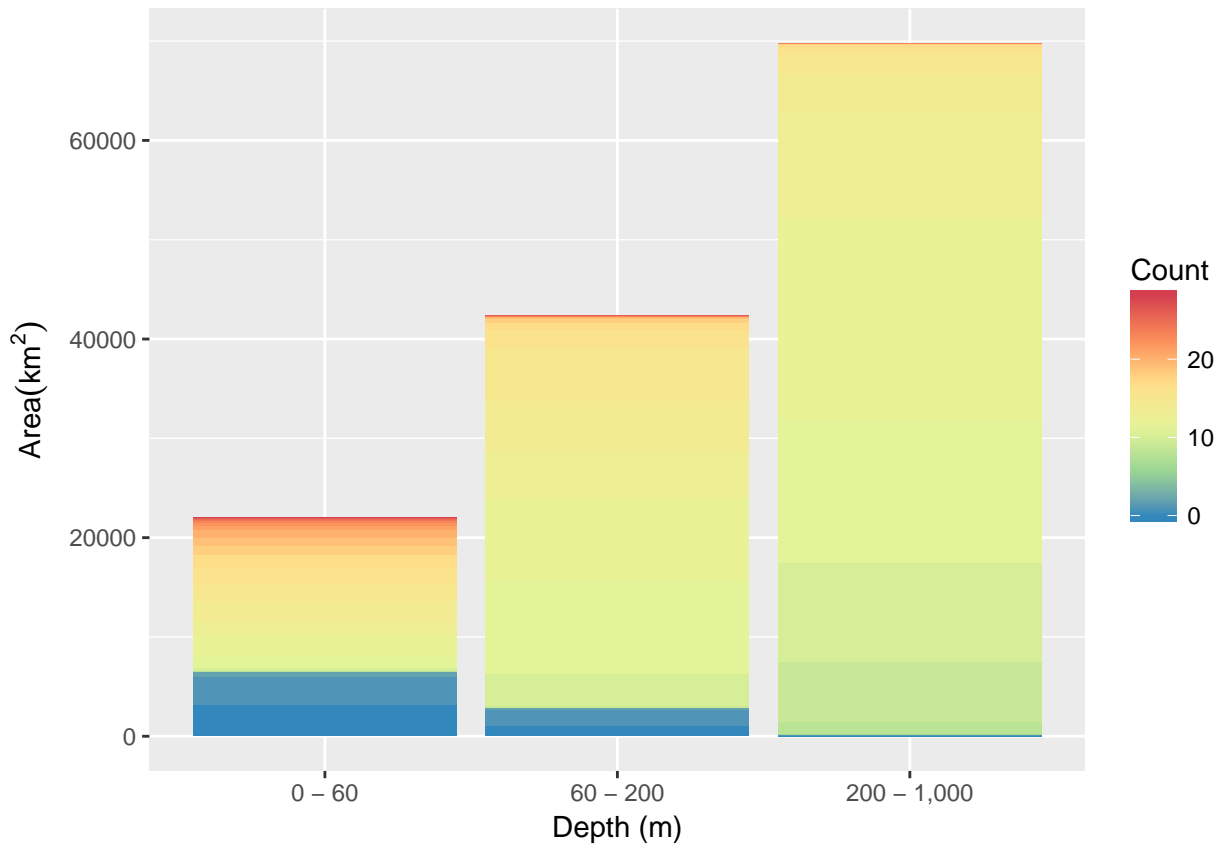


Figure 46: Area of Cumulative Ocean Use by Depth (m) for West region. Cumulative use are counted and summarized by Depth (m) and area.

## West: Map of Tide

## West: Plot of Uses by Tide

## West: Table of Uses by Tide

Table 20: Area (km<sup>2</sup>) 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 Tide (Win2) bin.

Category	Ocean Use		Area (km <sup>2</sup> ) by Tide (Win2)				Total	Rank
	Dataset	Layer	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 Ext	■	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



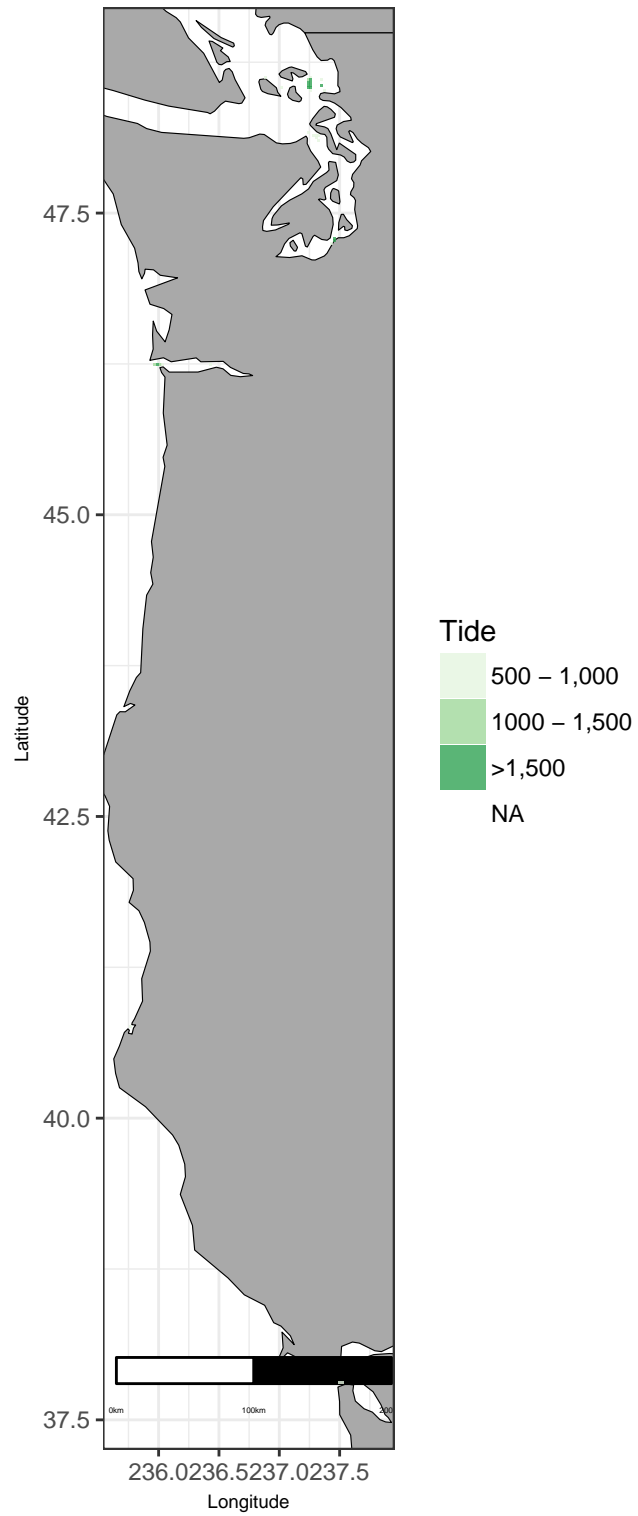


Figure 47: Map of viable tide in West region.

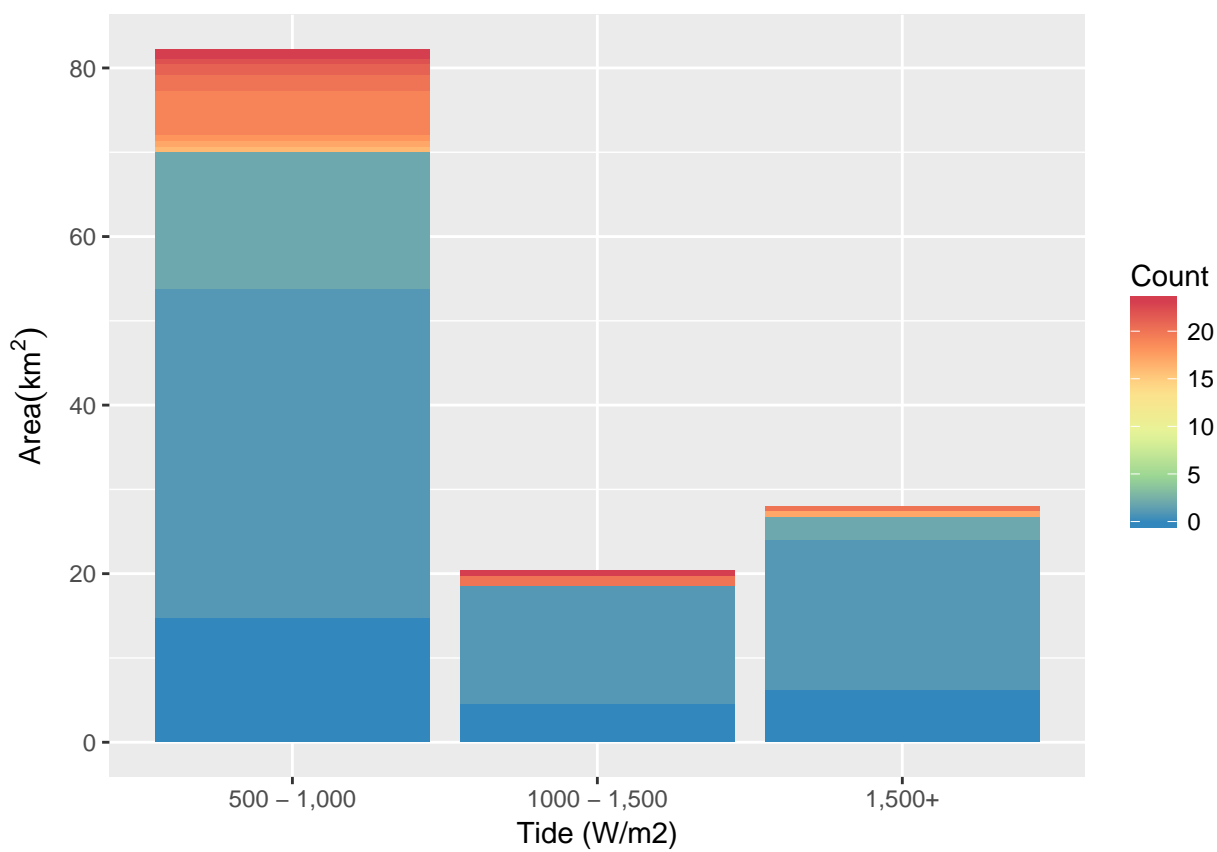


Figure 48: Area of Cumulative Ocean Use by Tide (W/m²) for West region. Cumulative use are counted and summarized by Tide (W/m²) and area.

West: Map of Wave

West: Plot of Uses by Wave

West: Table of Uses by Wave

Table 21: Area (km<sup>2</sup>) 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 Wave (Wave) bin.

Ocean Use		Area (km <sup>2</sup> ) by Wave (Wave)					Total	Rank
Category	Distant	Layer	0-20	20-30	30+			
Total Area			6,680	10,608	12,200	49,488		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 MPAs	616	888	238	1,742	31	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Cannery Kelp	271	156	18	445	45	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Eelgrass	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 Reefs	348	997	2,334	3,680	23	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	Sesuvium	2	14	0	16	60	
Ocean Use: Transportation: Commercial Shipping	Shipping Lanes		112	252	174	538	39	
Ocean Use: Aquaculture	Shellfish		1	0	0	1	62	
	Air Energy Farm		1,864	4,289	6,429	12,578	14	
Ocean Use: Aquaculture	Aquaculture		30	0	0	30	58	
	Beach		323	208	8	537	40	
Ocean Use: Aquaculture	Cables		485	735	640	1,860	30	
	Cannery Kelp		2,463	4,399	7,884	14,745	7	
Ocean Use: Aquaculture	Cannery Kelp		2,463	4,399	7,884	14,745	13	
	Cannery Kelp		557	492	65	1,114	35	
Ocean Use: Aquaculture	Cannery Kelp		384	399	73	857	37	
	Cannery Kelp		4,289	6,429	7,884	18,592	8	
Ocean Use: Aquaculture	Hunting		942	1,449	158	2,549	26	
	Kelp Fishing		2,666	3,711	1,836	8,213	19	
Ocean Use: Aquaculture	Military		1,864	4,289	7,884	20,404	5	
	Mining		39	11	0	50	55	
Ocean Use: Aquaculture	Monumental Hunting		1,864	4,289	7,884	20,404	5	
	Oil		2,542	6,526	6,957	16,025	11	
Ocean Use: Aquaculture	Paddling		2,775	5,512	1,322	7,609	20	
	Race Boat		2,775	5,512	7,219	15,506	6	
Ocean Use: Aquaculture	Race Boat		2,698	2,666	438	5,801	21	
	Race Boat		1,173	1,551	166	2,890	24	
Ocean Use: Aquaculture	Sailing		2,775	5,512	7,884	20,404	5	
	Scuba		1,068	1,046	280	2,393	28	
Ocean Use: Aquaculture	Shipping		1,662	4,537	4,392	10,591	17	
	Shore Fishing		332	224	10	567	38	
Ocean Use: Aquaculture	Surface Sports		1,682	1,030	172	2,884	25	
	Swimming		286	134	0	420	46	
Ocean Use: Aquaculture	Tidepooling		295	183	6	483	44	
	Wildlife Viewing		2,26	1,40	7,373	19,459	9	
Ocean Use: Aquaculture	Aquaculture		2	0	0	2	61	
	Cannery Kelp		16	2	0	18	59	
Ocean Use: Aquaculture	Cannery Kelp		149	1,289	1,095	2,533	1	
	Cannery Kelp		149	1,289	1,095	2,533	1	
Ocean Use: Aquaculture	Cannery Kelp		2	42	0	44	56	
	Cannery Kelp		149	1,289	1,095	2,533	1	
Ocean Use: Aquaculture	Cannery Kelp		29	24	9,678	9,731	18	
	Cannery Kelp		149	1,289	1,095	2,533	1	
Ocean Use: Aquaculture	Fishing Shows		16	61	1	80	52	
	Hunting		144	1,210	10,803	12,157	16	
Ocean Use: Aquaculture	Kelp Fishing		95	341	101	536	41	
	Marine Debris		58	377	1,730	1,805	32	
Ocean Use: Aquaculture	Military Operations		149	1,289	1,095	2,533	1	
	Mining		34	152	63	249	48	
Ocean Use: Aquaculture	Monumental Hunting		149	1,289	1,095	2,533	2	
	Ocean		6	299	11,719	12,024	15	
Ocean Use: Aquaculture	Offshore Air Energy		2	40	268	310	47	
	Paddling		134	683	142	959	36	
Ocean Use: Aquaculture	Perm Research Area		144	1,212	15,642	16,998	10	
	Race Boat		60	666	554	1,280	33	
Ocean Use: Aquaculture	Race Boat		149	1,289	1,095	2,533	1	
	Race Boat		149	1,289	1,095	2,533	1	
Ocean Use: Aquaculture	Race Boat		23	78	1	99	50	
	Sailing		149	1,289	1,095	2,533	1	
Ocean Use: Aquaculture	Scuba		52	662	541	1,254	34	
	Shipping		109	451	654	2,214	3	
Ocean Use: Aquaculture	Shore Use		15	59	1	74	53	
	Surface Board Sports		92	396	28	517	42	
Ocean Use: Aquaculture	Swimming		92	396	28	516	43	
	Tide Pooling		21	61	1	83	51	
Ocean Use: Aquaculture	Underwater Cables		50	113	2,282	2,444	27	
	Wildlife Viewing		149	1,289	1,095	2,533	4	

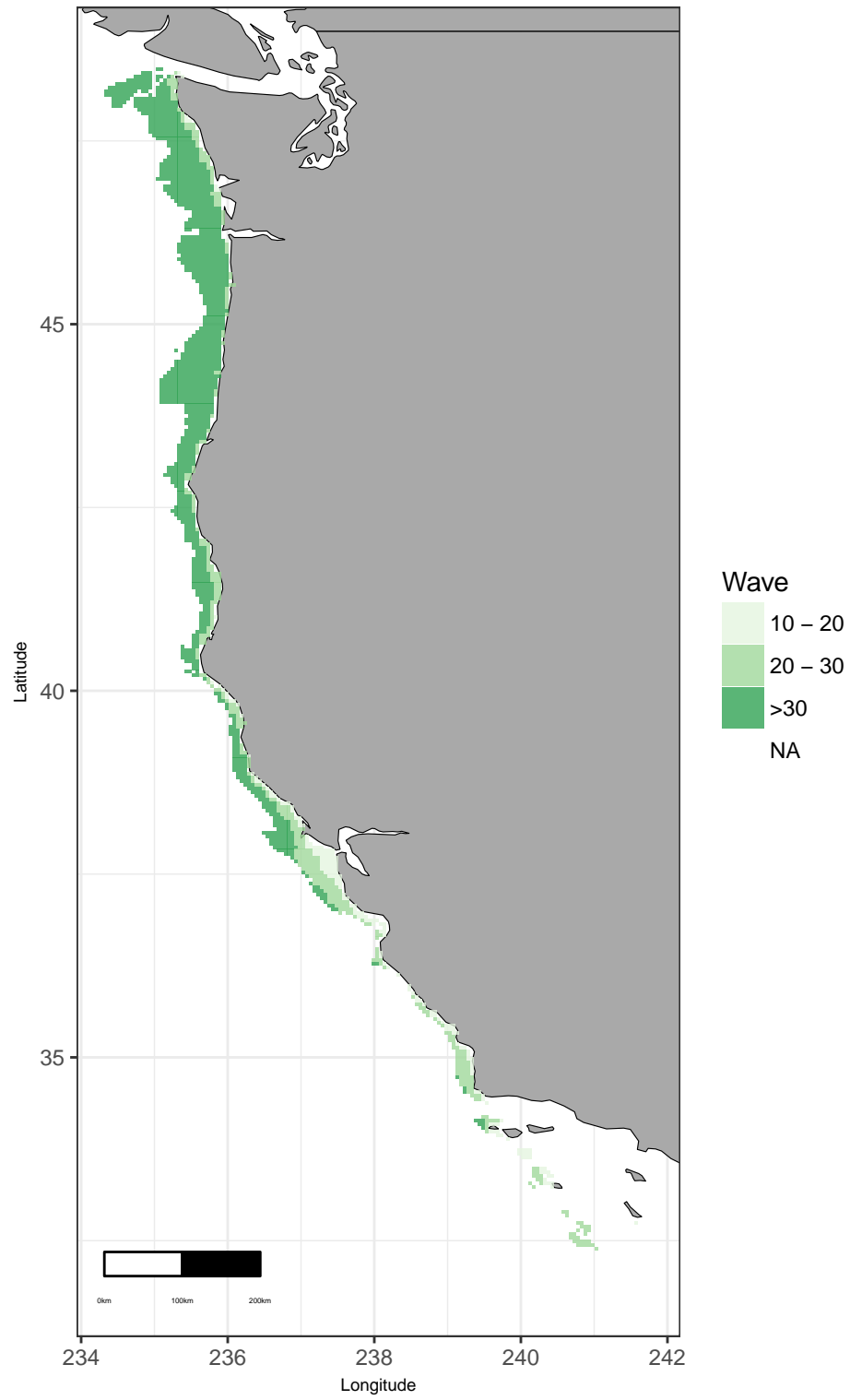


Figure 49: Map of viable wave in West region.

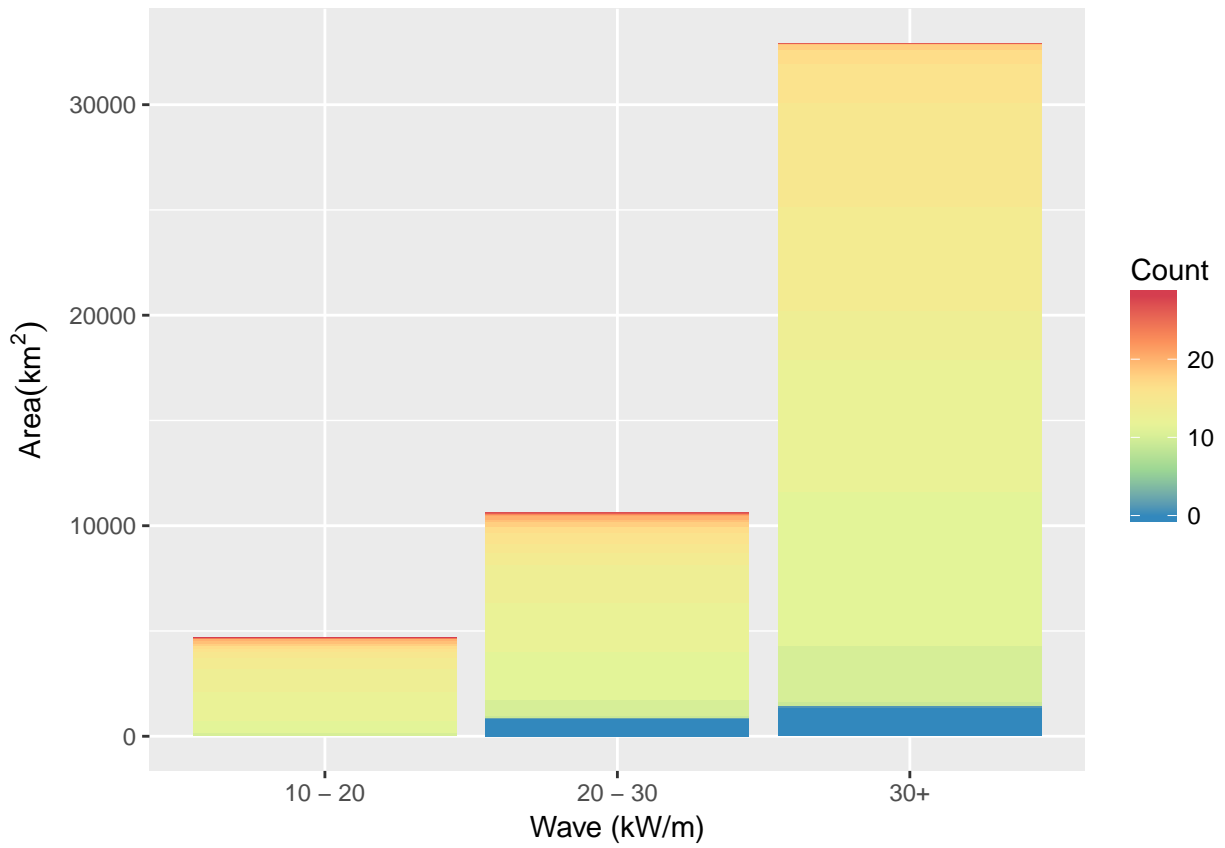


Figure 50: Area of Cumulative Ocean Use by Wave (kW/m) for West region. Cumulative use are counted and summarized by Wave (kW/m) and area.

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 @ West) for West region. Width of grey horizontal bars from left of cell indicate percent area occupied in given Wind (m/s @ West) Use.

Ocean Use		Area (km²) by Wind (m/s @ West)					Total	Rank
Category	Subcat	7	8	9+				
	Total Area	28,018	36,109	16,137		59,263		0
Government: Commercial Lanes	Active Oil & Gas Lanes	153	73	0		226	53	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	5,012	7,231	483		13,226	25	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	11,629	7,768	236		19,634	20	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	139	129	6		274	49	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	4	0	0		4	65	
Government: Marine Protected Areas (MPAs)	Marine Protected Areas	913	1,030	64		2,008	33	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	116	40	11		167	55	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	387	0	0		387	46	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	2,057	1,286	11		3,353	31	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	2,866	3,443	1,171		6,381	27	
Living Resources: Biological Occurrence: Fishes	Essential Fish Habitat	106	0	0		106	59	
Ocean Use: Transportation: Commercial Shipping	Shipping Lanes	403	411	0		904	41	
Ocean Use: Active for California	Oil Energy/Power	6,728	8,274	1,440		16,442	22	
Ocean Use: Active for California	Aggregates	24	0	0		24	64	
Ocean Use: Active for California	Beach	186	89	3		278	48	
Ocean Use: Active for California	Cables	4,560	2,377	39		7,007	26	
Ocean Use: Active for California	Com. Benthic Food	17,694	7,824			45,338	6	
Ocean Use: Active for California	Com. Benthic Mobile	13,658	14,400	6,911		34,969	14	
Ocean Use: Active for California	Com. Dive	711	344	22		1,077	37	
Ocean Use: Active for California	Com. Kelp	112	5	8		125	57	
Ocean Use: Active for California	Com. Pelagic	19,404	7,821			47,239	4	
Ocean Use: Active for California	Hunting	6,530	8,336	545		15,411	24	
Ocean Use: Active for California	Kayak Fishing	2,858	1,842	283		4,982	29	
Ocean Use: Active for California	Military	19,945	7,439			48,018	1	
Ocean Use: Active for California	Mining	32	0	0		32	63	
Ocean Use: Active for California	Monitored Boating	19,945	7,439			48,018	1	
Ocean Use: Active for California	Oil	19,378	7,782			46,211	5	
Ocean Use: Active for California	Paddling	2,699	1,728	303		4,730	28	
Ocean Use: Active for California	Rac. Boat	19,480	7,424			47,435	3	
Ocean Use: Active for California	Rac. Dive	2,459	839	37		3,335	32	
Ocean Use: Active for California	Rac. Shore Boaters	6,406	8,363	546		15,315	23	
Ocean Use: Active for California	Sailing	19,945	7,807			47,966	2	
Ocean Use: Active for California	Scuba	947	830	22		1,799	34	
Ocean Use: Active for California	Shipping	16,983	4,698			38,052	13	
Ocean Use: Active for California	Shore Fishing	171	27	1		199	54	
Ocean Use: Active for California	Surface Sports	1,052	483	13		1,548	36	
Ocean Use: Active for California	Swimming	57	15	0		72	62	
Ocean Use: Active for California	Tidepooling	172	67	3		242	51	
Ocean Use: Active for California	Wildlife Viewing	16,206	6,339			38,826	12	
Ocean Use: Active for Oregon & Washington	Aggregates	266	0	0		266	50	
Ocean Use: Active for Oregon & Washington	Com. Dive Fishing	1	0	0		1	67	
Ocean Use: Active for Oregon & Washington	Com. Fishing Food	6,437	7,818			43,554	7	
Ocean Use: Active for Oregon & Washington	Com. Fishing Mobile	6,437	7,818			43,517	9	
Ocean Use: Active for Oregon & Washington	Com. Gathering Shores	237	0	0		237	52	
Ocean Use: Active for Oregon & Washington	Com. Pelagic Fishing	6,437	7,818			43,554	7	
Ocean Use: Active for Oregon & Washington	Cruise Ships	1,335	18,229	3,359		22,923	19	
Ocean Use: Active for Oregon & Washington	Cultural Use	6,437	7,818			43,554	7	
Ocean Use: Active for Oregon & Washington	Fishing Shores	86	1	0		86	60	
Ocean Use: Active for Oregon & Washington	Hunting	6,026	11,824	0		17,850	21	
Ocean Use: Active for Oregon & Washington	Kayak Fishing	470	6	0		476	43	
Ocean Use: Active for Oregon & Washington	Marine Debris	791	831	0		1,622	35	
Ocean Use: Active for Oregon & Washington	Military Operations	6,437	7,818			43,554	7	
Ocean Use: Active for Oregon & Washington	Mining Mineral Est	478	55	0		533	42	
Ocean Use: Active for Oregon & Washington	Monitored Boating	5,820	13,236	3,932		33,008	15	
Ocean Use: Active for Oregon & Washington	Ocean Dumping	4,698	14,430	1,268		24,386	17	
Ocean Use: Active for Oregon & Washington	Offshore Oil Energy	80	238	26		337	47	
Ocean Use: Active for Oregon & Washington	Paddling	930	54	0		984	39	
Ocean Use: Active for Oregon & Washington	Peru Research Areas	6,029	17,212	830		24,071	18	
Ocean Use: Active for Oregon & Washington	Rac. Dive Fishing	1,012	20	0		1,032	38	
Ocean Use: Active for Oregon & Washington	Rac. Fishing Boat Boats	6,437	24,083	7,189		39,609	11	
Ocean Use: Active for Oregon & Washington	Rac. Fishing Pel Boats	6,437	7,818			43,554	7	
Ocean Use: Active for Oregon & Washington	Rac. Gathering Shores	125	1	0		126	56	
Ocean Use: Active for Oregon & Washington	Sailing	6,437	7,818			43,554	8	
Ocean Use: Active for Oregon & Washington	Scuba Recreational	962	0	0		962	40	
Ocean Use: Active for Oregon & Washington	Shipping	3,612	24,037	7,818		46,467	10	
Ocean Use: Active for Oregon & Washington	Shore Use	79	1	0		79	64	
Ocean Use: Active for Oregon & Washington	Surface Board Sports	451	13	0		464	44	
Ocean Use: Active for Oregon & Washington	Swimming	303	13	0		406	45	
Ocean Use: Active for Oregon & Washington	Tide Pooling	118	1	0		119	58	
Ocean Use: Active for Oregon & Washington	Underwater Cables	964	2,759	341		4,264	30	
Ocean Use: Active for Oregon & Washington	Underwater Pipelines	1	0	0		1	66	
Ocean Use: Active for Oregon & Washington	Wildlife Viewing Sea	6,094	17,106	4,250		27,550	16	

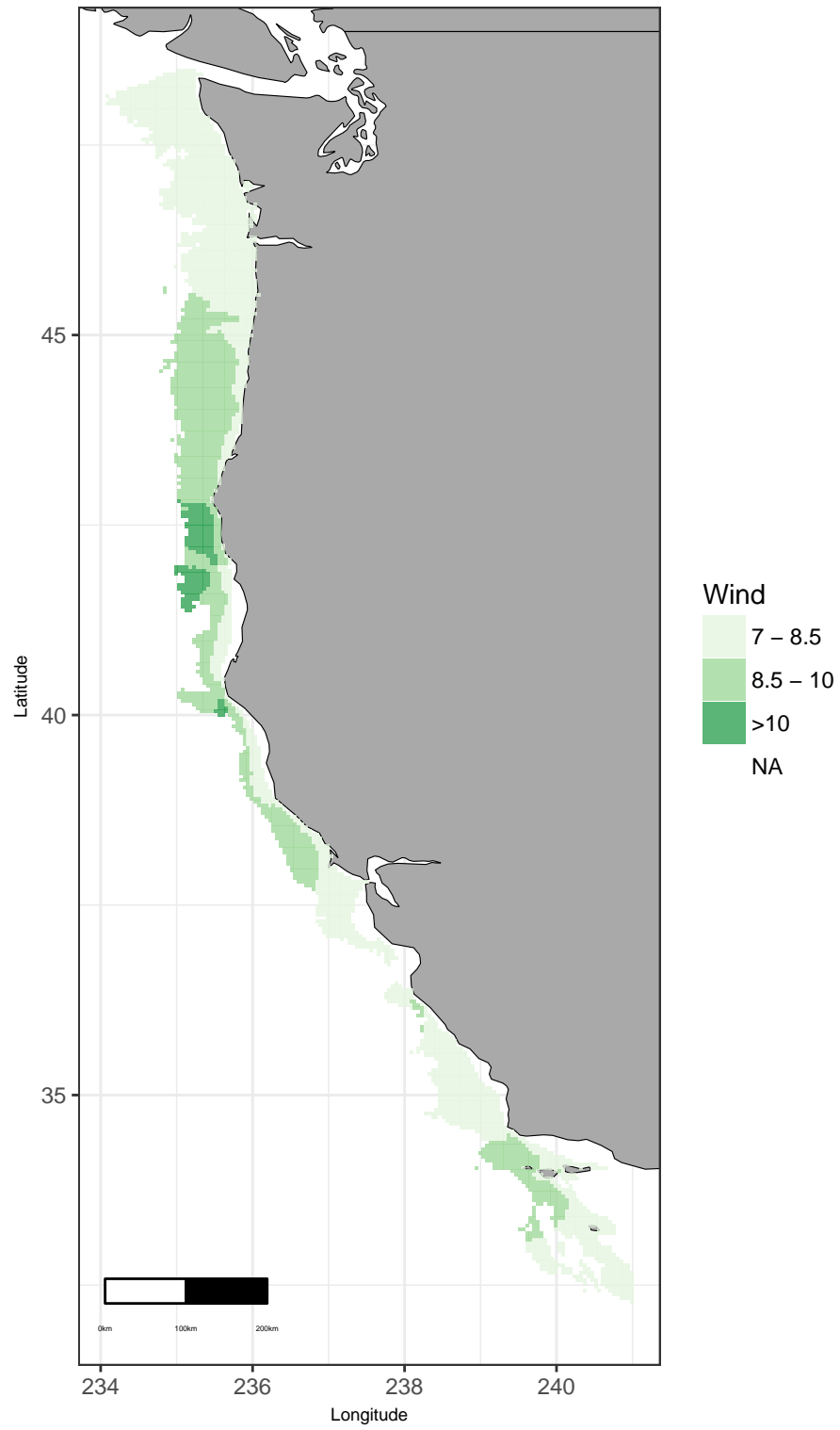


Figure 51: Map of viable wind in West region.

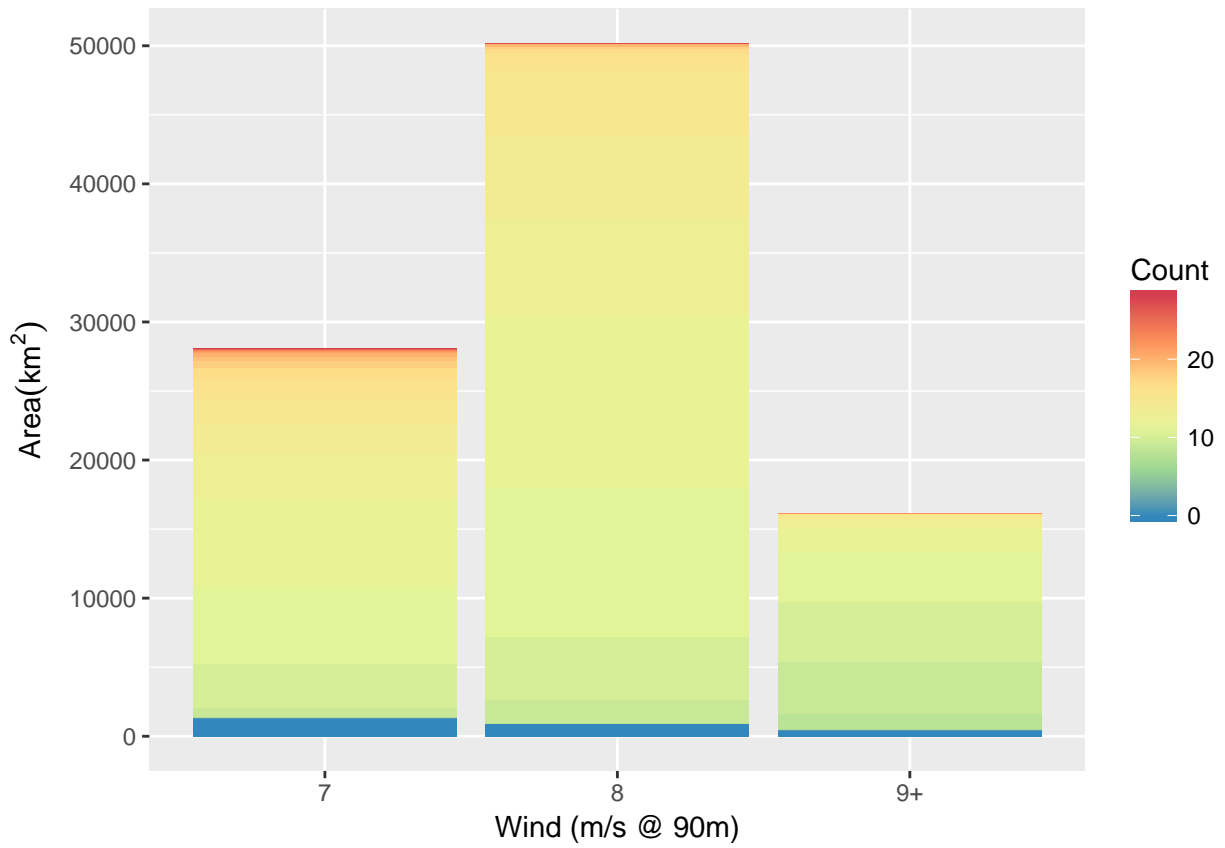


Figure 52: Area of Cumulative Ocean Use by Wind (m/s @ 90m) for West region. Cumulative use are counted and summarized by Wind (m/s @ 90m) and area.