

LAMPIRAN

1. Lampiran foto dokumentasi



a. Lokasi Penelitian



b. Pengukuran menggunakan



c. Penentuan titik koordinat

2. Lampiran data Gekombang (Hs) Observasi lapangan 14 Desember – 16 Desember 2018

- 14 Desember 2018 (m)

Jam perekaman	No	Tinggi Gelombang	Hs
06:00	1	0.52	0,623333
	2	0.42	
	3	0.59	
	4	0.53	
	5	0.52	

	6	0.49	
	7	0.53	
	8	0.69	
	9	0.59	
	10	0.54	
9:00	1	0.56	0,653333
	2	0.56	
	3	0.68	
	4	0.5	
	5	0.57	
	6	0.52	
	7	0.71	
	8	0.33	
	9	0.51	
	10	0.47	
12:00	1	0.33	0,486667
	2	0.36	
	3	0.33	
	4	0.46	
	5	0.5	
	6	0.52	
	7	0.24	
	8	0.41	
	9	0.48	
	10	0.36	
15:00	1	0.01	0,383333
	2	0.35	
	3	0.04	
	4	0.29	
	5	0.35	
	6	0.41	
	7	0.24	
	8	0.31	
	9	0.28	
	10	0.39	
18:00	1	0.25	0,403333
	2	0.32	
	3	0.26	
	4	0.48	
	5	0.3	
	6	0.27	
	7	0.41	
	8	0.4	
	9	0.3	
	10	0.29	

- 15 Desember 2018 (m)

Jam perekaman	No	Tinggi Gelombang	Hs
06:00	1	0.4	0,606667
	2	0.6	
	3	0.47	
	4	0.43	
	5	0.31	
	6	0.51	
	7	0.6	
	8	0.62	
	9	0.46	
	10	0.55	
9:00	1	0.42	0,583333
	2	0.51	
	3	0.66	
	4	0.49	
	5	0.45	
	6	0.58	
	7	0.43	
	8	0.43	
	9	0.47	
	10	0.48	
12:00	1	0.22	0,276667
	2	0.26	
	3	0.28	
	4	0.21	
	5	0.29	
	6	0.15	
	7	0.2	
	8	0.17	
	9	0.26	
	10	0.25	
15:00	1	0.18	0,193333
	2	0.21	
	3	0.19	
	4	0.1	
	5	0.13	
	6	0.12	
	7	0.14	
	8	0.16	
	9	0.14	
	10	0.14	
18:00	1	0.11	0,153333
	2	0.06	
	3	0.14	

	4	0.13
	5	0.13
	6	0.09
	7	0.18
	8	0.14
	9	0.12
	10	0.13

- 16 Desember 2018 (m)

Jam perekaman	No	Tinggi Gelombang	Hs
06:00	1	0.52	0,536667
	2	0.49	
	3	0.6	
	4	0.44	
	5	0.34	
	6	0.45	
	7	0.43	
	8	0.49	
	9	0.34	
	10	0.34	
9:00	1	0.26	0,246667
	2	0.18	
	3	0.11	
	4	0.15	
	5	0.17	
	6	0.19	
	7	0.16	
	8	0.18	
	9	0.14	
	10	0.29	
12:00	1	0.16	0,240000
	2	0.14	
	3	0.2	
	4	0.28	
	5	0.17	
	6	0.22	
	7	0.22	
	8	0.15	
	9	0.18	
	10	0.17	
15:00	1	0.2	0,233333
	2	0.12	
	3	0.15	
	4	0.19	
	5	0.22	

	6	0.22	
	7	0.25	
	8	0.23	
	9	0.18	
	10	0.2	
18:00	1	0.21	0,206667
	2	0.13	
	3	0.17	
	4	0.21	
	5	0.11	
	6	0.17	
	7	0.15	
	8	0.2	
	9	0.13	
	10	0.13	

3. Lampiran data *WaveWatch III* (m) BMKG

- 14 Desember 2018

Hari 1	Tinggi Gelombang
6:00	0,704946
9:00	0,284099
12:00	0,332115
15:00	0,408648
18:00	0,36851

- 15 Desember 2018

Hari 2	Tinggi Gelombang
6:00	0,117132
9:00	0,0911443
12:00	0,0895064
15:00	0,0908752
18:00	0,0548355

- 16 Desember 2018

Hari 3	Tinggi Gelombang
6:00	0,00273
9:00	0,00231
12:00	0,00207
15:00	0,00183
18:00	0,00167

4. Arah Angin Lapangan 14 – 16 Desember 2018

- 14 Desember 2018

Jam Perekaman	No	Arah Angin
06:00	1	288° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
9:00	1	285° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
12:00	1	285° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
15:00	1	276° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
18:00	1	274° B
	2	
	3	
	4	
	5	
	6	

	7	
	8	
	9	
	10	

- **15 Desember 2018**

Jam Perekaman	No	Arah Angin
06:00	1	239° BD
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
9:00	1	285° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
12:00	1	262° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
15:00	1	260° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
18:00	1	244° BD

	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

• **16 Desember 2018**

Jam Perekaman	No	Arah Angin
06:00	1	219° BD
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
9:00	1	239° BD
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
12:00	1	257° B
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
15:00	1	293° BL
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

18:00	1	228° BD
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

5. Lampiran kedua data Hs 14 – 16 Desember 2018

Jam	Lapangan	BMKG
6:00	0,62	0,705
9:00	0,65	0,284
12:00	0,48	0,332
15:00	0,38	0,409
18:00	0,40	0,369
6:00	0,60	0,117
9:00	0,58	0,091
12:00	0,27	0,090
15:00	0,19	0,091
18:00	0,15	0,055
6:00	0,53	0,003
9:00	0,24	0,002
12:00	0,24	0,002
15:00	0,23	0,002
18:00	0,21	0,002

6. Nilai RMSE gelombang signifikan (hs) observasi dan BMKG

Jam	Lapangan	BMKG	Zi-Zj	(Zi-Zj)^2	RMSE
6:00	0,623	0,705	-0,082	0,007	1,203
9:00	0,653	0,284	0,369	0,136	0,080
12:00	0,487	0,332	0,155	0,024	
					√0.080
15:00	0,383	0,409	-0,025	0,001	
18:00	0,403	0,369	0,035	0,001	=0.283
6:00	0,607	0,117	0,490	0,240	
9:00	0,583	0,091	0,492	0,242	
12:00	0,277	0,090	0,187	0,035	
15:00	0,193	0,091	0,102	0,010	
18:00	0,153	0,055	0,098	0,010	
6:00	0,537	0,003	0,534	0,285	
9:00	0,247	0,002	0,244	0,060	
12:00	0,240	0,002	0,238	0,057	
15:00	0,233	0,002	0,231	0,054	

18:00 0,207 0,002 0,205 0,042

7. Perhitungan Hs (m) Lapangan

$$H_s = \frac{H_1 + H_2 + \dots + H_n}{n}$$

• **Hari pertama 14 Desember 2018**

➤ Jam 06:00 pagi

$$H_s = 0,59 + 0,69 + 0,59$$

$$\begin{aligned} & \frac{\quad\quad\quad}{3} \\ &= \frac{1,87}{3} \\ &= 0,62333\text{m} \end{aligned}$$

➤ Jam 09:00 pagi

$$H_s = 0,71 + 0,68 + 0,57$$

$$\begin{aligned} & \frac{\quad\quad\quad}{3} \\ &= \frac{1,96}{3} \\ &H_s = 0,65333 \text{ m} \end{aligned}$$

➤ Jam 12:00 siang

$$H_s = 0,52 + 0,48 + 0,46$$

$$\begin{aligned} & \frac{\quad\quad\quad}{3} \\ &= \frac{1,46}{3} \\ &H_s = 0,48667 \text{ m} \end{aligned}$$

➤ Jam 15:00 Sore

$$H_s = 0,41 + 0,39 + 0,35$$

$$\begin{aligned} & \frac{\quad\quad\quad}{3} \\ &= \frac{1,15}{3} \\ &H_s = 0,38333 \text{ m} \end{aligned}$$

➤ Jam 18:00 Sore

$$H_s = 0,48 + 0,41 + 0,32$$

$$\begin{aligned} & \frac{\quad\quad\quad}{3} \\ &= \frac{1,21}{3} \\ &H_s = 0,40333 \text{ m} \end{aligned}$$

• **Hari Kedua 15 Desember 2018**

➤ Jam 06:00 pagi

$$H_s = 0,62 + 0,60 + 0,60$$

$$\frac{\quad\quad\quad}{3}$$

$$= \frac{1,82}{3}$$

$$H_s = 0,60667 \text{ m}$$

➤ Jam 09:00 pagi

$$H_s = 0,66+0,58+0,51$$

3

$$= \frac{1,75}{3}$$

$$H_s = 0,58333 \text{ m}$$

➤ Jam 12:00 siang

$$H_s = 0,29+0,26+0,21$$

3

$$= \frac{0,83}{3}$$

$$H_s = 0,27667 \text{ m}$$

➤ Jam 15:00 Sore

$$H_s = 0,21+0,19+0,18$$

3

$$= \frac{0,58}{3}$$

$$H_s = 0,19333 \text{ m}$$

➤ Jam 18:00 Sore

$$H_s = 0,19+0,14+0,14$$

3

$$= \frac{0,46}{3}$$

$$H_s = 0,15333 \text{ m}$$

• **Hari Ketiga 16 Desember 2018**

➤ Jam 06:00 pagi

$$H_s = 0,60+0,52+0,49$$

3

$$= \frac{1,61}{3}$$

$$H_s = 0,53667 \text{ m}$$

➤ Jam 09:00 pagi

$$H_s = 0,29+0,26+0,19$$

3

$$= \frac{0,74}{3}$$

$$H_s = 0,24667 \text{ m}$$

➤ Jam 12:00 siang

$$H_s = \frac{0,28+0,22+0,22}{3}$$

$$= \frac{0,72}{3}$$

$$H_s = 0,24000 \text{ m}$$

➤ Jam 15:00 Sore

$$H_s = \frac{0,25+0,23+0,22}{3}$$

$$= \frac{0,70}{3}$$

$$H_s = 0,23333 \text{ m}$$

➤ Jam 18:00 Sore

$$H_s = \frac{0,21+0,21+0,20}{3}$$

$$= \frac{0,62}{3}$$

$$H_s = 0,20667 \text{ m}$$

8. Lampiran Data Pasut

Lon	yyyy-mm-dd	hh:mm:ss	(UTC) z(m)
105.1283	12/14/2018	0:00:00	0.037
105.1283	12/14/2018	1:00:00	0.381
105.1283	12/14/2018	2:00:00	0.679
105.1283	12/14/2018	3:00:00	0.91
105.1283	12/14/2018	4:00:00	1.061
105.1283	12/14/2018	5:00:00	1.127
105.1283	12/14/2018	6:00:00	1.116
105.1283	12/14/2018	7:00:00	1.038
105.1283	12/14/2018	8:00:00	0.908
105.1283	12/14/2018	9:00:00	0.739
105.1283	12/14/2018	10:00:00	0.542
105.1283	12/14/2018	11:00:00	0.324
105.1283	12/14/2018	12:00:00	0.092
105.1283	12/14/2018	13:00:00	-0.149

105.1283	12/14/2018	14:00:00	-0.39
105.1283	12/14/2018	15:00:00	-0.621
105.1283	12/14/2018	16:00:00	-0.827
105.1283	12/14/2018	17:00:00	-0.99
105.1283	12/14/2018	18:00:00	-1.092
105.1283	12/14/2018	19:00:00	-1.119
105.1283	12/14/2018	20:00:00	-1.06
105.1283	12/14/2018	21:00:00	-0.917
105.1283	12/14/2018	22:00:00	-0.696
105.1283	12/14/2018	23:00:00	-0.419
105.1283	12/15/2018	0:00:00	-0.109
105.1283	12/15/2018	1:00:00	0.204
105.1283	12/15/2018	2:00:00	0.491
105.1283	12/15/2018	3:00:00	0.727
105.1283	12/15/2018	4:00:00	0.897
105.1283	12/15/2018	5:00:00	0.991
105.1283	12/15/2018	6:00:00	1.009
105.1283	12/15/2018	7:00:00	0.958
105.1283	12/15/2018	8:00:00	0.852
105.1283	12/15/2018	9:00:00	0.702
105.1283	12/15/2018	10:00:00	0.522
105.1283	12/15/2018	11:00:00	0.323
105.1283	12/15/2018	12:00:00	0.115
105.1283	12/15/2018	13:00:00	-0.095
105.1283	12/15/2018	14:00:00	-0.3
105.1283	12/15/2018	15:00:00	-0.492
105.1283	12/15/2018	16:00:00	-0.662
105.1283	12/15/2018	17:00:00	-0.799
105.1283	12/15/2018	18:00:00	-0.89
105.1283	12/15/2018	19:00:00	-0.924
105.1283	12/15/2018	20:00:00	-0.893
105.1283	12/15/2018	21:00:00	-0.794
105.1283	12/15/2018	22:00:00	-0.632
105.1283	12/15/2018	23:00:00	-0.417
105.1283	12/16/2018	0:00:00	-0.166
105.1283	12/16/2018	1:00:00	0.097
105.1283	12/16/2018	2:00:00	0.349
105.1283	12/16/2018	3:00:00	0.568
105.1283	12/16/2018	4:00:00	0.733
105.1283	12/16/2018	5:00:00	0.835
105.1283	12/16/2018	6:00:00	0.867
105.1283	12/16/2018	7:00:00	0.833

105.1283	12/16/2018	8:00:00	0.741
105.1283	12/16/2018	9:00:00	0.604
105.1283	12/16/2018	10:00:00	0.437
105.1283	12/16/2018	11:00:00	0.253
105.1283	12/16/2018	12:00:00	0.066
105.1283	12/16/2018	13:00:00	-0.114
105.1283	12/16/2018	14:00:00	-0.28
105.1283	12/16/2018	15:00:00	-0.426
105.1283	12/16/2018	16:00:00	-0.545
105.1283	12/16/2018	17:00:00	-0.635
105.1283	12/16/2018	18:00:00	-0.688
105.1283	12/16/2018	19:00:00	-0.702
105.1283	12/16/2018	20:00:00	-0.672
105.1283	12/16/2018	21:00:00	-0.595
105.1283	12/16/2018	22:00:00	-0.474
105.1283	12/16/2018	23:00:00	-0.315

Tanggal	Jam Perekaman				
	6:00	9:00	12:00	15:00	18:00
14-12-2918	1.116	0.739	0.092	-0.621	-1.092
15-12-2919	1.009	0.702	0.115	-0.492	-0.890
16-12-2920	0.867	0.604	0.066	-0.426	-0.688