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Supporting Information

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Supporting Information for

Topographic control of tides in the Ross Sea: eddy-like structures, bottom-trapped waves, and energetics

Yue Xia¹, Hengling Leng², Zhaomin Wang², Craig Stevens^{3,4}, Chengyan Liu², Liangjun Yan⁵, Xianxian Han⁵, Dake Chen^{2,6}

¹School of Atmospheric Sciences, Sun Yat-sen University, and Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), Zhuhai, China.

²Southern Marine Science and Engineering Guangdong Laboratory (Zhuhai), Zhuhai, China.

³Earth Sciences New Zealand, Wellington, New Zealand.

⁴Dept. Physics, Univ. Auckland, Auckland, New Zealand.

⁵School of Marine Sciences, Sun Yat-sen University, Zhuhai, China.

⁶State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou, China.

Correspondence to: Hengling Leng (lenghengling@sml-zhuhai.cn)

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Introduction

In this document, Table S1 summarizes the Model-Observation Comparison, including the mooring stations chosen, as well as the validation depths and time periods selected.

Figures S1-S16 show the comparison of the simulated and observed tidal currents at different mooring stations shown in Table S1

Figure S17 shows the depth-integrated energy flux (W/m) components, including the time-averaged values along with snapshots taken at high tide and low tide.

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Table S1. Model-Observation Comparison Summary

Figure Number	Mooring Station	Validation Depth (m)	Validation Period
S1	adp1	864 m	2003-03-06 21:00–2003-04-06 20:00
S2	adp2	504 m	2004-03-09 01:00–2004-04-09 00:00
S3	ca1	484 m	2003-03-02 07:00–2003-04-02 06:00
S4	cb1	404 m	2003-03-03 07:00–2003-03-15 19:00
S5	cb2	381 m	2003-04-01 00:00–2003-05-01 00:00
3	cc1	449 m	2003-03-03-02:00–2003-04-03 01:00
S6	cd1	508 m	2003-03-02 21:00–2003-04-02 20:00
S7	ce1	1007 m	2003-03-03 20:00–2003-03-22 14:00
S8	ce2	1751 m	2003-04-01 00:00–2003-05-01 00:00
S9	eb1	586 m	2003-03-01 20:00–2003-04-01 19:00
S10	m1	478 m	2004-03-08 22:00–2004-04-08 21:00
S11	m3	491 m	2004-03-07 00:00–2004-04-06 23:00
S12	m4	384 m	2004-03-10 07:00–2004-04-10 06:00
S13	m5	1049 m	2004-03-09 07:00–2004-04-09 06:00
S14	wa1	587 m	2003-03-06 06:00–2003-04-06 05:00
S15	wb1	632 m	2003-03-06 02:00–2003-04-06 01:00
S16	wc1	1238 m	2003-03-04 02:00–2003-04-04 01:00

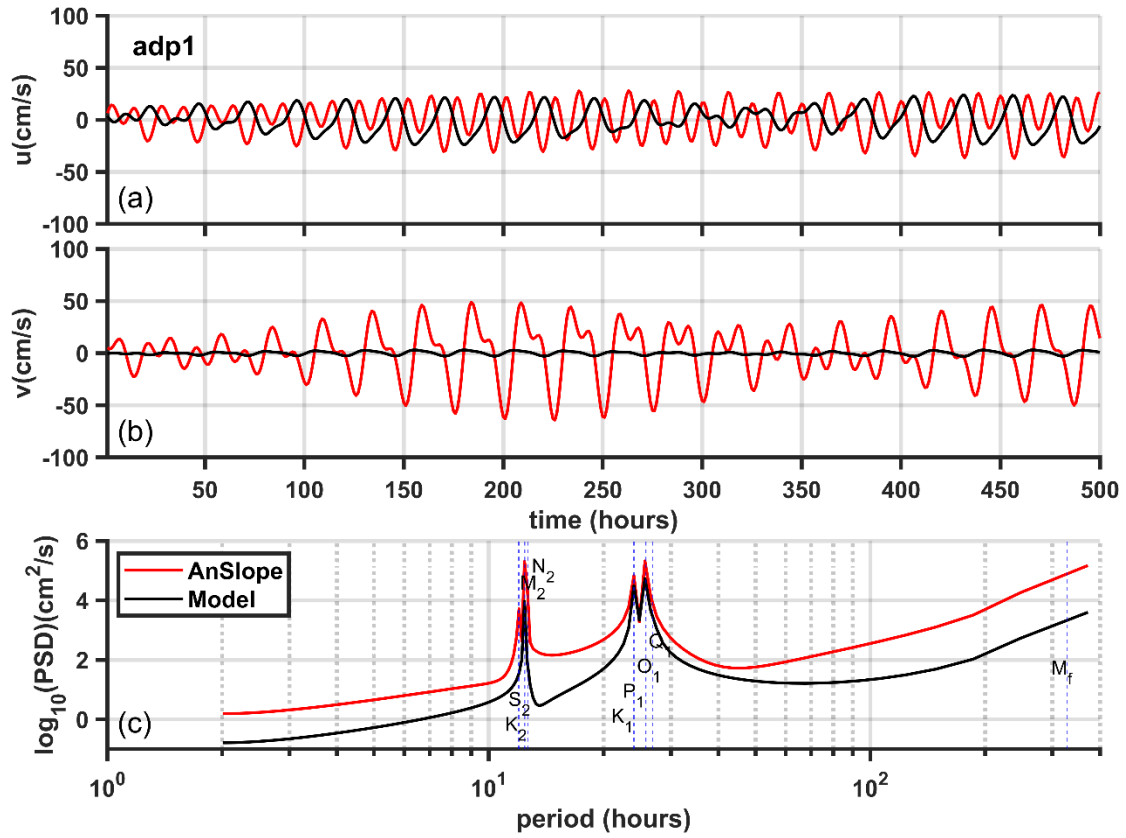


Figure S1. Comparison of the simulated tidal currents and observation from mooring adp1, showing the filtered time series (semi-diurnal and diurnal constituents) of the (a) meridional and (b) zonal tidal velocities, and (c) the corresponding power spectral density (PSD).

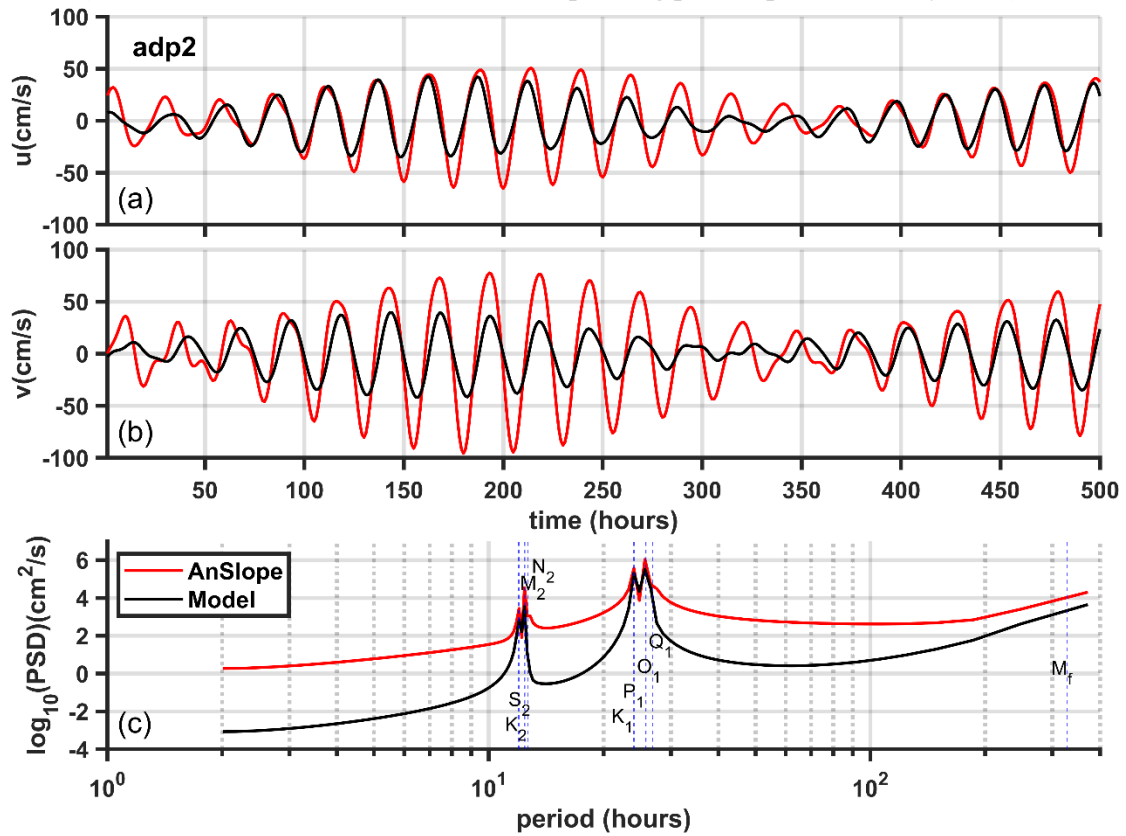


Figure S2. Comparison for mooring adp2, as in Figure S1.

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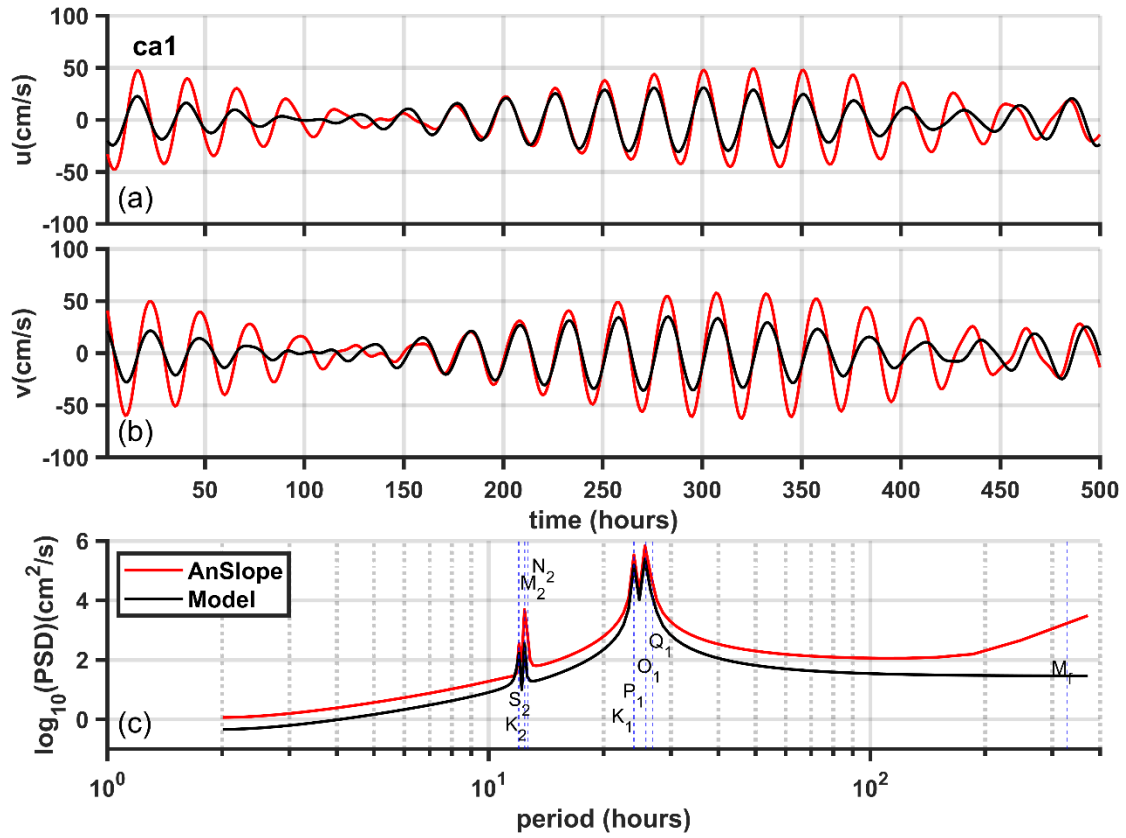


Figure S3. Comparison for mooring ca1, otherwise as in Figure S1.

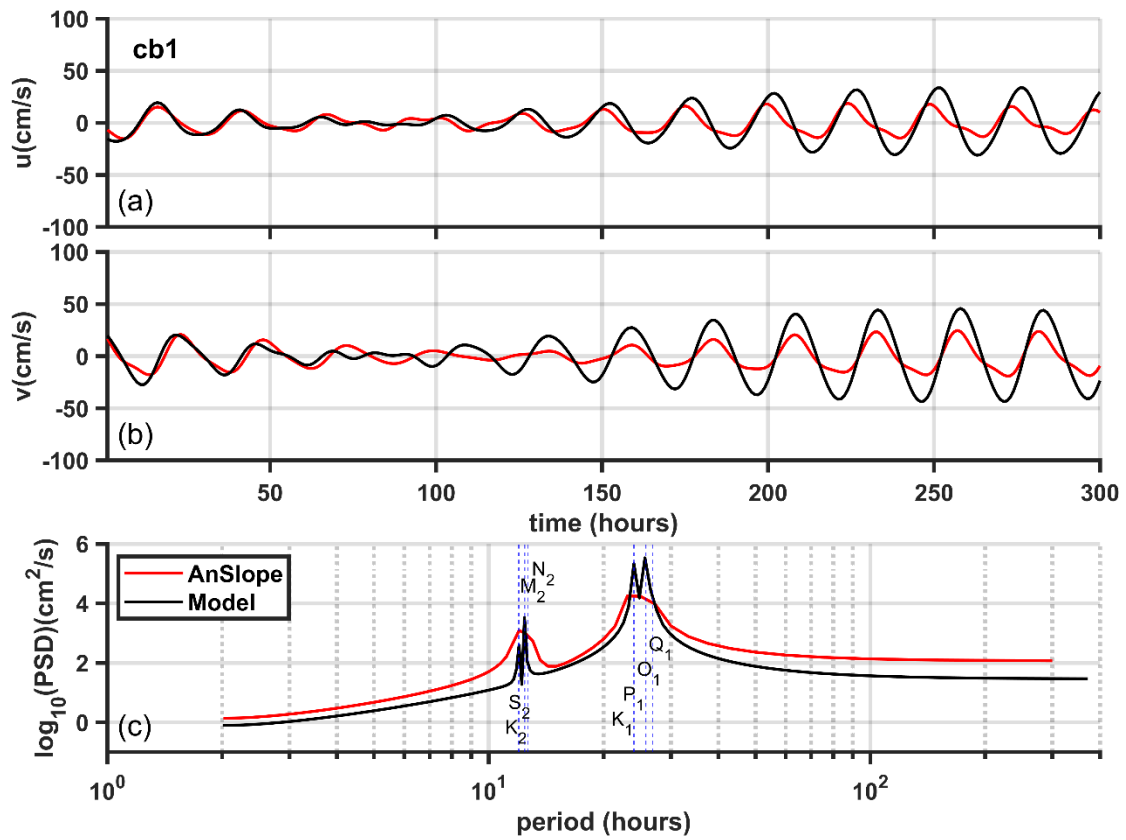


Figure S4. Comparison for mooring cb1, as in Figure S1.

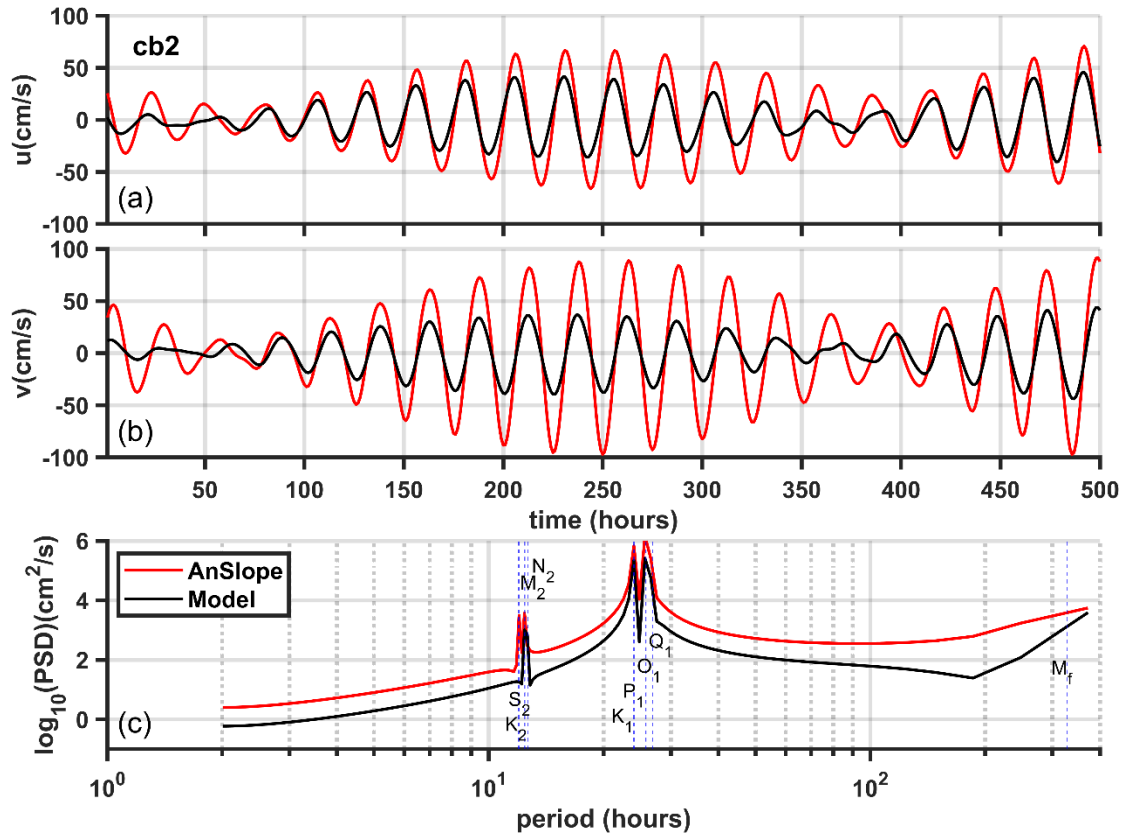


Figure S5. Comparison for mooring cb2, as in Figure S1.

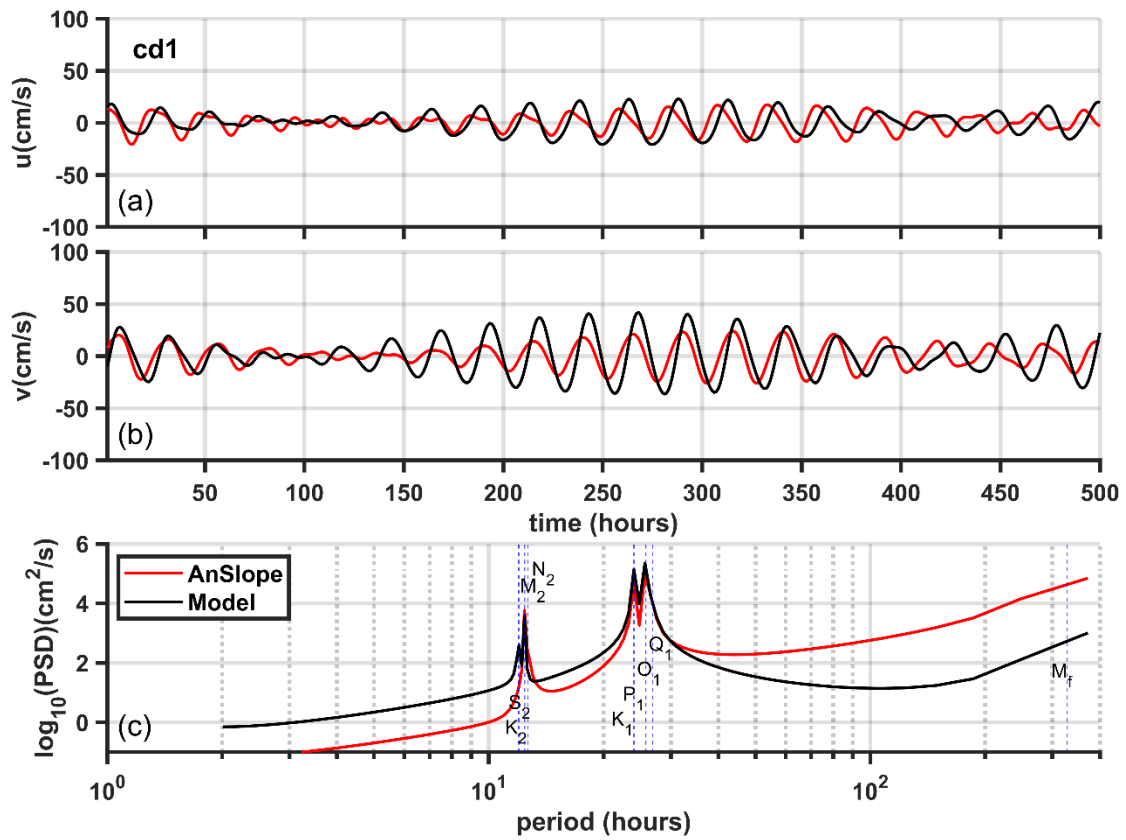


Figure S6. Comparison for mooring cd1, otherwise as in Figure S1.

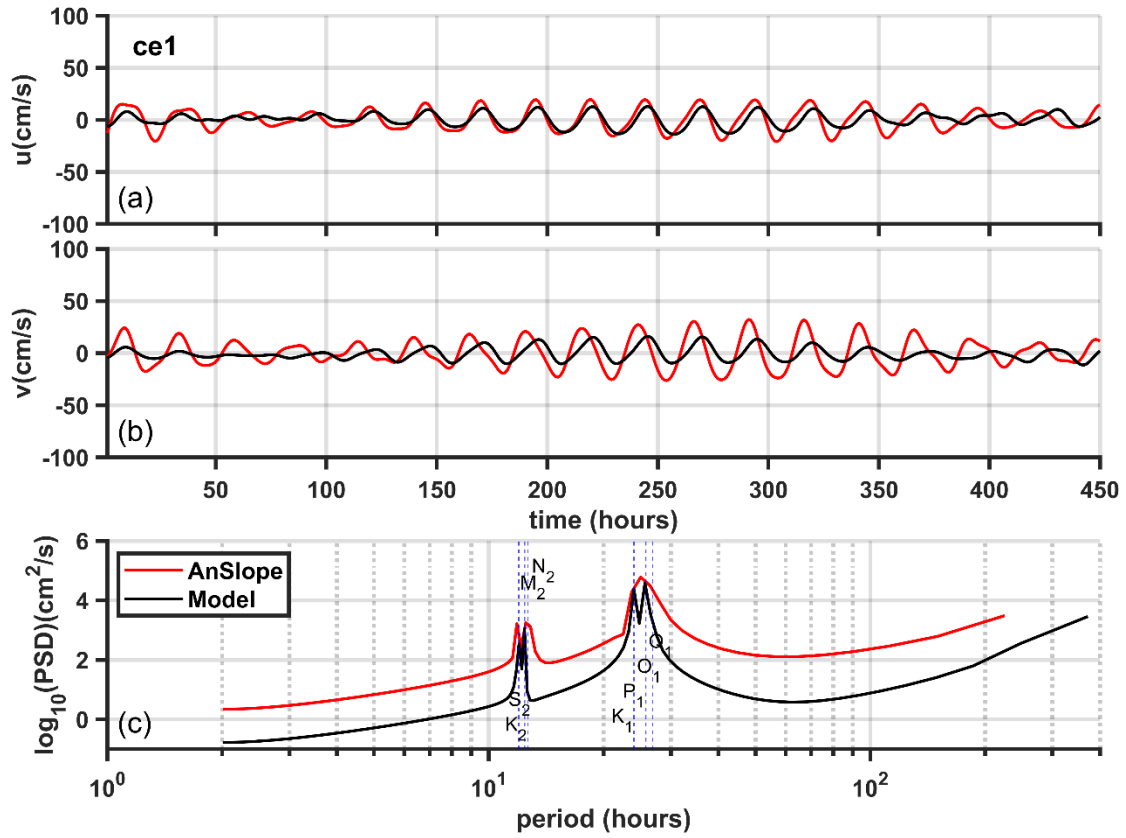


Figure S7. Comparison for mooring ce1, otherwise as in Figure S1.

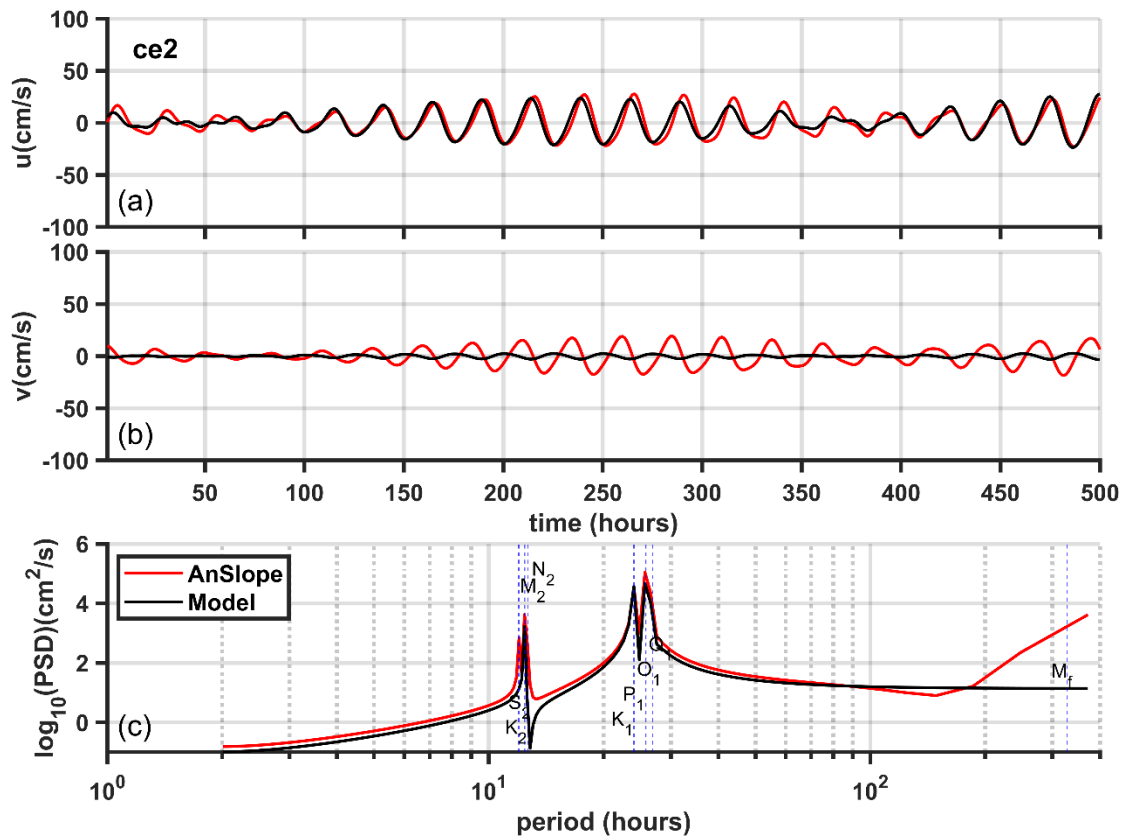


Figure S8. Comparison for mooring ce2, otherwise as in Figure S1.

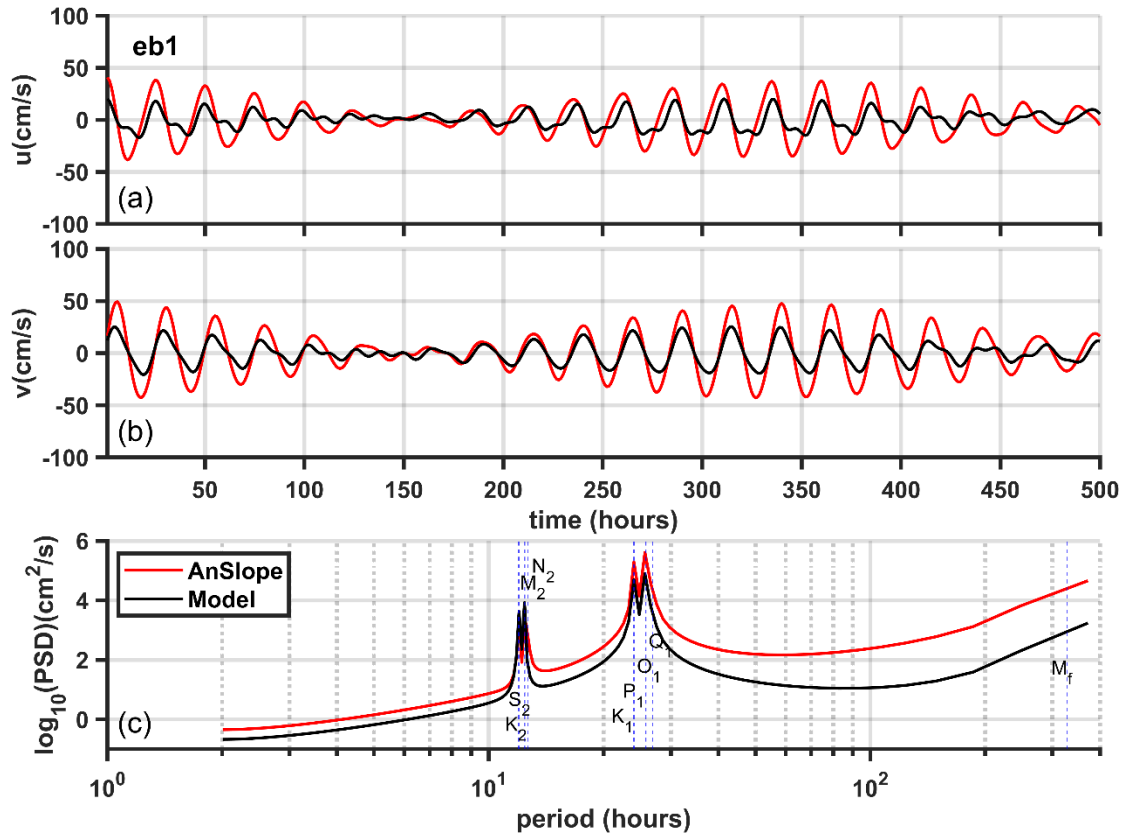


Figure S9. Comparison for mooring eb1, otherwise as in Figure S1.

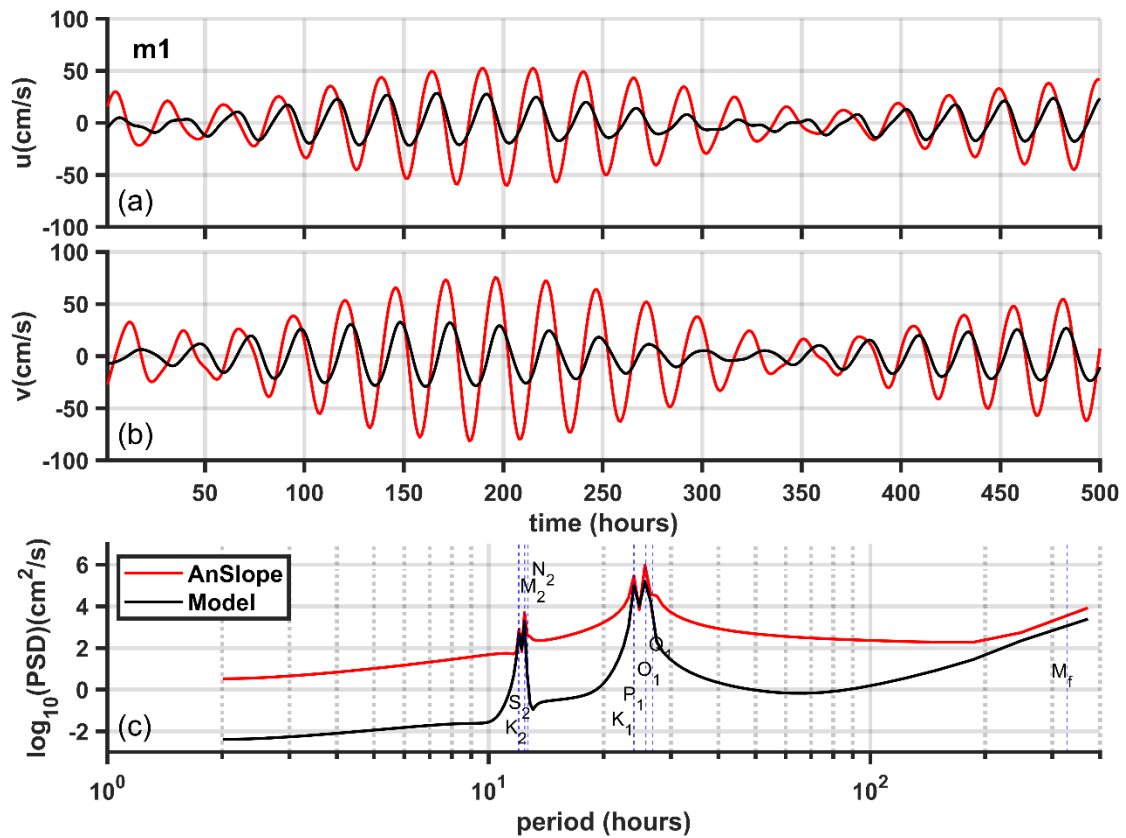


Figure S10. Comparison for mooring m1, otherwise as in Figure S1.

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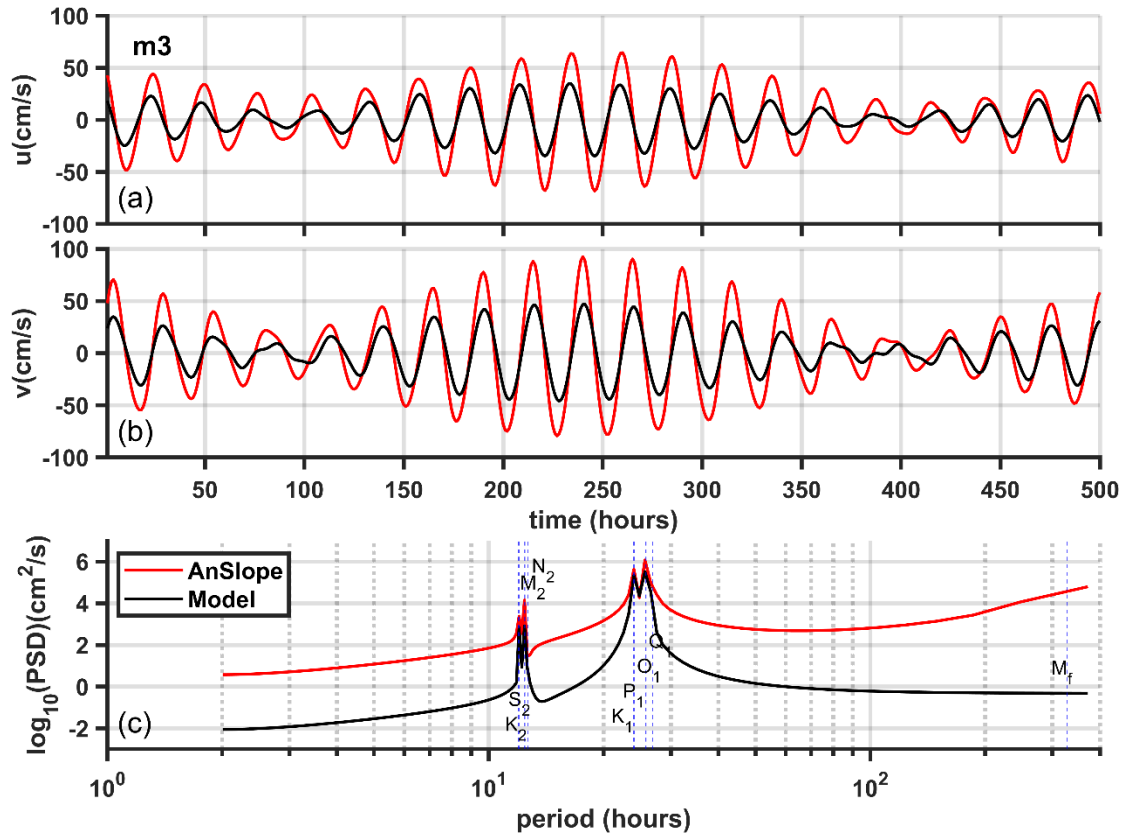


Figure S11. Comparison for mooring m3, otherwise as in Figure S1.

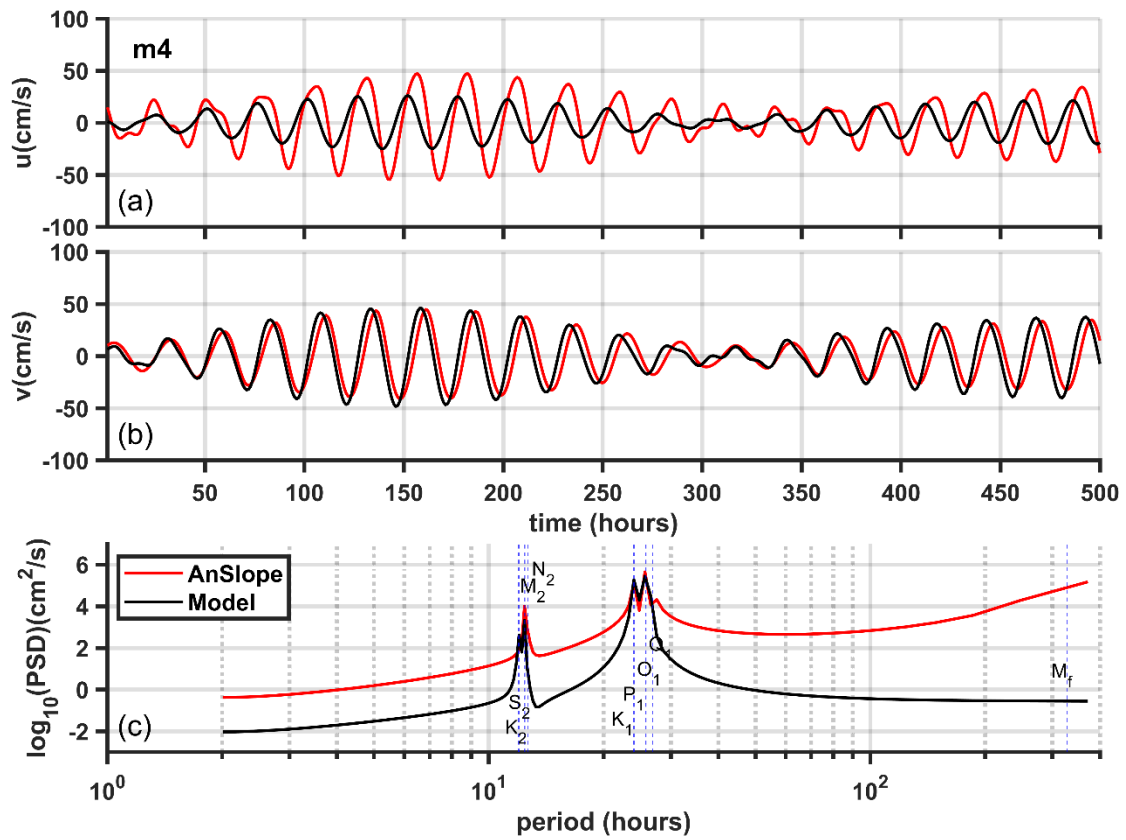


Figure S12. Comparison for mooring m4, otherwise as in Figure S1.

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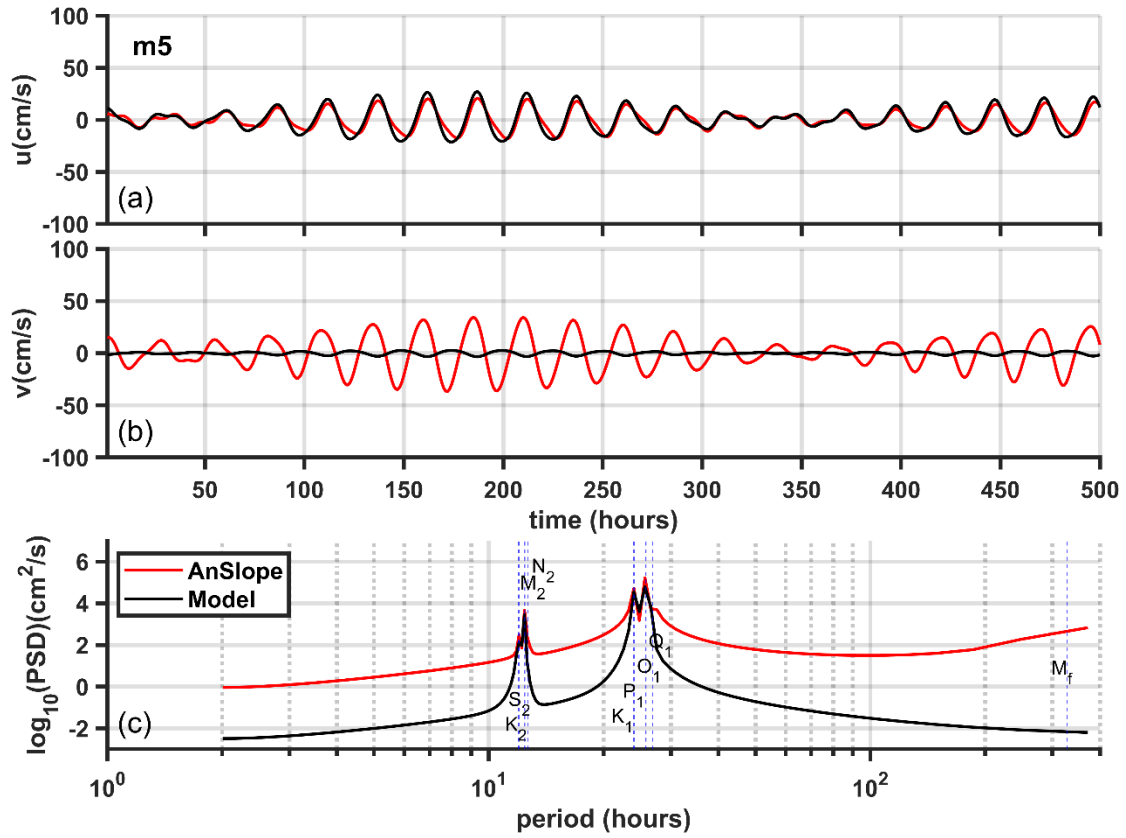


Figure S13. Comparison for mooring m5, otherwise as in Figure S1.

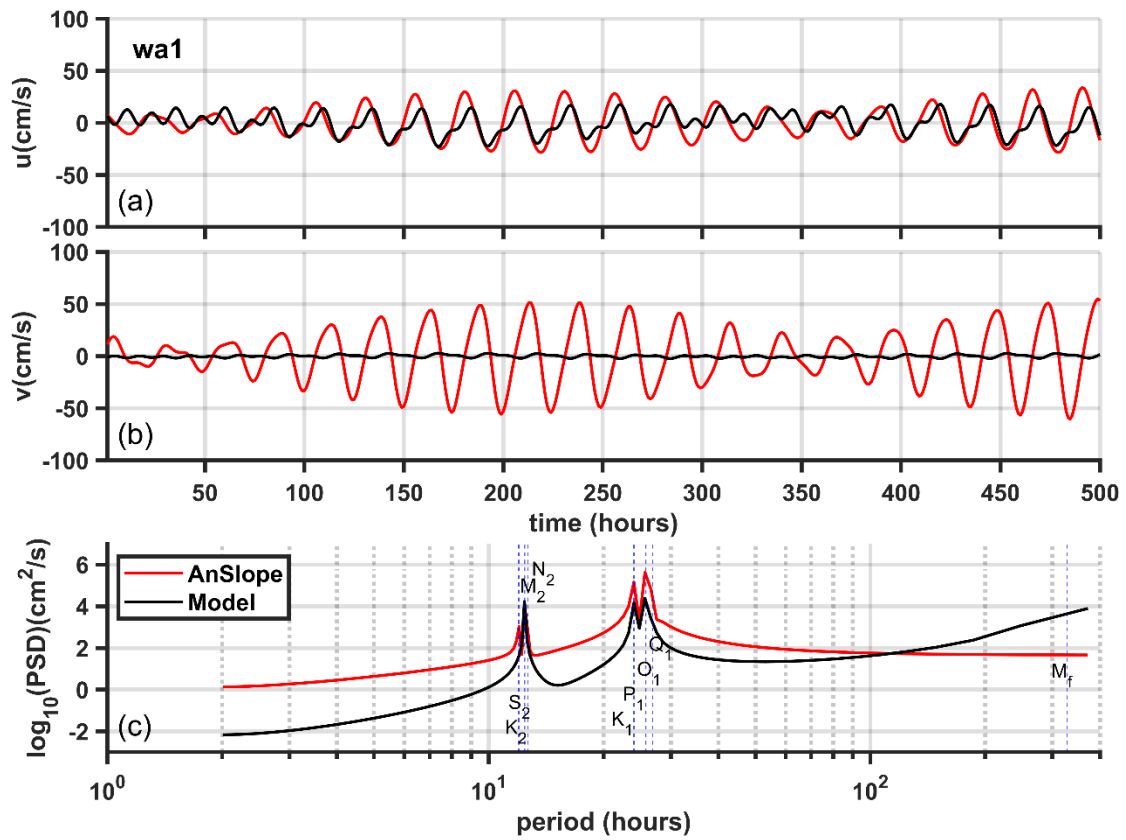


Figure S14. Comparison for mooring wa1, otherwise as in Figure S1.

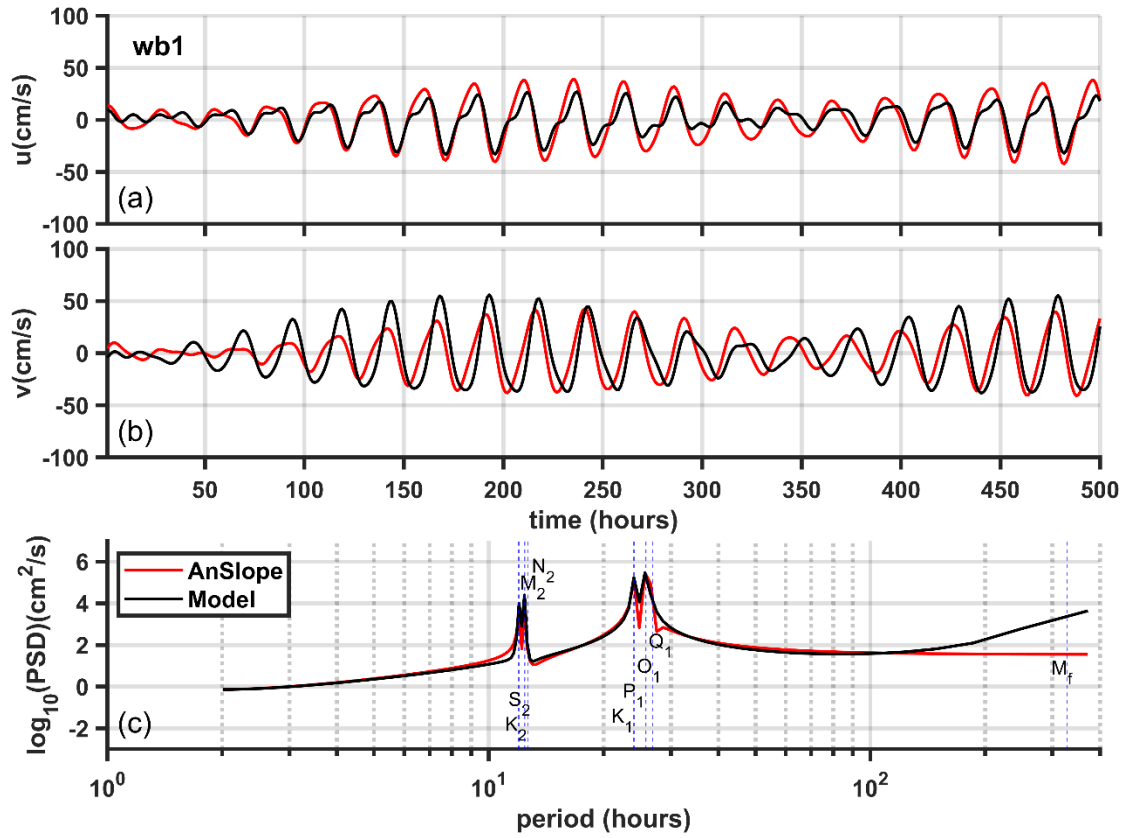


Figure S15. Comparison for mooring wb1, otherwise as in Figure S1.

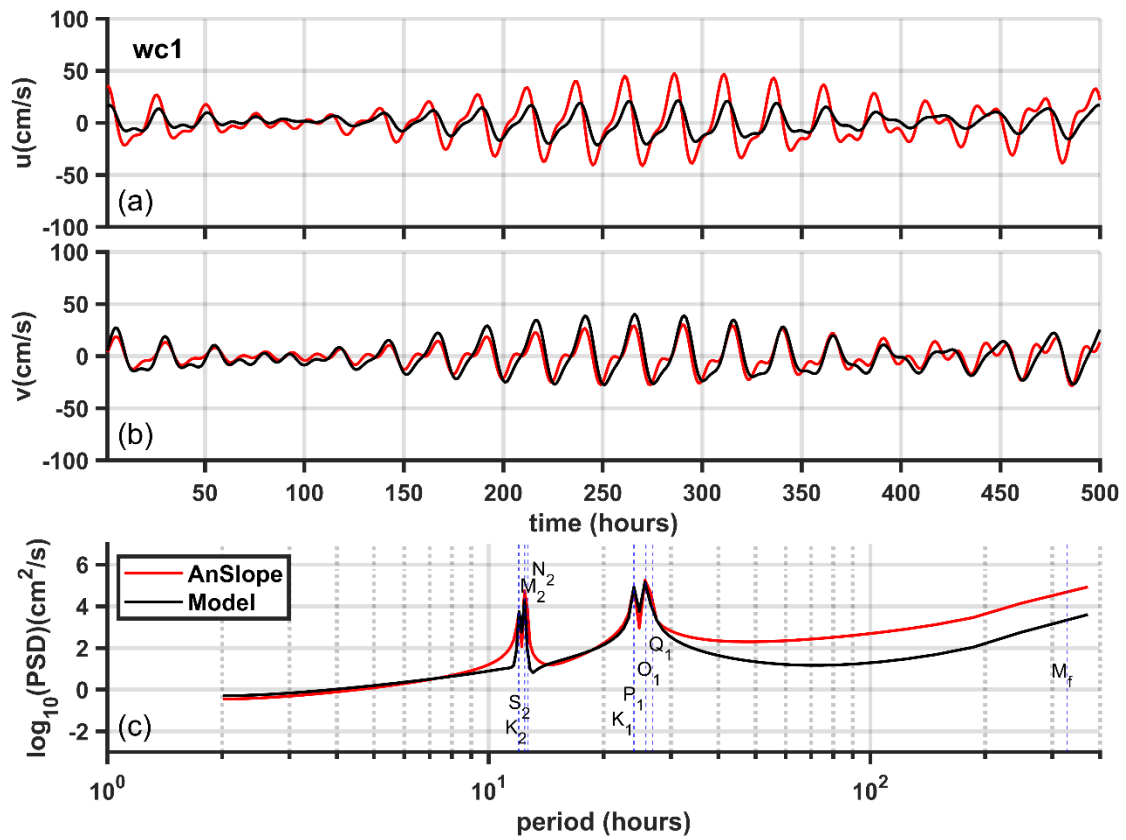


Figure S16. Comparison for mooring wc1, otherwise as in Figure S1.

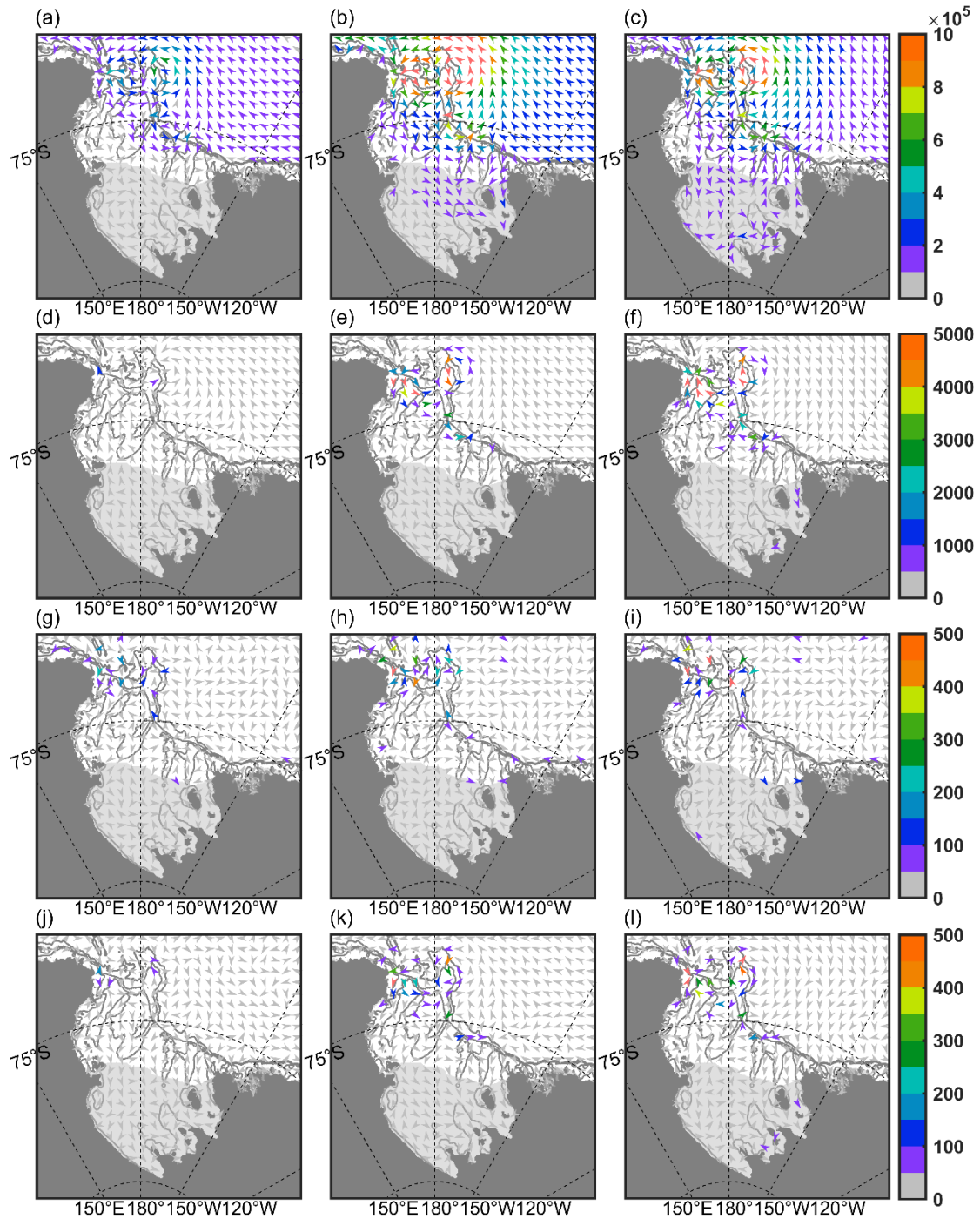


Figure S17. Depth-integrated energy flux (W/m) components: (a–c) barotropic pressure work, (d–f) barotropic advective work, (g–i) baroclinic pressure work, and (j–l) baroclinic advective work. From left to right, the columns correspond to the time-averaged values, snapshots at high tide, and snapshots at low tide, respectively.