hiFleet 船队在线

2026年
第15周市场周报

Contents

上海迈利船舶科技有限公司

hiFleet 船队在线 租船AI产品介绍

Chartering AI PRODUCT INTRODUCTION

租船AI是一款利用大模型技术自动整理船货盘邮件、快速检索公开/私密船盘与货盘，并帮助您更高效发布信息的智能工具。

Chartering AI is an AI-powered tool that automatically organises tonnage and cargo circulars, enables fast search and filtering, and helps you publish open tonnage or cargo requirements with ease.

主要用途Key benefits：

01 每天收到大量船货盘邮件，阅读工作量大，找船特别费时。HiFleet租船AI使用大模型技术帮您整理船货盘邮件，能高效检索船盘与货盘。
Automatically structures tonnage/cargo emails for efficient review.

02 按区域、港口附近智能检索船盘与货盘。Smart search by region or port proximity.

03 自动识别发件人角色（船东/OP/经纪人）。Identifies sender type (Owner/Operator/Broker).

04 标注 PSC 风险、制裁风险、吊机、舱口等关键技术信息。Tags key technical & risk fields (PSC, sanctions, cranes, hatch specs, etc.).

05 支持公开与私密两种模式，适用于不同公司需求。Supports both Public and Private modes for different confidentiality needs.

06 按港口多维度筛选预抵船舶，快速锁定目标船舶。Expected Arriving Vessels with multi-dimensional filters for quick targeting.

HiFleet
LLM AI Shipping Chartering Tool

Expected Arrivals Screening

Public or private service modes

AI analysis of cargo & tonnage offers chartering emails

Fast search & filtering of cargo/tonnage offers

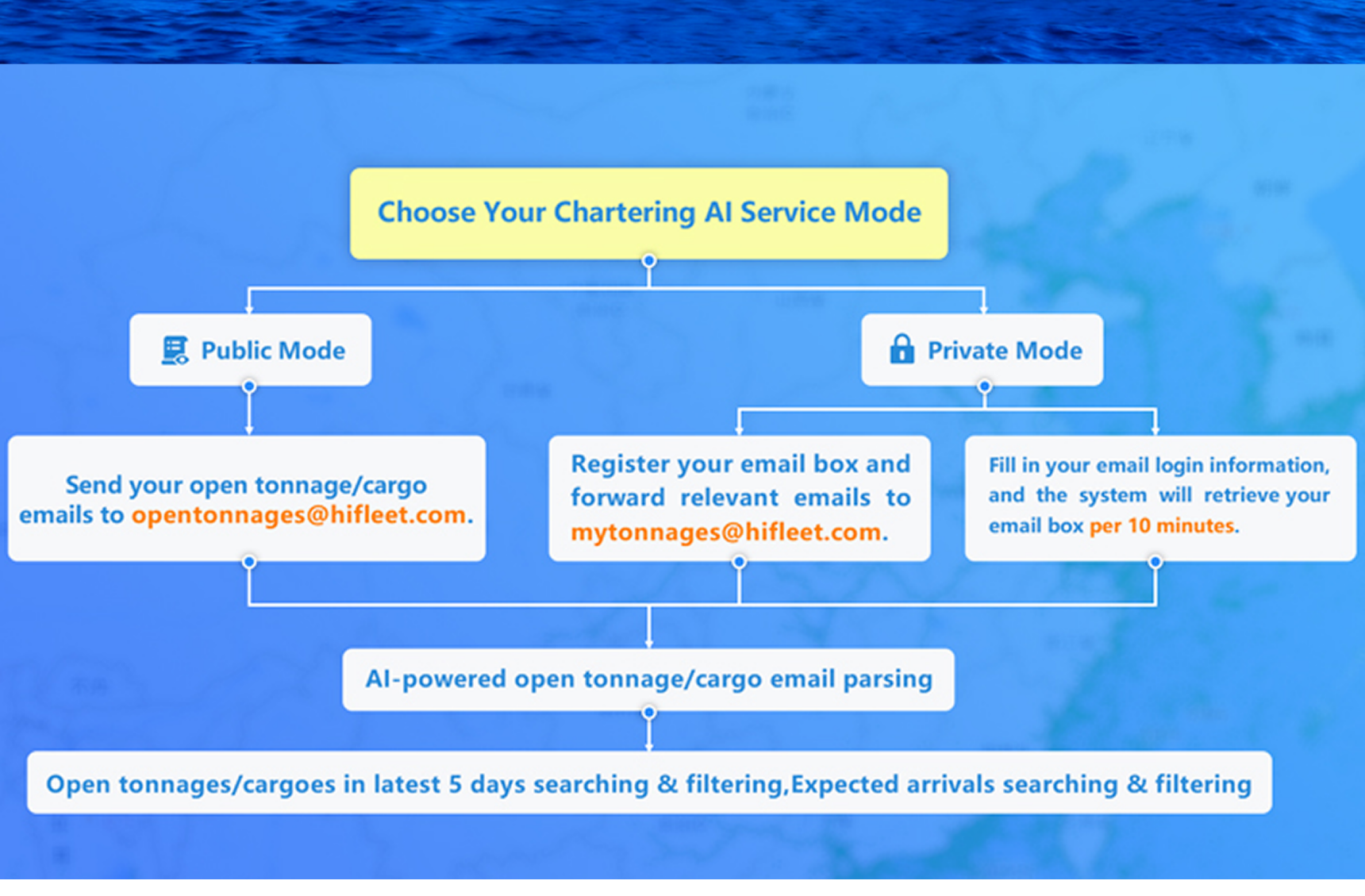
Search cargo & tonnage offers by port & its nearby

Basic authenticity screening for tonnage offers

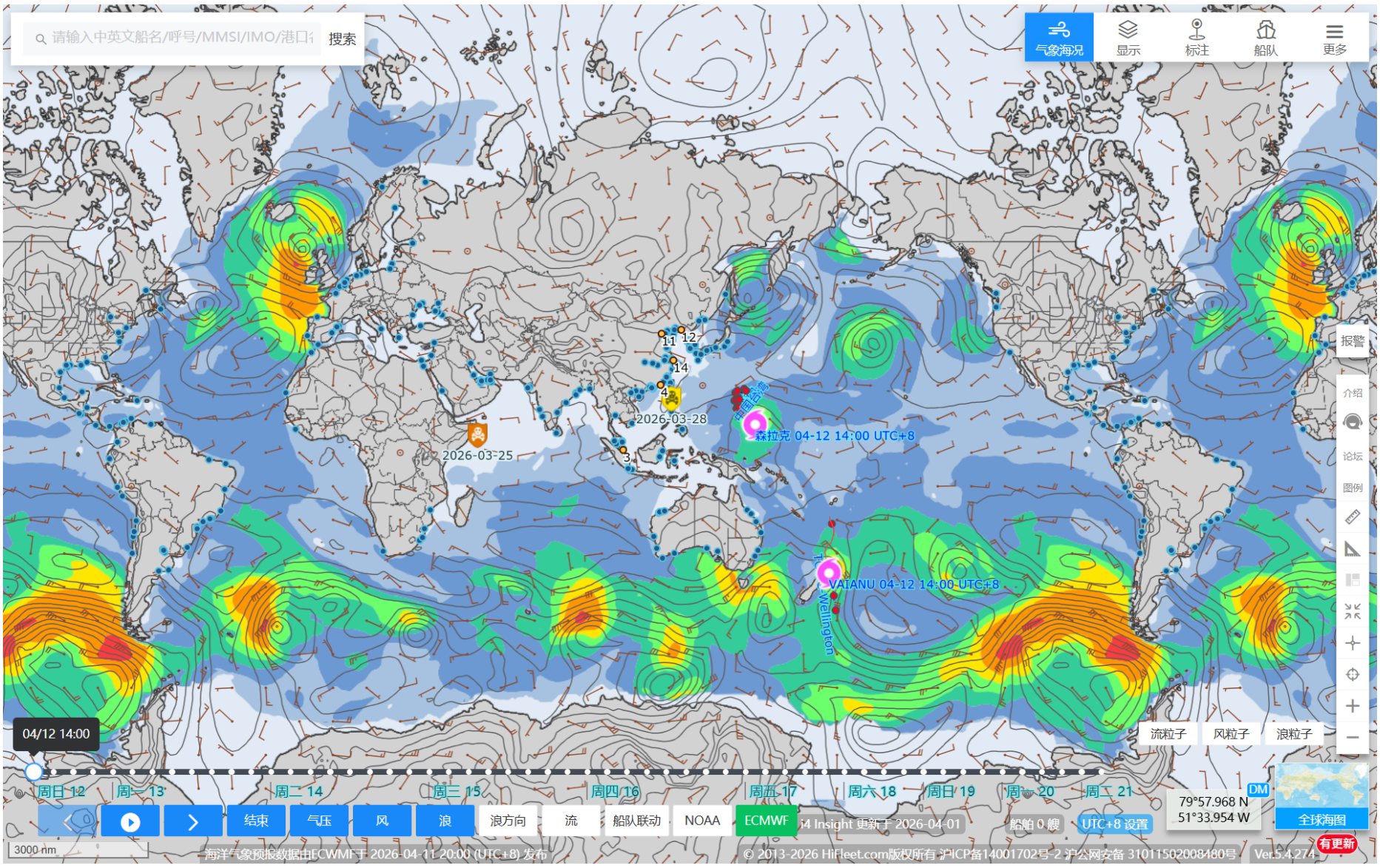
Sanctions-risk alerts for tonnage offers

Basic analysis of 3-year vessel performance (speed/consumption)

Port-of-call country tags (e.g., CIS, AU, BH)



第一部分 航运安全 SHIPPING SAFETY



航行警告 Navigation Warning

HiFleet显示全球目前有效的航行警告有1419个，远东和环加勒比海居多，请相关水域船舶注意航行警告内容。 There are currently 1419 navigational warnings in effect around the ocean on hiFleet with the Far East and around the coastal of Caribbean Sea still being the majority. Please pay attention to the navigational warnings in relevant waters.

航海气象 Meteorology

未来一周中国渤海海域风力3-4级，轻浪；黄海风力3-4级，轻浪；东海风力4-5级，中浪；台湾海峡4-5级风，中浪；南海大部海域风力3-4级，中浪。太平洋以西森拉克超强台风已经生成，对中国和东南亚海域没有大的影响。The coming week the wind in Bohai Sea is gentle with slight sea. Yellow Sea the wind is moderate with slight sea. And China East Sea is moderate with moderate sea. The wind in the Taiwan Strait is moderate with moderate sea. In most of the South China Sea the wind is moderate with moderate sea. The Typhoon SINKAKU formed in the west Pacific Ocean.

海盗事件 Piracy

2026年3月28日，菲律宾马尼拉锚地。一艘停泊的集装箱船上的值班人员发现船上有三名未经授权的人员，于是立即发出警报。看到值班人员发出警报后，这些人员跳入海中逃走了，没有发生任何盗窃事件。28.03.2026: 0700 UTC: Posn: 14:35.65N – 120:51.70E, Manila Anchorage, Philippines. Duty crew on an anchored container ship noticed three unauthorised individuals on board and raised the alarm. Seeing the alerted crew the individuals jumped overboard and escaped. No theft was reported.

海上事件 Marine Incidents

2026年4月6日，一名俄罗斯电机员阿列克谢·加拉基奥诺夫在也门接受了治疗后已返回本国。此前，他所在船只在红海被胡塞武装分子击沉，此事发生在九个月前。船舶是去年 7 月“Eternity C”（2012年建造，36800 载重吨的散货船）遭袭击后被胡塞武装扣押长达数月的 11 人之一。On April 6th, 2026, a Russian crew member returned to his home country after receiving treatment in Yemen. Previously, his ship was sunk by Houthi militants in the Red Sea nine months ago. The ship's engineer, Alexey Galakionov, was one of the 11 people who were detained by the Houthi militants for several months after the "Eternity C" (a 36,800-ton bulk carrier built in 2012) was attacked in July last year.

其它 Others

没有 Nil

备注 Remark

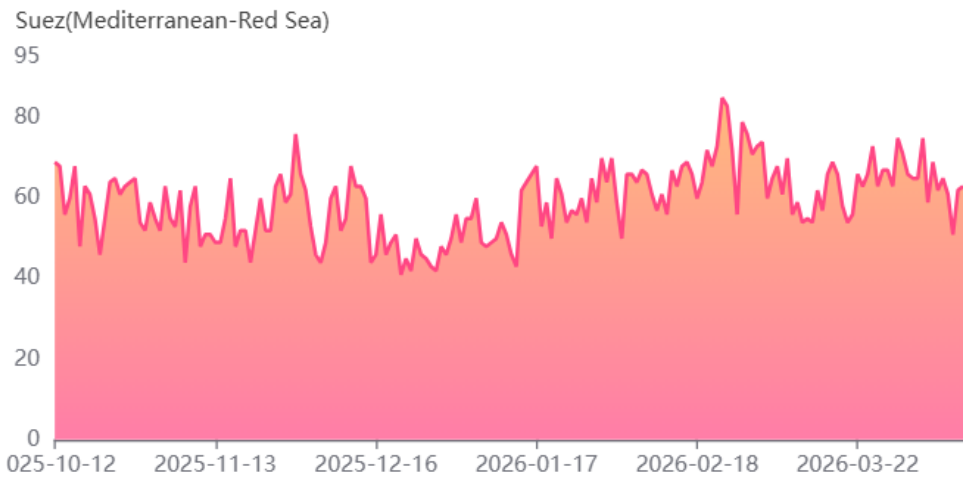
本报告数据截止时间为2026年4月12日北京时间17点；所有数据和或观点仅供参考，在任何情况下本公司及其员工不承担任何风险。 The data deadline for this report is Beijing time 17 hours on Apr 12th of 2026; All data and/or opinions are for reference only and under no circumstances do the Company and its employees assume any risk.

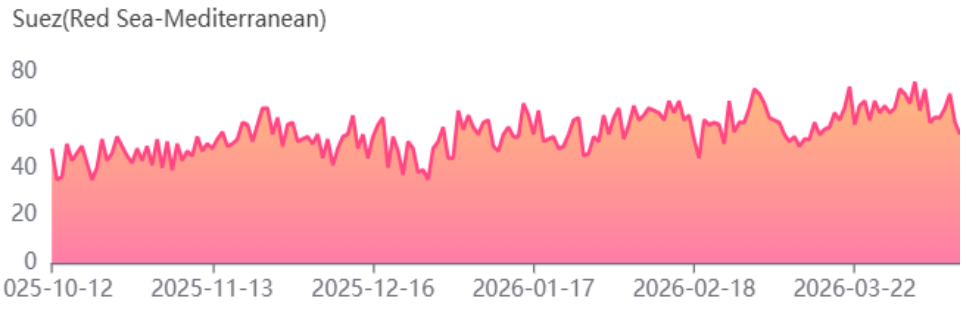
第二部分 航运数据 SHIPPING DATA

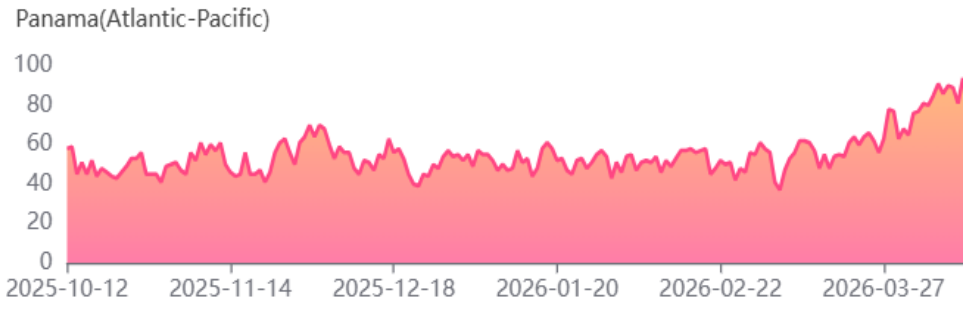
最近一周船舶运河/河口锚地等待数量

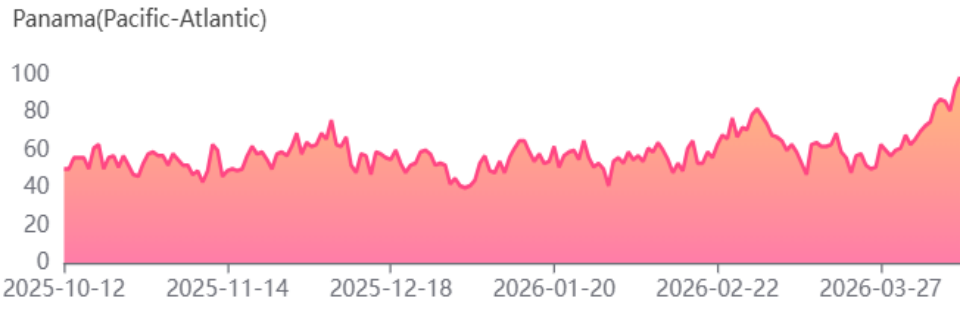
Latest Week Update Vessel Waiting Numbers Information in Anchorages of Canals and Rivers

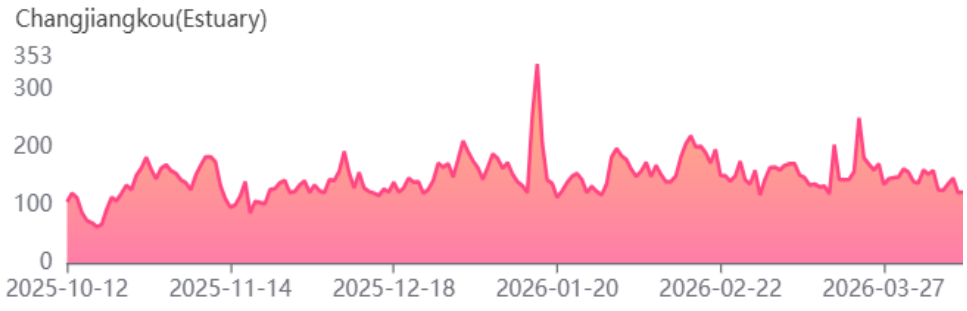
Canal/Riv.	P.N.	M.N.	WoW	MoM
Suez.Red	54	1860	-49	168
Miss.Riv.	6	128	2	58
CJK	122	4394	-116	-284
Pa.Atlan.	94	2043	109	510
Colum.Riv.	7	147	20	-46
Suez.Med.	63	1863	-47	-67
Pa.Pac.	99	1933	160	69
ZJK	87	3619	-70	107

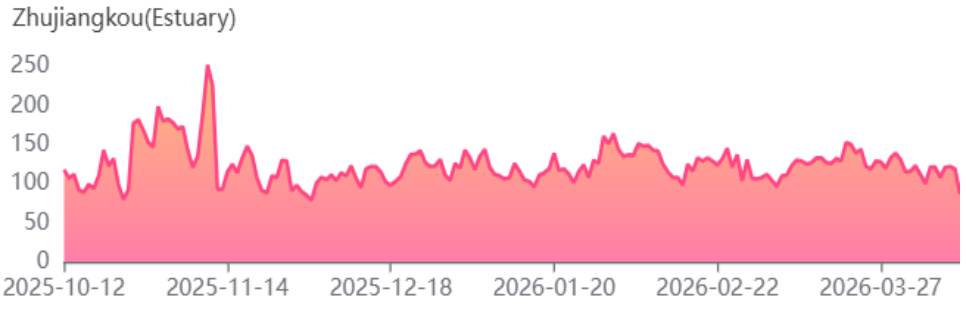


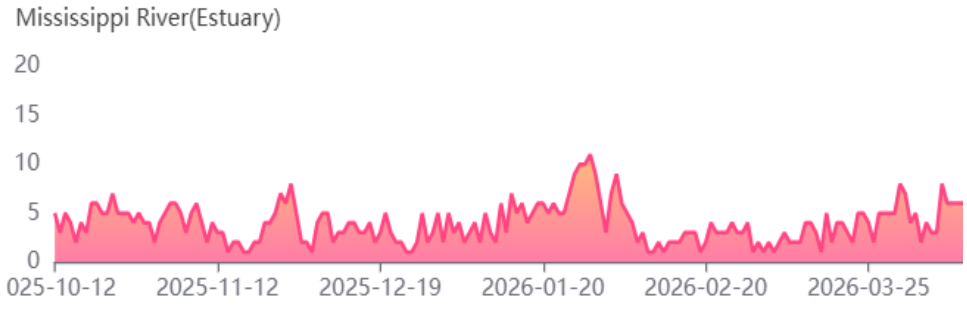


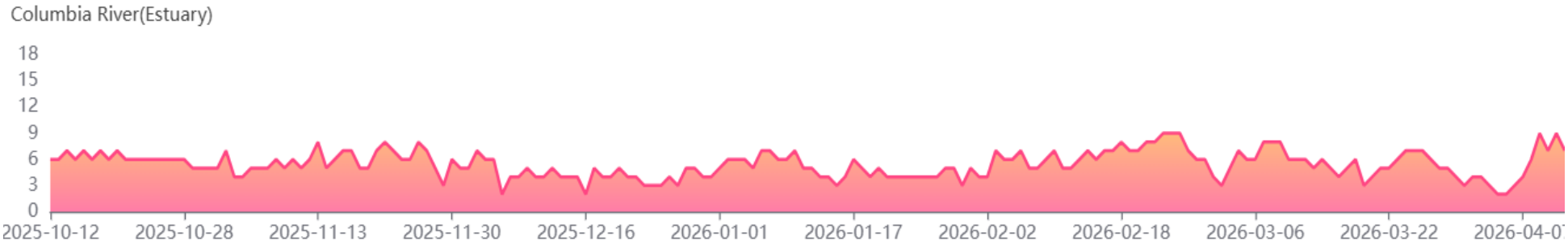










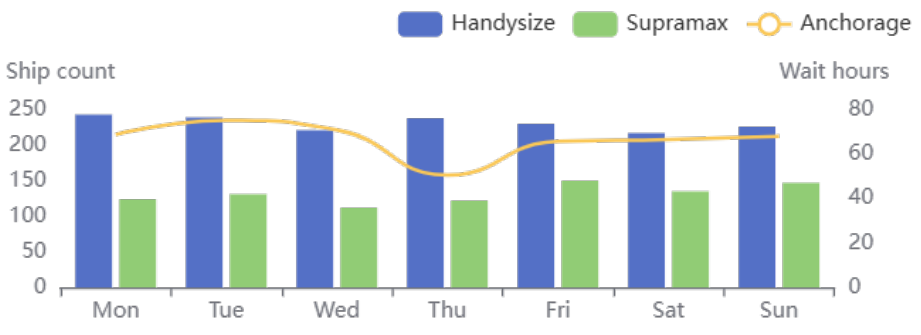


(P.N-Present Number; M.N.-Month Number; WoW-Week on Week; MoM-Month on Month)

最近一周中国区域超大灵便型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra and Handy Num. and Waiting Time Information in Anchorages of China

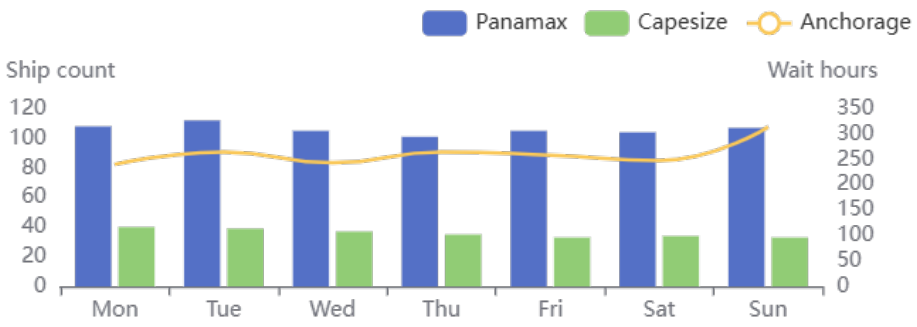
Type	M	T	W	Th	F	Sat	Sun
HDY	243	239	221	238	230	217	226
SMX	124	131	112	122	150	135	147
WT.h.	68.8	75.2	70.9	50.5	65.75	66.5	68



最近一周巴西区域好望角型和巴拿马型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Capesize and Panamax Num. and Waiting Time Information in Anchorages of Brazil

Type	M	T	W	Th	F	Sat	Sun
Pan.	108	112	105	101	105	104	107
Cap	40	39	37	35	33	34	33
WT.h.	240.4	264.4	243.3	264.85	258.3	247.7	314



最近一周澳大利亚区域好望角型和巴拿马型散货船舶锚泊数量和平均锚泊时长

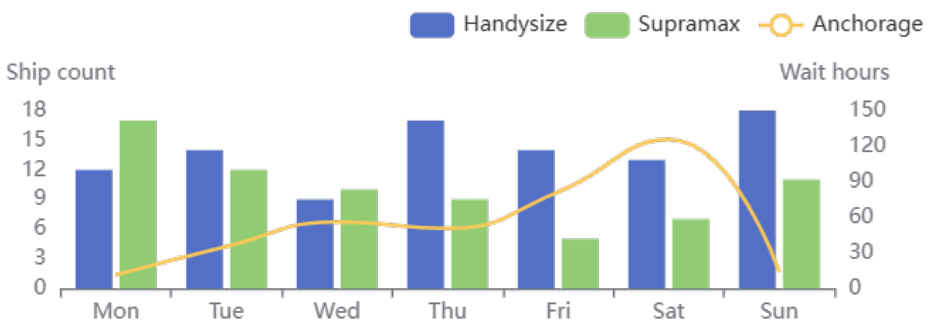
Latest Week Update for Capesize and Panamax Num. and Waiting Time Information in Anchorages of Australia

Type	M	T	W	Th	F	Sat	Sun
Pan.	29	28	32	33	35	30	37
Cap	82	76	75	73	71	68	72
WT.h.	172.6	145.65	147.4	134.9	109.7	117.6	146

最近一周黑海区域超大灵便型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra & Handy Num. and Waiting Time Information in Anchorages of Black Sea

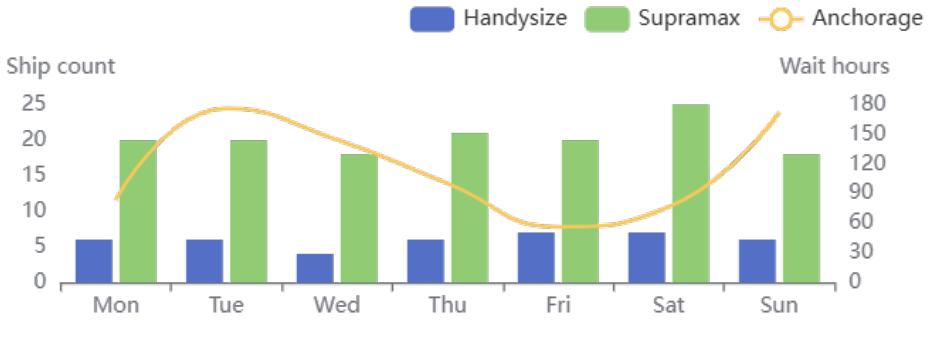
Type	M	T	W	Th	F	Sat	Sun
HDY	12	14	9	17	14	13	18
SMX	17	12	10	9	5	7	11
WT.h.	11.4	35.4	56.2	50.6	81.3	125.8	14



最近一周美湾区域超大灵便型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra and Handy Num. and Waiting Time Information in Anchorages of US Gulf

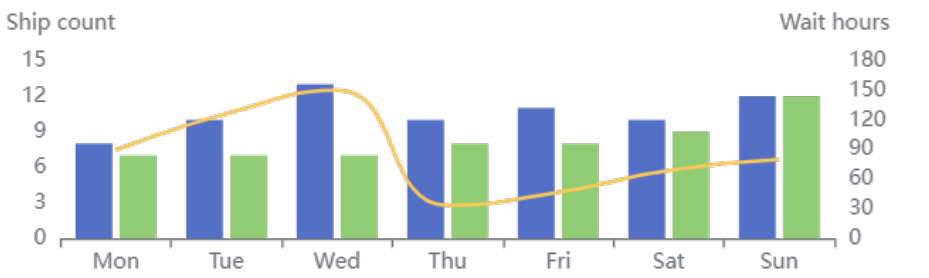
Type	M	T	W	Th	F	Sat	Sun
HDY	6	6	4	6	7	7	6
SMX	20	20	18	21	20	25	18
WT.h.	83.8	176.15	144.45	100.3	56.3	76.4	172



最近一周拉普拉特河区域超大型散货船和灵便型散货船舶锚泊数量和平均锚泊时长

Latest Week Update for Supra and Handy Num. and Waiting Time Information in Anchorages of Plate River

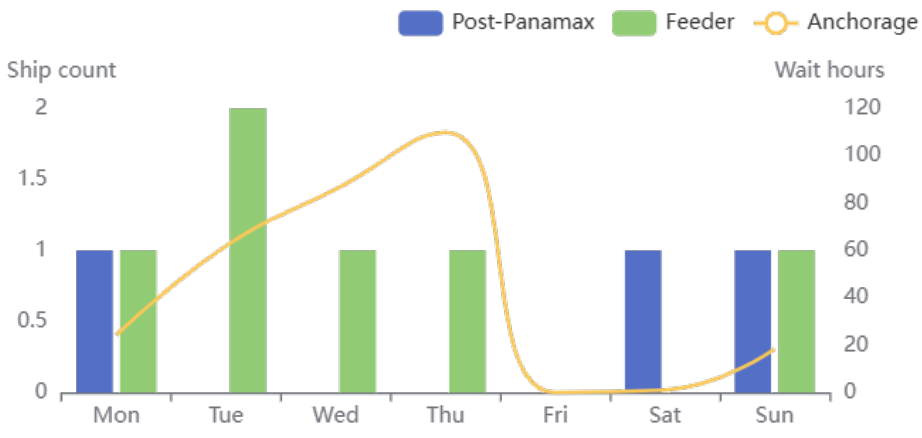
Type	M	T	W	Th	F	Sat	Sun
HDY	8	10	13	10	11	10	12
SMX	7	7	7	8	8	9	12
WT.h.	89.7	126.3	150.3	33.5	46.7	68.9	80



最近一周香港区域集装箱船锚泊数量和平均等待时长

Latest Week Update for Container Vessels Num. and Waiting Time Information on Anchorages of HongKong

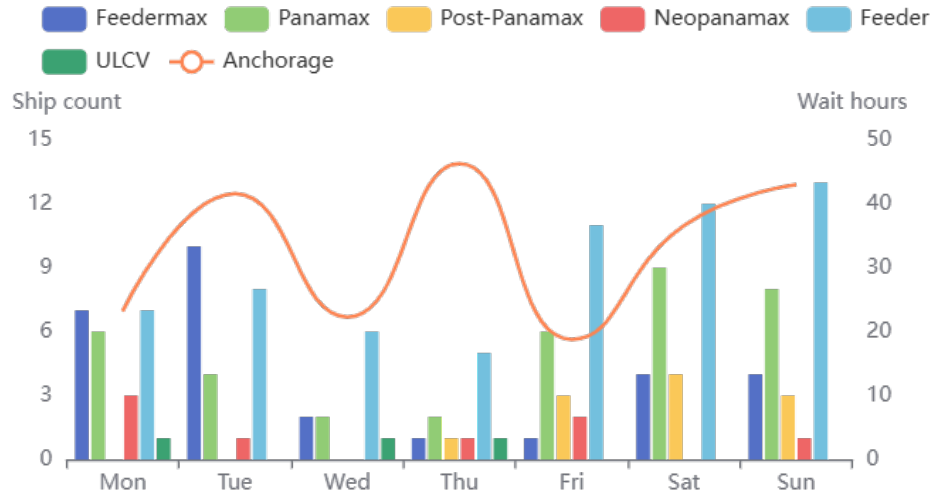
Type	M	T	W	Th	F	Sat	Sun
F.ma.	0	0	0	0	0	0	0
Pan.	0	0	0	0	0	0	0
PPx	1	0	0	0	0	1	1
NPx	0	0	0	0	0	0	0
Fd	1	2	1	1	0	0	1
WT.h.	24.3	61.9	85.9	109.9	0.0	1.1	18.5
Ulcv	0	0	0	0	0	0	0



最近一周上海区域集装箱船锚泊数量和平均等待时长

Latest Week Update for Container Vessels Num. and Waiting Time Information in Anchorages of Shanghai

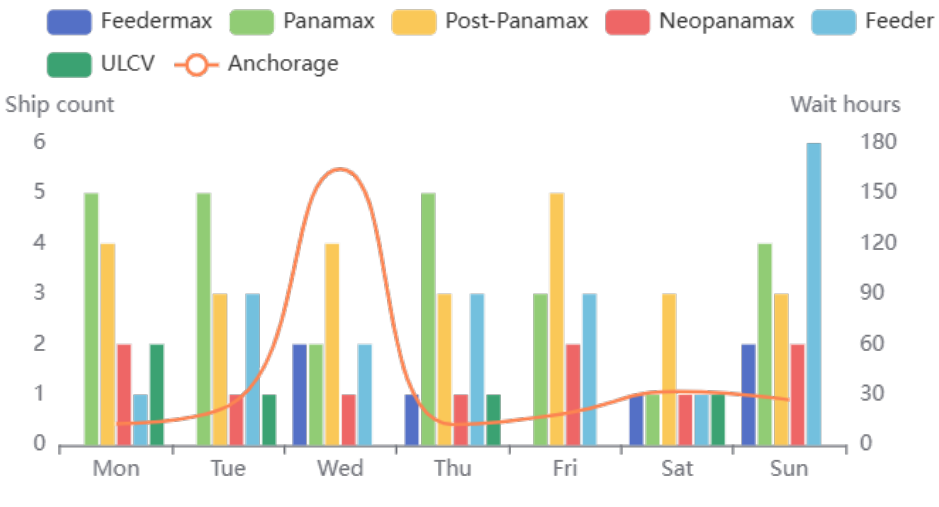
Type	M	T	W	Th	F	Sat	Sun
F.ma.	7	10	2	1	1	4	4
Pan.	6	4	2	2	6	9	8
PPx	0	0	0	1	3	4	3
NPx	3	1	0	1	2	0	1
Fd	7	8	6	5	11	12	13
Ulcv	1	0	1	1	0	0	0
WT.h.	23.2	41.6	22.3	46.3	18.8	36.6	43



最近一周新加坡区域集装箱船锚泊数量和平均锚泊时长

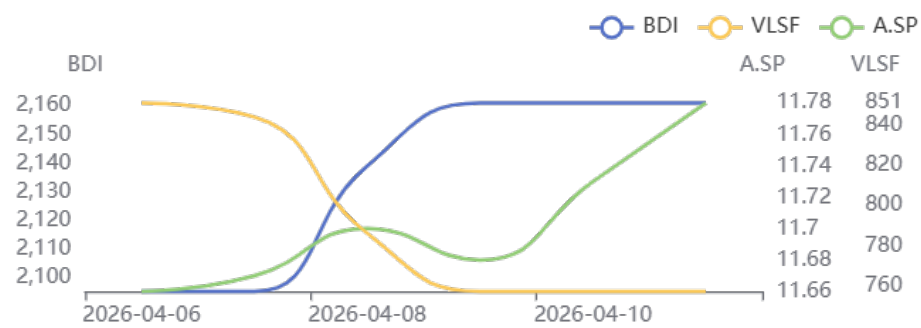
Latest Week Update for Container Vessels Num. and Waiting Time Information in Anchorages of Singapore

Type	M	T	W	Th	F	Sat	Sun
F.ma.	0	0	2	1	0	1	2
Pan.	5	5	2	5	3	1	4
PPx	4	3	4	3	5	3	3
NPx	2	1	1	1	2	1	2
Fd	1	3	2	3	3	1	6
Ulcv	2	1	0	1	0	1	0
WT.h.	12.75	23.3	164.5	12.25	18.9	32.05	27



最近一周空载散货船平均航速Latest Weekly Average Speed for Bulkers during Ballast Voyage

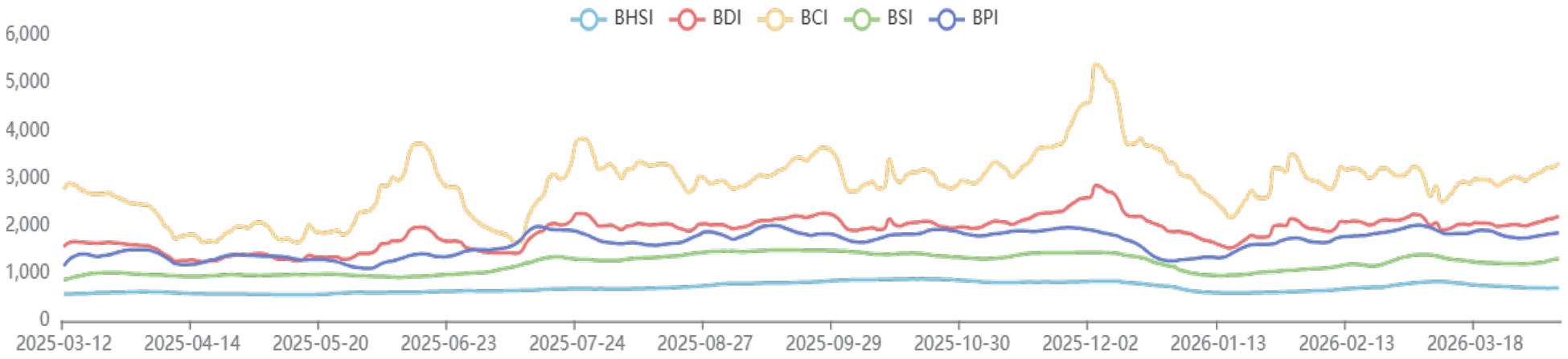
Type	M	T	W	Th	F	Sat	Sun
BDI	1802	1802	1823	1842	1842	1842	1842
VLSF	851.00	844.00	786.00	757.00	757.00	757.00	757.00
A.SP	11.66	11.67	11.7	11.68	11.73	11.78	



第三部分 航运市场 SHIPPING MARKET

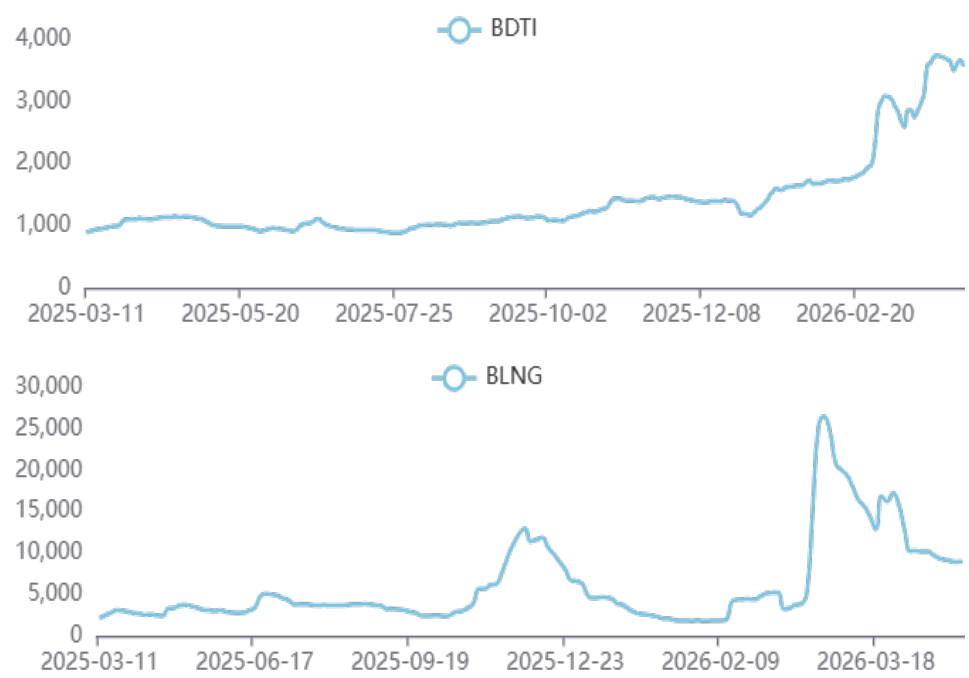
波罗的海干散货指数Baltic Dry Index

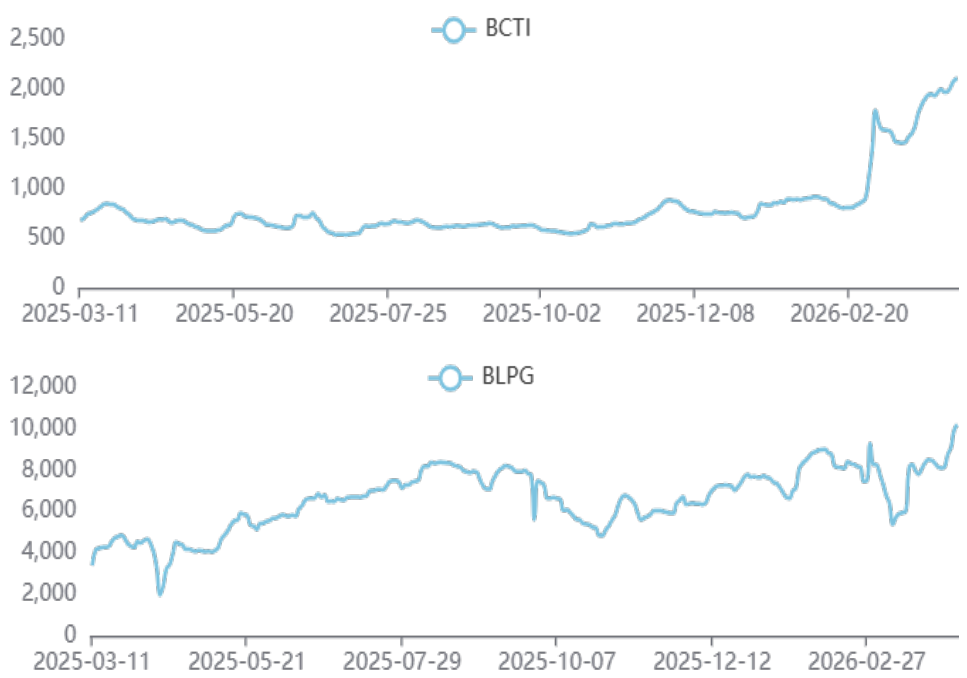
Type	PI	WoW	W%	M%	y%
BDI	2201	135.0	6.53	8.53	73.44
BCI	3318	232.0	7.52	15.21	86.3
BPI	1855	71.0	3.98	0.92	56.01
BSI	1308	84.0	6.86	1.95	39.0
BHSI	699	4.0	0.58	-12.19	19.28



能源运价指数Energy Shipping Index

Type	PI	WoW	W%	M%	y%
BDTI	3561	-78.0	-2.14	37.7	217.1
BCTI	2106	137.0	6.96	43.95	217.17
BLNG	8940	-427.0	-4.56	-45.26	249.22
BLPG	10176	2031.0	24.94	72.74	320.5





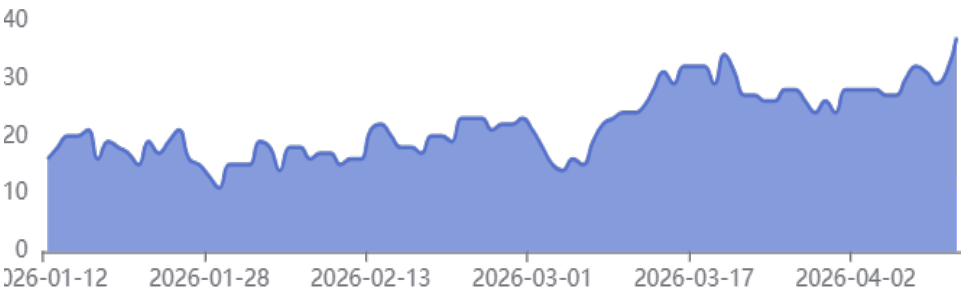
第四部分 运力分布 SUPPLY DISTRIBUTION

好望角型散货船 Capesize

区域：巴西，最近一周好望角型散货船准备装货船舶数量

Area: Brazil, The latest week update number for Capesize with cargo loading intention.

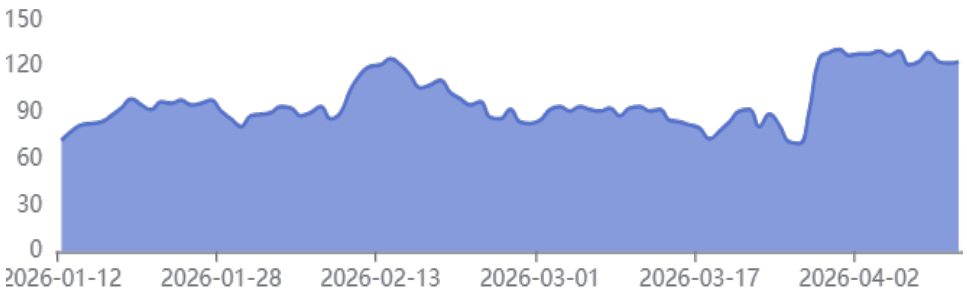
Type	M	T	W	Th	F	Sat	Sun
Cape	27	30	32	31	29	31	37



区域：澳大利亚。最近一周好望角型散货船准备装货船舶数量。

Area: Australia. The latest week update number for Capesize with cargo loading intention.

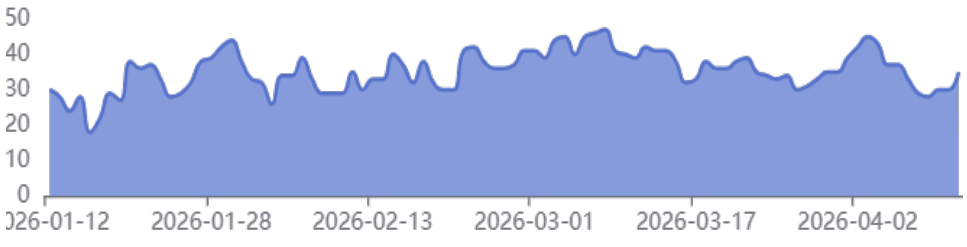
Type	M	T	W	Th	F	Sat	Sun
Cape	130	121	123	129	123	122	123



区域：南非，最近一周好望角型散货船准备装货船舶数量

Area: South Africa, The latest week update number for Capesize with cargo loading intention.

Type	M	T	W	Th	F	Sat	Sun
Cape	37	33	29	28	30	30	35

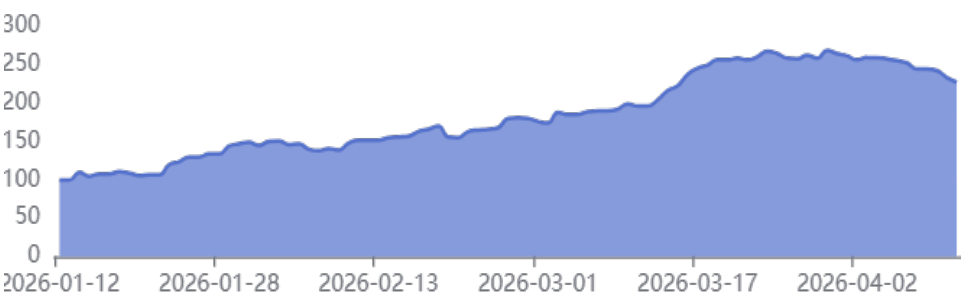


巴拿马型散货船 PANAMAX

区域：南美北部和东部。最近一周巴拿马型散货船准备装货船舶数量。

Area: South America. The latest week update number for Panamax with cargo loading intention.

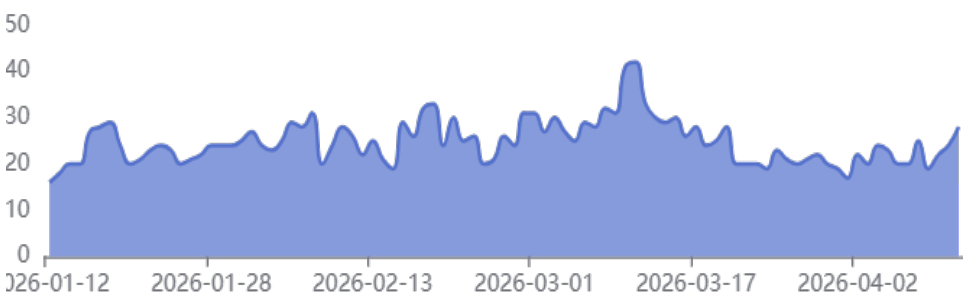
Type	M	T	W	Th	F	Sat	Sun
Pan.	254	251	243	243	241	232	226



区域：黑海。最近一周巴拿马型散货船准备装货船舶数量。

Area: Black Sea. The latest week update number for Panamax with cargo loading intention.

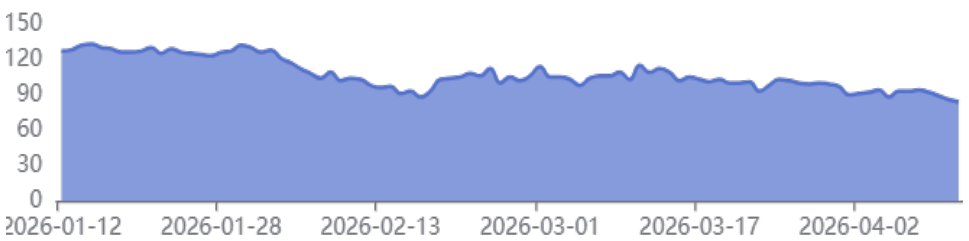
Type	M	T	W	Th	F	Sat	Sun
Pan.	14	11	14	13	13	12	8



区域：澳大利亚。最近一周巴拿马型散货船准备装货船舶数量。

Area: Australia. The latest week update number for Panamax with cargo loading intention.

Type	M	T	W	Th	F	Sat	Sun
Pan.	93	93	94	92	89	86	84

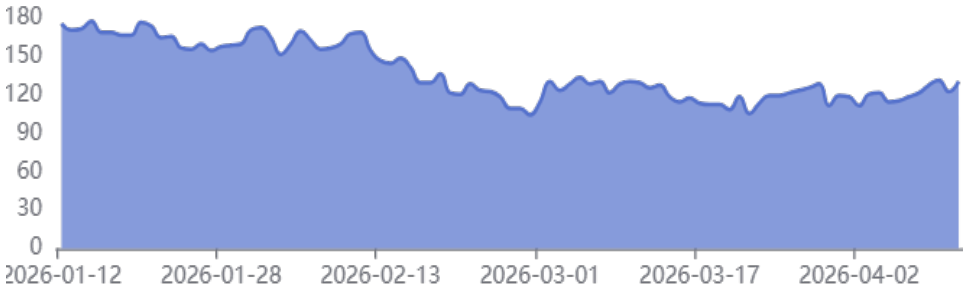


超大灵便型散货 SUPRAMAX

区域：北中国。最近一周超大灵便型散货船准备装货船舶数量。

Area: North China. The latest week update number for Supramax with cargo loading intention.

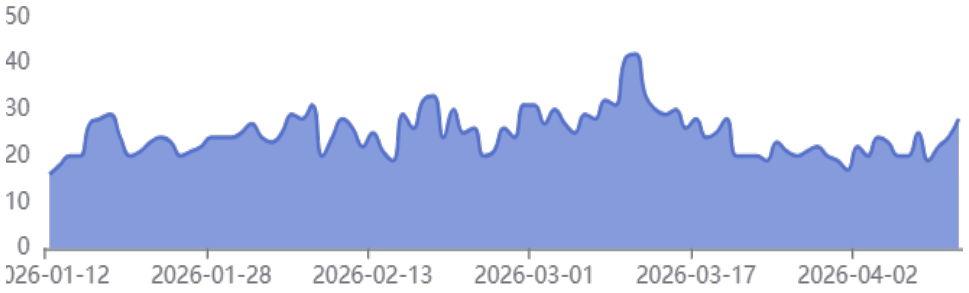
Type	M	T	W	Th	F	Sat	Sun
SMX	115	118	121	127	131	122	130



区域：黑海。最近一周巴拿马型散货船准备装货船舶数量。

Area: Black Sea. The latest week update number for Panamax with cargo loading intention.

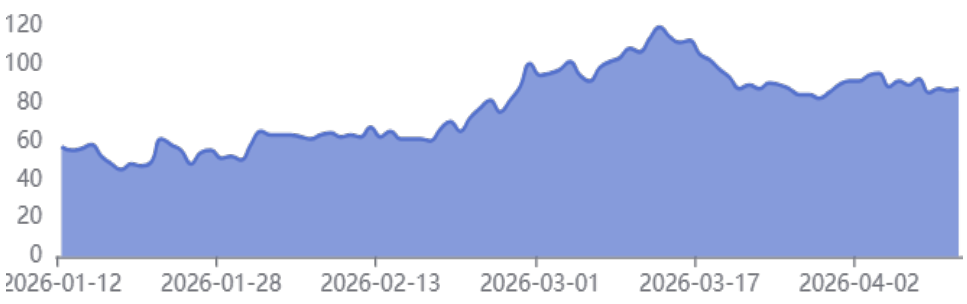
Type	M	T	W	Th	F	Sat	Sun
SMX	20	20	25	19	22	24	28



区域：美湾。最近一周超大灵便型散货船准备装货船舶数量。

Area: US Gulf. The latest week update number for Supramax with cargo loading intention.

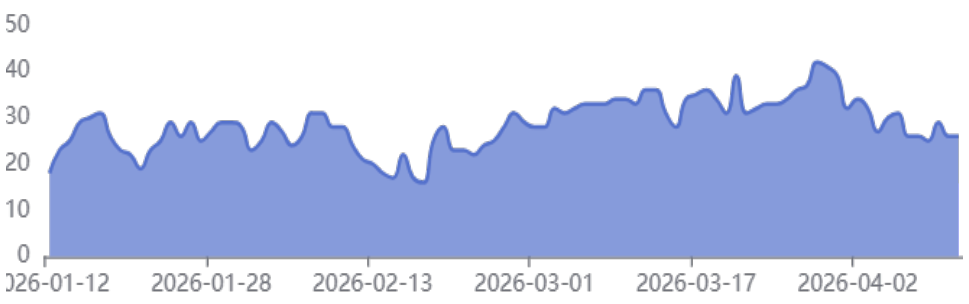
Type	M	T	W	Th	F	Sat	Sun
SMX	31	26	26	25	29	26	26



区域：南美的北部和东部。最近一周超大灵便型散货船准备装货船舶数量。

Area: South America. The latest week update number for Supramax with cargo loading intention.

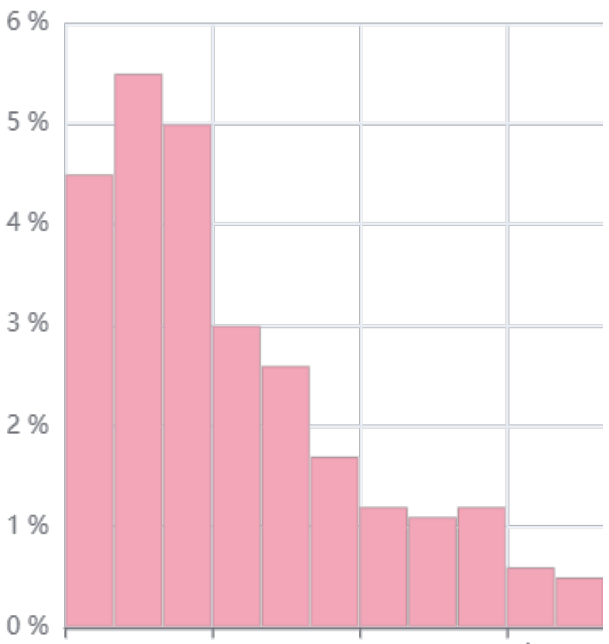
Type	M	T	W	Th	F	Sat	Sun
SMX	91	89	92	85	87	86	87

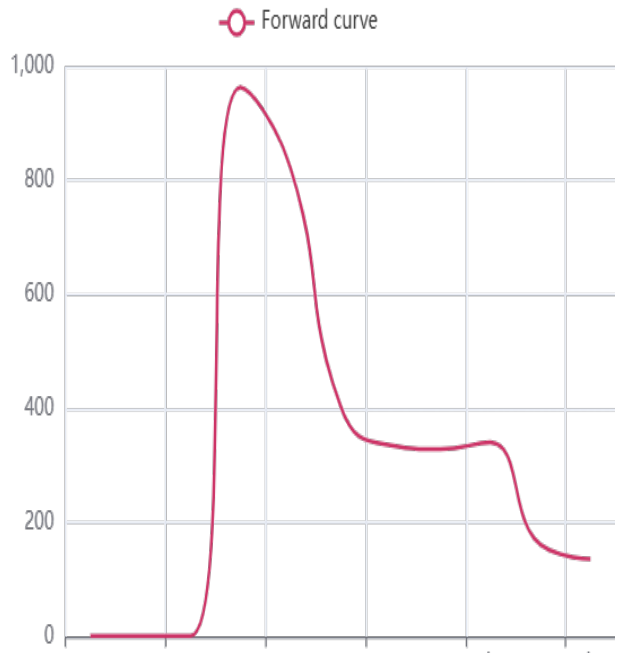


第五部分 远期运价协议 FFA

好望角型散货船Capesize

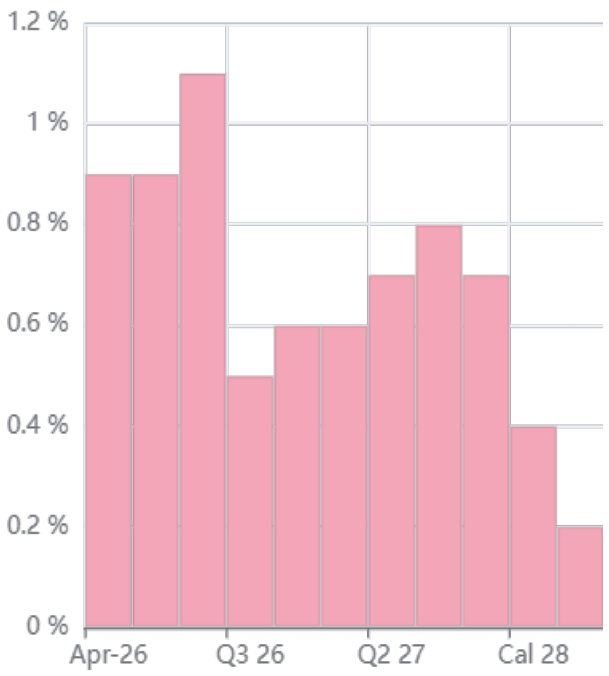
5TC	$/day	WoW	
Apr-26	31,774.00	1364.0	4.5 %
May-26	34,314.00	1790.0	5.5 %
Jun-26	34,853.00	1664.0	5.0 %
Q3 26	32,629.33	962.33	3.0 %
Q4 26	32,824.00	821.0	2.6 %
Q1 27	24,432.00	404.0	1.7 %
Q2 27	28,474.00	335.0	1.2 %
Q3 27	30,917.00	328.0	1.1 %
Cal 27	28,704.75	340.0	1.2 %
Cal 28	26,510.00	161.0	0.6 %
Cal 29	25,439.00	136.0	0.5 %

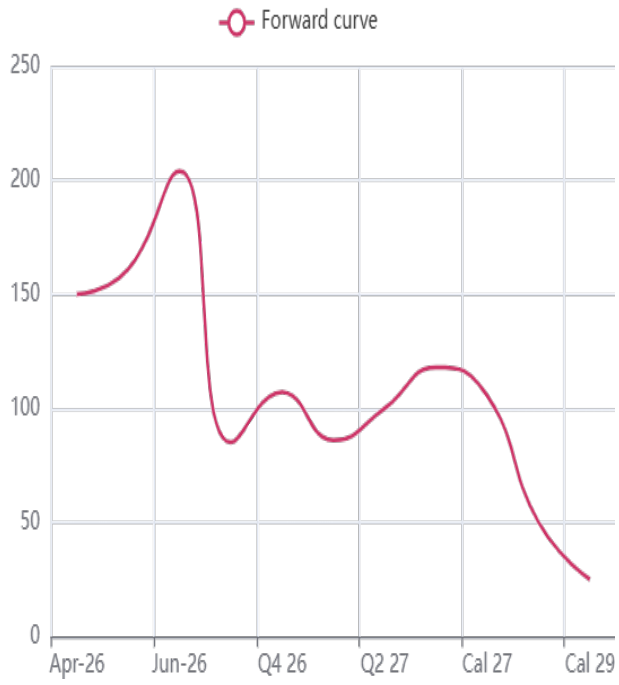




巴拿马型散货船Panamax

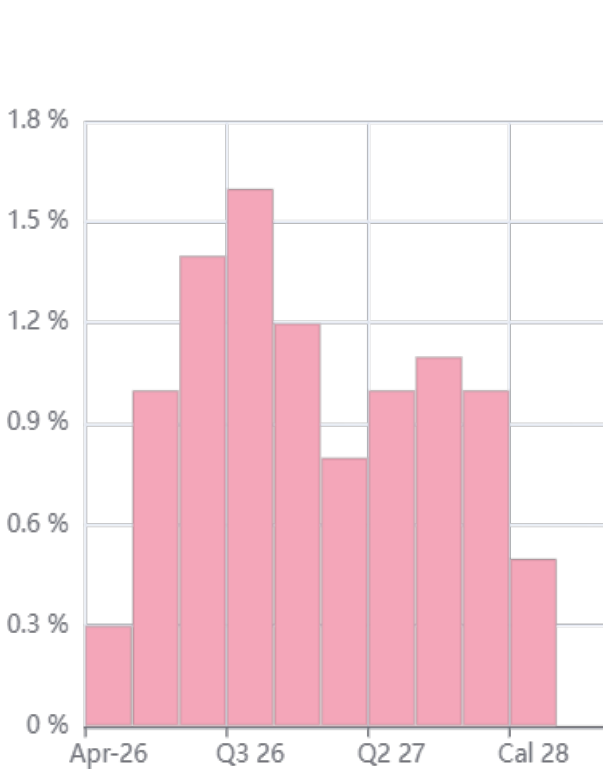
4TC	$/day	WoW	
Apr-26	17,193.00	150.0	0.9 %
May-26	18,925.00	161.0	0.9 %
Jun-26	19,093.00	204.0	1.1 %
Q3 26	18,395.33	85.0	0.5 %
Q4 26	16,946.00	107.0	0.6 %
Q1 27	13,882.00	86.0	0.6 %
Q2 27	15,068.00	100.0	0.7 %
Q3 27	15,061.00	118.0	0.8 %
Cal 27	14,636.75	105.5	0.7 %
Cal 28	13,832.00	50.0	0.4 %
Cal 29	13,639.00	25.0	0.2 %

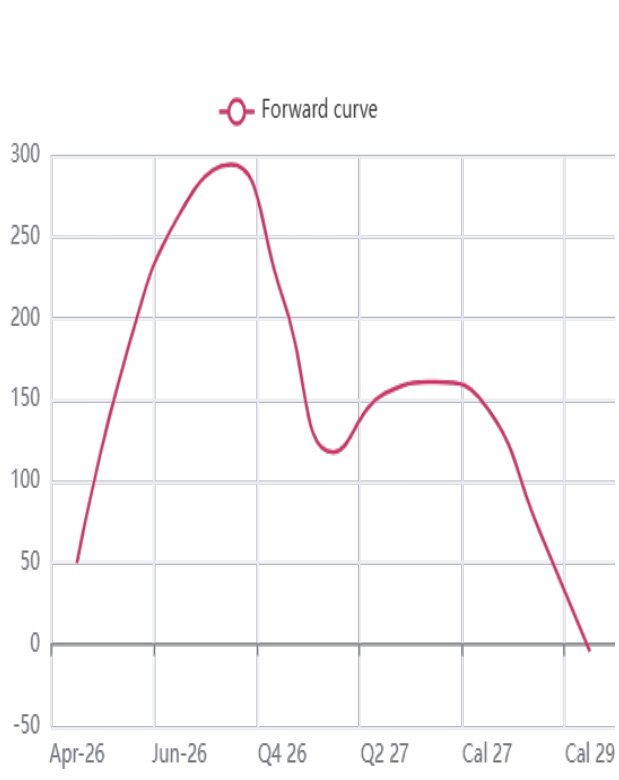




超大灵便型散货船Supramax

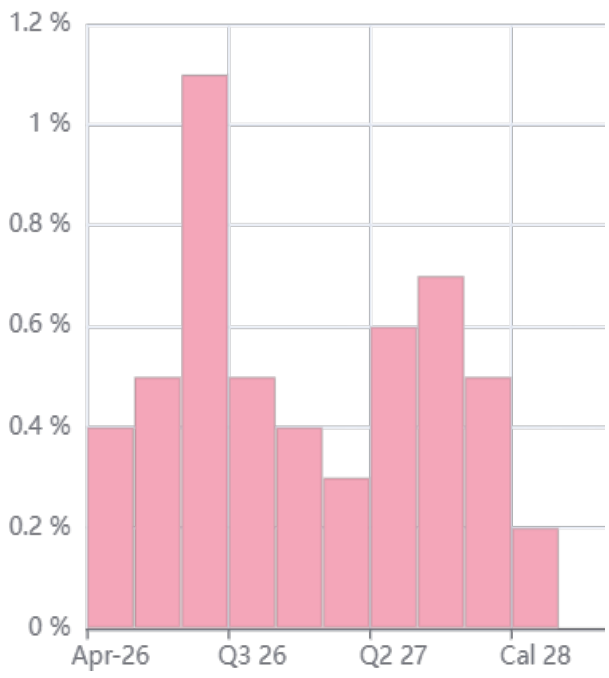
10TC	$/day	WoW	
Apr-26	17,398.00	50.0	0.3 %
May-26	18,830.00	182.0	1.0 %
Jun-26	18,855.00	264.0	1.4 %
Q3 26	18,384.33	294.33	1.6 %
Q4 26	17,348.00	214.0	1.2 %
Q1 27	14,048.00	118.0	0.8 %
Q2 27	15,909.00	154.0	1.0 %
Q3 27	15,252.00	161.0	1.1 %
14,927.75	Cal 27	145.0	1.0 %
Cal 28	14,148.00	71.0	0.5 %
Cal 29	14,023.00	-4.0	0.0 %

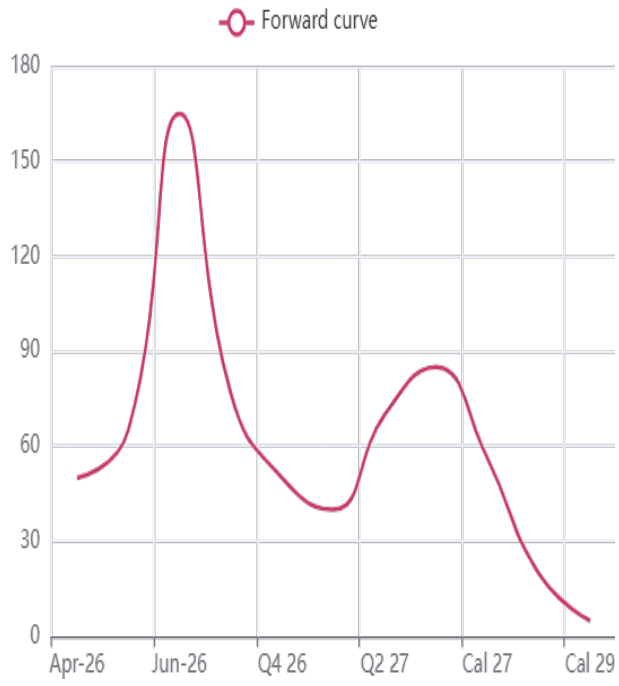




灵便型散货船Handysize

7TC	$/day	WoW	
Apr-26	13,430.00	50.0	0.4 %
May-26	14,310.00	65.0	0.5 %
Jun-26	14,780.00	165.0	1.1 %
Q3 26	14,173.33	76.67	0.5 %
Q4 26	13,330.00	50.0	0.4 %
Q1 27	11,620.00	40.0	0.3 %
Q2 27	12,620.00	70.0	70.0
Q3 27	12,570.00	85.0	0.7 %
Cal 27	12,245.00	56.25	0.5 %
Cal 28	11,620.00	20.0	0.2 %
Cal 29	11,485.00	5.0	0.0 %





第六部分 燃油价格 BUNKER PRICE

MP	LO	HO	MO	SP	WoW	W%	M%
zhoushan	920.5	786.5	null	134.0	-36.5	-21.41	318.75
Singapore	865.5	742.0	1874.0	123.5	-39.0	-24.0	50.61
Rotterdam	744.5	696.0	1500.0	48.5	3.0	6.59	102.08
Fujairah	846.0	721.0	1738.5	125.0	-23.5	-15.82	33.69
Houston	919.0	705.0	1460.0	214.0	51.5	31.69	9.18

(MP-Bunkering Main Ports; LO-Heavy Low Sulphur Fuel Oil; HO-Heavy Hight Sulphur Fuel Oil; MO-MGO; SP-Spread;)

第七部分 最新商品价格 LATEST COMMODITIES PRICE

Grains and Oilseeds	Index	+/-	Weekly	Monthly	YTD
Wheat	206.0	-3.0	-1.44	-0.96	2.49
Maize	230.0	-1.0	-0.43	-0.43	-2.13
Soybeans	220.0	-1.0	-0.45	-4.35	11.11
Rice	158.0	1.0	0.64	0.64	-10.23
Barley	244.0	0.0	0.0	-0.81	2.95
Energy		Index	+/-	Weekly	Monthly	YTD
Crude Oil	USD/Bbl	97.22	-1.86	-1.88	10.96	59.53
Brent	USD/Bbl	96.85	-4.13	-4.09	6.28	50.36
Natural Gas	USD/MMBtu	2.73	-0.12	-4.21	-10.78	-25.21
Gasoline	USD/Gal	3.02	-0.1	-3.21	12.69	48.77
Heating Oil	USD/Gal	3.91	-0.16	-3.93	12.03	87.98
Ethanol	USD/Gal	1.95	-0.05	-2.5	4.84	8.33
Naphtha	USD/T	894.03	-56.32	-5.93	14.73	67.29
Propane	USD/Gal	0.74	-0.07	-8.64	-3.9	-6.33
Uranium	USD/Lbs	85.8	1.65	1.96	-0.12	33.23
Methanol	CNY/T	3173.0	120.0	3.93	26.92	28.15
TTF Gas	EUR/MWh	45.3	-3.29	-6.77	-8.21	26.54
UK Gas	GBp/thm	114.25	-8.41	-6.86	-9.58	30.01
Industrial		Index	+/-	Weekly	Monthly	YTD
Copper	USD/Lbs	5.71	0.12	2.15	-3.22	34.04
Coal	USD/T	135.5	-6.95	-4.88	-5.77	38.97
Steel	CNY/T	3086.0	-39.0	-1.25	-0.58	0.85
Iron Ore	USD/T	107.83	1.45	1.36	4.79	6.92
Aluminum	USD/T	3478.0	-12.7	-0.36	4.52	46.26
Lithium	CNY/T	158500.0	-3000.0	-1.86	0.0	118.92
Metals		Index	+/-	Weekly	Monthly	YTD
Gold	USD/t.oz	4717.85	-22.45	-0.47	-9.01	56.96
Silver	USD/t.oz	73.79	-1.26	-1.68	-17.41	143.85
Platium	null	2027.6	58.3	2.96	-9.54	123.87
Currencies	Index		+/-	Weekly	Monthly	YTD
EUR/USD	1.17		0.01	0.86	0.0	7.34
USD/CNY	6.83		-0.05	-0.73	-0.73	-7.2

第八部分 本周话题 WEEKLY TOPIC

智能航运发展

以人工智能、大数据、物联网、自动控制等技术为核心，实现船舶自主航行、智能调度、远程监控与无人作业的现代化航运形态，是全球未来智能航运业低碳化、高效化发展的重要方向。
2026年3月25日消息，日本川崎汽船（K Line）旗下一艘国内滚装船正式获批成为自主航行船舶。该船通过日本船级社（NK）认证，并完成日本国土交通省检验，获得自主航行运营许可。
中国最新发布的《智能航运2030发展路线图》提出，计划在2027年前投放超100艘智能船舶，引发全球航运业高度关注。据上海相关研究机构及业内人士分析，这一规划标志着中国智能航运从分散试点阶段，转向统筹协调的规模化部署，属于系统性战略升级。但在监管规则、执行标准等方面，仍存在待突破的瓶颈。
当前全球智能航运仍处于规模化落地初期，主要面临技术、法规、标准、成本、安全、人才、协同七大核心挑战。核心技术瓶颈尚未突破，比如复杂场景可靠性不足，雨雾、夜间、狭窄航道、恶劣海况等低能见度/高风险场景下，感知、避碰、决策算法稳定性不足，离全自主仍有差距。面临海上各种风险，智能航运关键装备与芯片的可靠度仍需不断完善与合理成本。
面对智能航运的法规与责任体系严重滞后。IMO自主船舶法规框架未完全落地，各国认证、主体责任认定、保险、事故追责标准差异大。监管适配不足，传统海事监管面向有人船，对远程操控、自主决策、数据留痕、应急接管等缺乏配套流程。
航运相关数据标准碎片化，并存在数据孤岛。国际/区域/国家/企业标准交叉冲突，技术接口、数据格式、航行规范不一致，跨系统兼容难。船公司、港口、交管、物流、海关数据互不相通，难以形成全链路数字孪生与协同调度。
智能航运投入成本高、回报周期长。智能船舶新建/改装、感知与算力系统、岸基控制中心投资巨大，中小企业难以承担。智慧航道、自动化码头、北斗/5G覆盖、新能源加注站等投入大、回收期长。系统运维、网络保障、算法迭代、冗余备份持续投入，短期效益不明显。
智能航运网络与数据安全风险突出。智能船舶高度联网，易遭黑客入侵、航线篡改、系统瘫痪，直接危及航行安全。航行、货物、商业、位置等敏感数据跨境传输与存储合规压力大。通信中断、系统故障时的应急接管与安全兜底机制不完善。
智能航运复合型人才严重短缺。既懂航海业务、又精通AI、算法、网络安全、数据工程的复合型人才全球紧缺。传统船员技能与智能船舶、远程操控、系统运维不匹配，再就业与培训体系滞后。高校、科研机构与港航企业需求错位，成果转化效率低。
智能航运生态不成熟。船，港，航，货协同不足，信息互通不畅、流程不衔接，智能船舶无法与智能港口、智慧航道高效联动。商业模式不清晰，运营、维保、数据服务、保险、金融等配套生态不完善，市场化复制难。区域发展不均衡，内河与远洋、发达国家与发展中国家基础设施与技术水平差距大，规模化推广受阻。
智能航运的核心瓶颈不在单一技术，而在系统工程。技术可靠、法规健全、标准统一、成本可控、安全可信、人才充足、生态协同缺一不可。未来3–5年仍是规则完善、技术迭代与生态构建的关键期。

With artificial intelligence, big data, the Internet of Things, and automatic control at its core, achieving a modern shipping model featuring autonomous navigation, intelligent scheduling, remote monitoring, and unmanned operations is an important direction for the global future intelligent shipping industry to develop in a low-carbon and efficient manner.
On March 25, 2026, a domestic roll-on/roll-off vessel of K Line, a Japanese shipping company, was officially approved to become an autonomous vessel. The ship passed the certification of the Japanese Classification Society (NK) and completed the inspection by the Japanese Ministry of Land, Infrastructure, Transport and Tourism, obtaining the permission for autonomous operation.
The latest "2030 Development Roadmap for Smart Shipping" released by China has proposed that over 100 intelligent ships will be put into service by 2027, which has drawn great attention from the global shipping industry. According to relevant research institutions and industry insiders in Shanghai, this plan marks a shift from the scattered pilot stage to a coordinated and large-scale deployment of smart shipping in China, representing a systematic strategic upgrade. However, there are still bottlenecks that need to be overcome in terms of regulatory rules and implementation standards.
At present, global intelligent shipping is still in the early stage of large-scale implementation, and it mainly faces seven core challenges: technology, regulations, standards, cost, safety, talent, and collaboration. The core technical bottlenecks have not yet been overcome. For instance, the reliability in complex scenarios is insufficient. In low visibility/high-risk scenarios such as rain, fog, night, narrow waterways, and harsh sea conditions, the stability of perception, collision avoidance, and decision-making algorithms is inadequate, and there is still a gap from full autonomy. Facing various risks at sea, the reliability of key equipment and chips for intelligent shipping still needs to be continuously improved and with reasonable costs.
The regulatory and liability systems for intelligent shipping are seriously lagging behind. The IMO's autonomous vessel regulatory framework has not been fully implemented. There are significant differences in certification, responsibility determination, insurance, and accident accountability standards among various countries. The regulatory adaptation is insufficient. Traditional maritime supervision is oriented towards manned vessels, lacking corresponding procedures for remote control, autonomous decision-making, data retention, and emergency takeover.
Intelligent shipping has high investment costs and a long return period. The investment for building or modifying intelligent ships, as well as for perception and computing systems, and the shore-based control center is huge, making it unaffordable for small and medium-sized enterprises. Investments in smart waterways, automated terminals, Beidou/5G coverage, and new energy refueling stations are large and have long recovery periods. Continuous investment in system operation and maintenance, network security, algorithm iteration, and redundancy backup results in no obvious short-term benefits.
The intelligent shipping network faces prominent risks in terms of data security. Intelligent ships are highly interconnected, making them vulnerable to hacking, alteration of routes, and system failures, which directly threaten navigation safety. There is a significant compliance pressure for the cross-border transmission and storage of sensitive data such as navigation, cargo, business, and location information. The emergency takeover and safety fallback mechanisms in case of communication interruption or system failure are not well-developed.
There is a severe shortage of comprehensive talents in the field of intelligent shipping. There is a global shortage of talents who are proficient in both maritime business and AI, algorithms, cybersecurity, and data engineering. The traditional crew skills do not match the requirements of intelligent ships, remote control, and system operation and maintenance. The re-employment and training systems are lagging behind. There is a mismatch between the demands of universities, research institutions, and port and shipping enterprises, and the efficiency is low.
The intelligent shipping ecosystem is not yet mature. There is a lack of coordination among ships, ports, navigation and cargo. Information exchange is not smooth, processes do not connect, and intelligent ships cannot efficiently interact with intelligent ports and smart waterways. The business model is unclear, and the supporting ecosystem for operations, maintenance, data services, insurance, and finance is not complete. It is difficult to replicate on a market scale. Regional development is unbalanced. There are significant differences in infrastructure and technical levels between inland waterways and ocean shipping, as well as between developed and developing countries. Large-scale promotion is hindered.
The core bottleneck of intelligent shipping does not lie in a single technology, but in system engineering. Reliable technology, sound regulations, unified standards, controllable costs, safety and trustworthiness, sufficient talent, and ecological collaboration are all indispensable. The next 3-5 years will remain a critical period for rule improvement, technology iteration, and ecological construction.