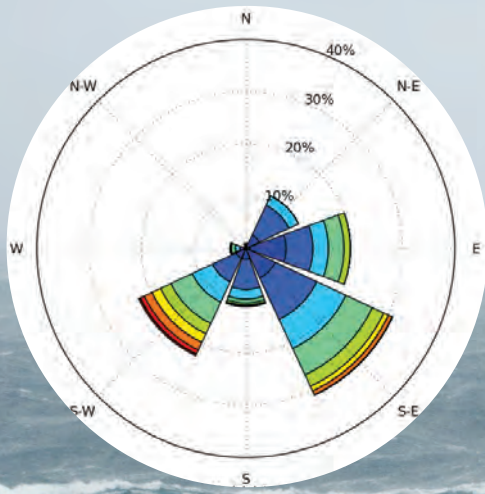


OFFSHORE

 CLS SERVICES



ADVANCED MET-OCEAN STUDIES

OFFSHORE PRODUCTS & SERVICES

Reliable data about the ocean environment are critical for offshore facilities design and operations. Our Metocean studies provide essential information on oceanography and marine meteorology in support of Oil & Gas applications.

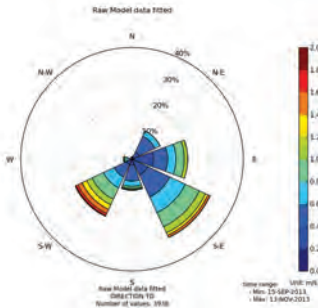
OUR SOLUTIONS

CLS uses a state-of-the-art worldwide database containing up to 20 years ocean data to carry out flash or detailed metocean studies, as per client needs.

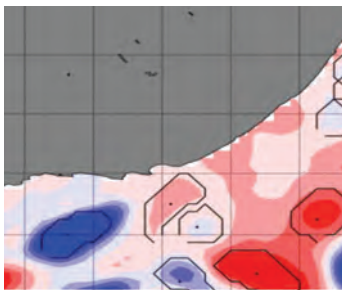
- Ocean circulation study: based on literature and CLS oceanographers' expertise.
- Extreme events and statistical study: statistical values provided in tables including, quantiles, standard deviation, etc.
- Spatial variability study: carried out using ocean current maps on specific areas provided in image, table or movie format.
- Seasonal variability study: assessment of best season for operations provided in statistical tables and diagrams such as rose or profiles, by month and by year.
- Eddies circulation study: statistical results (map format) on the detection of fronts and eddies, eddies' intensity, frequency, radius, etc.

DELIVERABLES

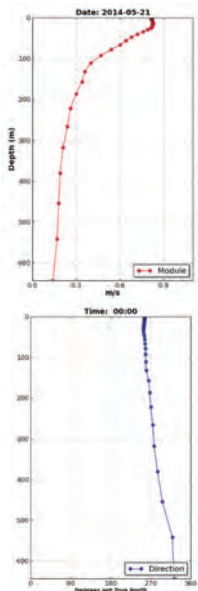
- PDF reports, tables, image formats, animated files, current roses, map format



Example of monthly rose diagram



Example of eddies circulation map



Example of current speed and direction profiles by month

Statistics and Quantiles for all year and monthly at 0m Current speed in m/s													
	ALL YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
min	0.001	0.006	0.003	0.001	0.001	0.002	0.006	0.018	0.024	0.003	0.021	0.024	0.001
mean	0.068	0.086	0.085	0.069	0.048	0.051	0.078	0.102	0.112	0.084	0.098	0.128	0.111
max	0.336	0.316	0.226	0.161	0.133	0.139	0.320	0.222	0.289	0.229	0.212	0.245	0.279
std	0.054	0.061	0.048	0.037	0.027	0.037	0.054	0.046	0.054	0.049	0.039	0.059	0.061
099%	0.240	0.322	0.225	0.160	0.113	0.150	0.293	0.219	0.273	0.213	0.202	0.240	0.257
095%	0.193	0.227	0.179	0.142	0.101	0.124	0.200	0.185	0.198	0.165	0.168	0.227	0.228
090%	0.165	0.150	0.144	0.129	0.084	0.105	0.151	0.165	0.186	0.154	0.153	0.210	0.195
050%	0.078	0.070	0.079	0.061	0.047	0.045	0.064	0.096	0.101	0.077	0.093	0.120	0.097
010%	0.023	0.033	0.024	0.025	0.012	0.016	0.024	0.041	0.050	0.020	0.046	0.057	0.041
005%	0.019	0.025	0.015	0.017	0.008	0.011	0.019	0.029	0.039	0.010	0.037	0.024	0.027
001%	0.007	0.010	0.004	0.008	0.001	0.006	0.011	0.018	0.025	0.006	0.022	0.025	0.008

Example of table of statistic computation on ocean current speed

FORECAST ▪ MONITORING ▪ HINDCAST ▪ VALIDATE ▪ QUALIFY ▪ SATELLITE & IN-SITU OBSERVATIONS ▪ NUMERICAL MODELS ▪ 24/7 OPERATIONS ▪ 60 IN-HOUSE OCEANOGRAPHERS ▪ REGIONAL APPROACH ▪ WORLDWIDE COVERAGE

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