



## Projet BOUSSOLE

V. Vellucci, M. Golbol, D. Antoine et al.

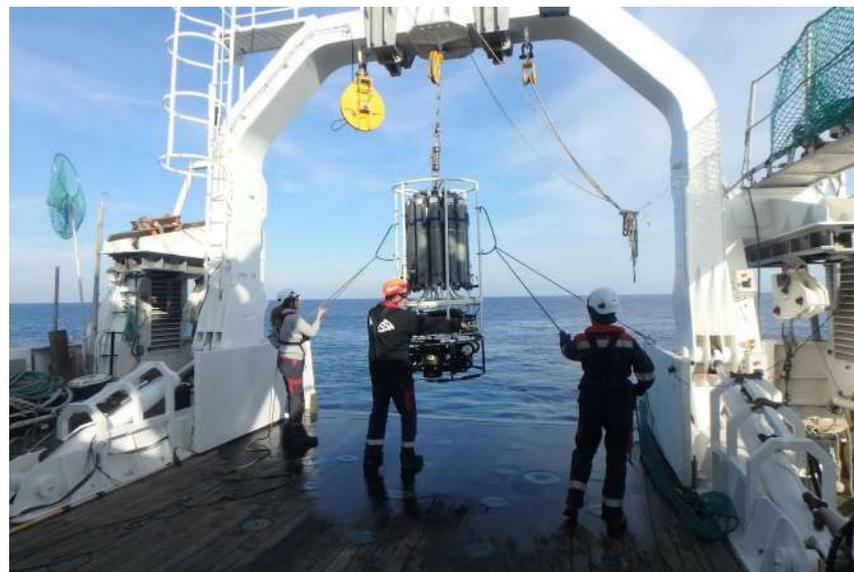
# Objectifs

établir une série bio-optique à long terme en support de la **SVC** des capteurs satellite **couleur de l'eau**, de la validation des produits biogéochimique dérivés et de la recherche fondamentale en optique marine à différents échelle temporelles.

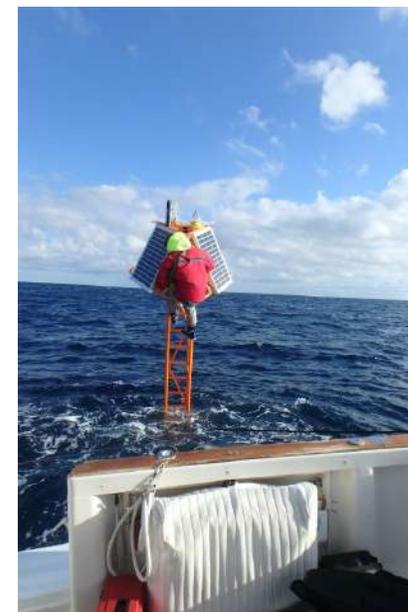
# Stratégie



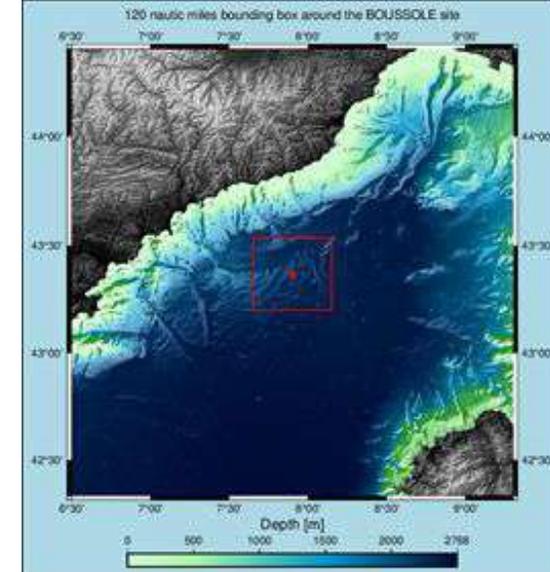
**Bouée** en mer ligure pour mesures AOPs/IOPs à haute fréquence (15')



**Campagnes mensuelles** sur navire FOF pour maintenance bouée et acquisition mesures complémentaires



**Campagnes de maintenance** sur navire d'opportunité



# Résultats récentes

# Optimisation modèle BGC avec assimilation OC *Lazzari et al. submitted. Scientific Reports*

**BOUSSOLE**  
Buoys for the acquisition of long-term optical time-series

Home | Project overview | News | Cruises | Data | People

Technological development | Instrumentation | Calibration/validation operations | Image gallery | Reports & publications

REPORTS & PUBLICATIONS

- BOUSSOLE Publications
- Publications using BOUSSOLE data
- International workshops and meetings
- Project RESEARCH meetings
- Reports
- BOUSSOLE Schedule
- BOUSSOLE landing page on the French Oceanographic Fleet website

BOUSSOLE publications and PhD works

Publication	Availability
Arriaga D, Hord A, Balle M, Claustre H (2002) Measurements and modeling of absorption optical properties of ocean waters in support to ocean color data calibration, validation and merging. <i>RASA Technical memorandum # 2002-218005</i> , NASA/GSFC, Greenbelt, MD, 143-145	🔗
Arriaga D, Chans M, Claustre H, D'Onofrio F, Hord A, Balle M, Gerth B, Lora F, Rie J, Schuster E, Scott A, Talley D, Hooker SB, Gouveia J-F, Deser, Deser C, Adams D (2008) BOUSSOLE - a joint CASI-INSI, ESA, CNES and NASA Ocean Color Calibration and Validation Activity. <i>RASA Technical memorandum # 2008-214147</i> , NASA/GSFC, Greenbelt, MD, 61 pp.	🔗
Arriaga D, Chans M (2004) Visibilité radiométrique de calibration de satellite océan couleur mesura. Proceedings of the 35th COPEM Scientific Assembly, Paris, 18 to 23 July 2004.	🔗
Arriaga D, Gouveia J-F, Deser C, Lora F, Scott A, Benday P (2008) The BOUSSOLE - buoy - A new transparent-to-airal four mooring dedicated to marine optics - design, tests and performance at sea. <i>Journal of Atmospheric and Oceanic Technology</i> , 25, 968-989. doi:10.1175/JATOC1208.1	🔗
Arriaga D, D'Onofrio F, Hooker SB, Balle M, Gerth B, Talley D, Scott A (2008) Assessment of uncertainty in the ocean reflectance	🔗

## French Oceanographic Cruises

### BOUSSOLE

Type: Set of cruises

Chief scientist(s): GOLBOL Melek, VELLUCCI Vincenzo, ANTOINE David

Project manager: GOLBOL Melek

DOI: 10.18142/1

Objective: These are the monthly cruises on the mooring site with a dual objective:

- 1) verifying the buoy's good operability and the good condition of the mooring along with data download and
- 2) carrying out a series of additional measurements that are needed either to interpret the continuous measurements taken on the mooring or to acquire additional parameters for marine optics studies.

The supplementary measurements include: CTD profiles, HPLC pigments, specific absorption of phytoplankton, particles and dissolved matter, dry weight, descending and ascending underwater radiance profiles, inherent optical property profiles, atmospheric measurements (aerosol optical thickness), reflectance measurements above the surface and using an underway fluorometer to grid the area.

The BOUSSOLE site (42°53'N, 7°42'E) is situated on the CUMED site. It is located in the

How to cite ?

GOLBOL Melek, VELLUCCI Vincenzo, ANTOINE David (2009) BOUSSOLE. <https://doi.org/10.18142/1>

**BOUSSOLE**  
IMEV - Institut de la Mer de Villefranche  
Verified email at obs-vlfr.fr - [Homepage](#)  
marine optics

**Cited by** [VIEW ALL](#)

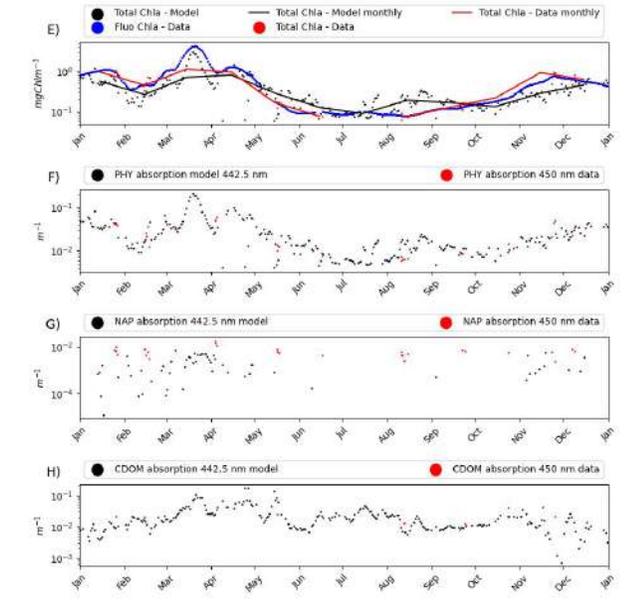
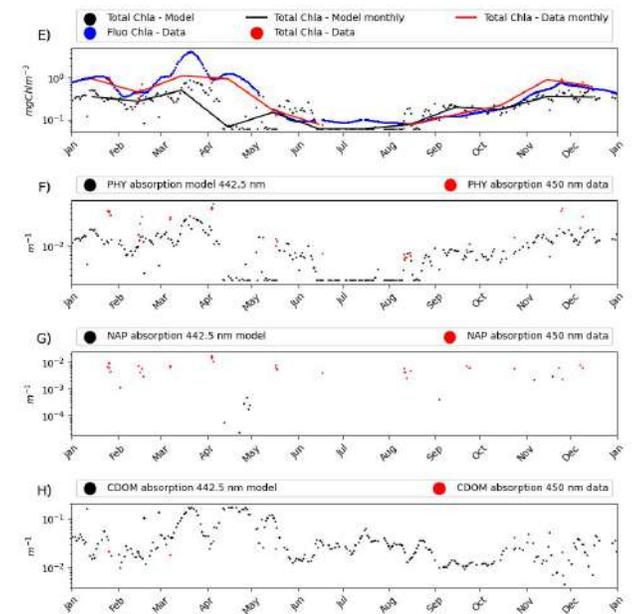
Citations	All	Since 2019
h-index	43	33
i10-index	82	76

**Bar chart of citations (2017-2024):**

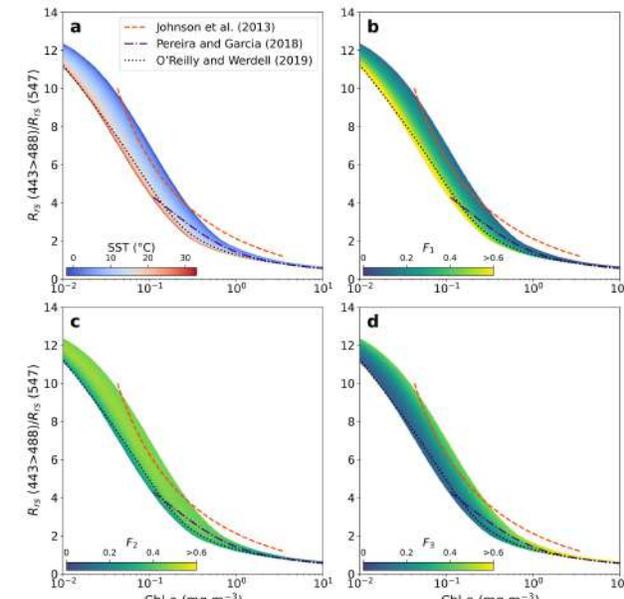
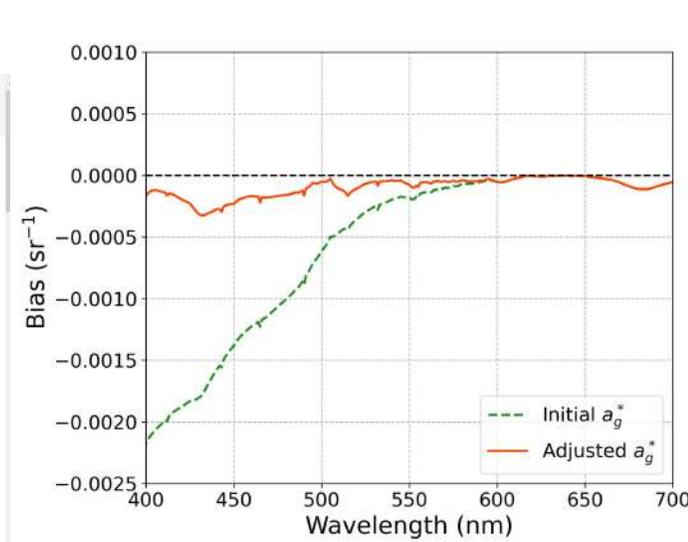
Year	Citations
2017	~150
2018	~180
2019	~220
2020	~250
2021	~300
2022	~280
2023	~250
2024	~100

**Recent Publications:**

Title	Cited by	Year
Merged satellite ocean color data products using a bio-optical model: Characteristics, benefits and issues	460	2010
Sentinel-2 MultiSpectral Instrument (MSI) data processing for aquatic science applications: Demonstrations and validations	282	2017
An ocean-colour time series for use in climate studies: the experience of the ocean-colour climate change initiative (OC-CC)	276	2019
Assessment of uncertainty in the ocean reflectance determined by three satellite ocean color sensors	274	2008



## Modèle bio-optique forward (size fraction/T°) *Sun et al. submitted RSE*

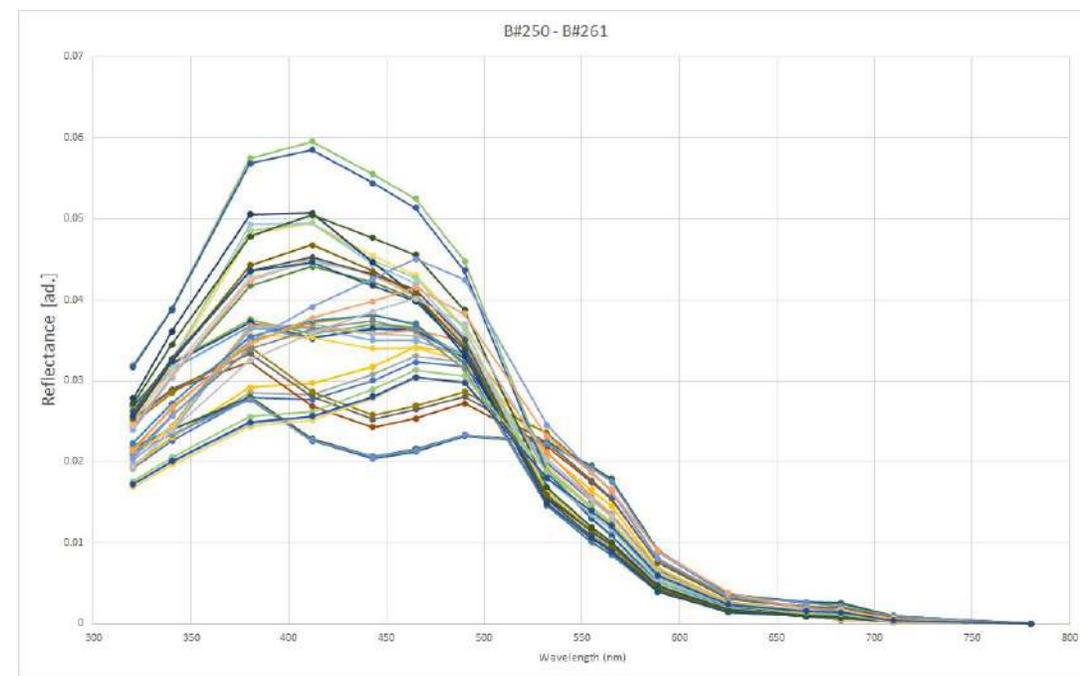
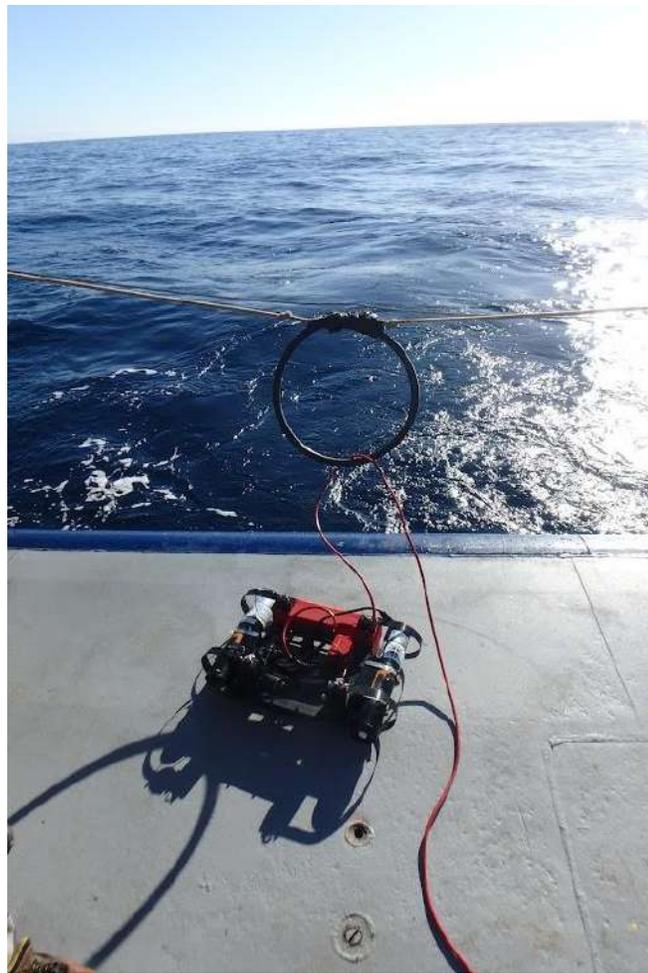


# Points principaux 2023

12 campagnes mensuelles réalisés

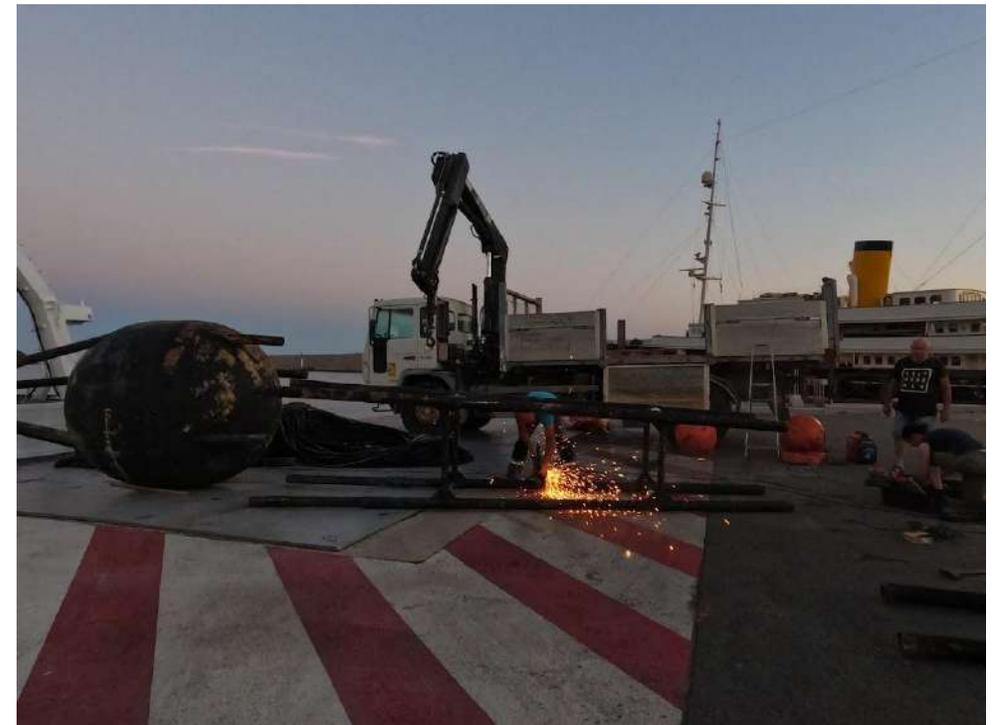
Fin de la série de campagne en décembre (B#261)

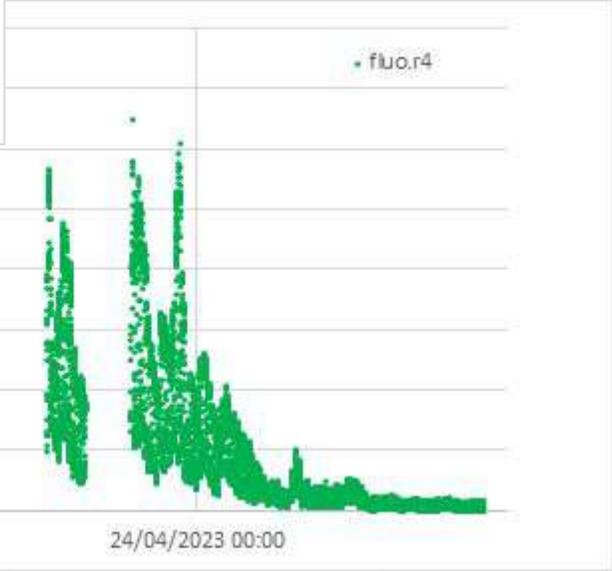
Melk Golbol (responsable campagnes) recruté à l'IRD (LOCEAN)



# Points principaux 2023

Juillet/Aout : récupération définitive du mouillage





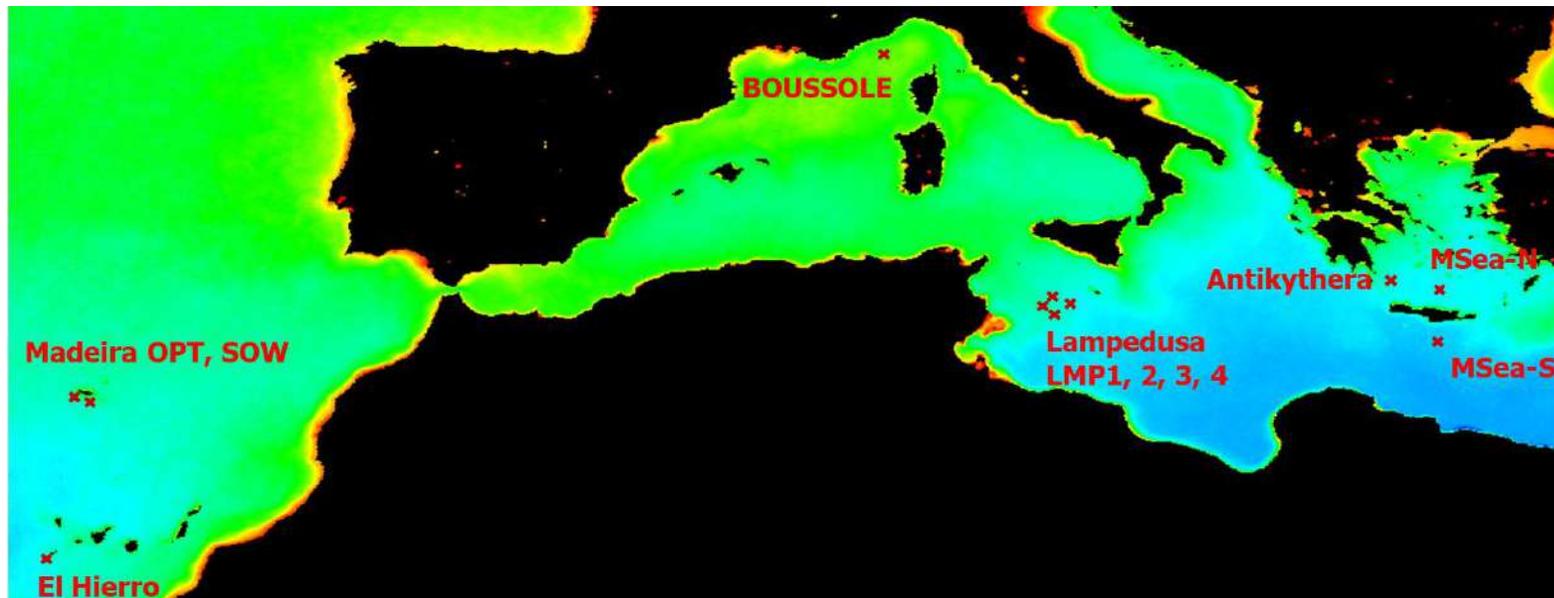
# Copernicus programme OC-SVC infrastructure (EUMETSAT) [update 2023]

## Phase-3: Infrastructure placement

Caractérisation environnementale de plusieurs sites en Med et Atlantique, 5 études en parallèle (FRA, GRC, ITA, PRT, ESP)

Juin 2021: présentation des résultats avec comité de review

Juillet 2022: synthèse des résultats (Eumetsat)



### 7.4 High level summary of the top-ranking selection for the OC-SVC Location

In summary:

- Two top ranking sites have been selected: El Hierro and MSEA-S.

### 7.5 Recommendation for the Copernicus OC-SVC Infrastructure Location

The scientific recommendation:

- The Expert Review Board recommends to move to the next phase of the Copernicus OC-SVC infrastructure roadmap, Phase 4 Engineering Design – see Figure 6, with two candidate OC-SVC locations: El Hierro and MSEA-S.

1-year, ITT expected Q2 2023

# Copernicus programme OC-SVC infrastructure (EUMETSAT) [update 2024]

## Phase-3: Infrastructure placement

Caractérisation environnementale de plusieurs sites en Med et Atlantique, 5 études en parallèle (FRA, GRC, ITA, PRT, ESP)

Juin 2021: présentation des résultats avec comité de review

Juillet 2022: synthèse des résultats (Eumetsat)

**Novembre 2023: OC-SVC Information Day**

ITT expected Q3-Q4 2024 : Detailed Design (two sites 1 pilot)

Q2 2025 Site selection Development

Q2 2028 Opérations

Instrument cible: spectromètre Moby-like a production EU (si possible)

Plus d'info <https://www.eumetsat.int/copernicus-oc-svc-information-day>

Contacts Links Site map



Home Project overview News Cruises Data People  
 Technological development Instrumentation Calibration/validation operations Image gallery Reports & publications

[DATA ACCESS : MONTHLY MAINTENANCE CRUISES](#)

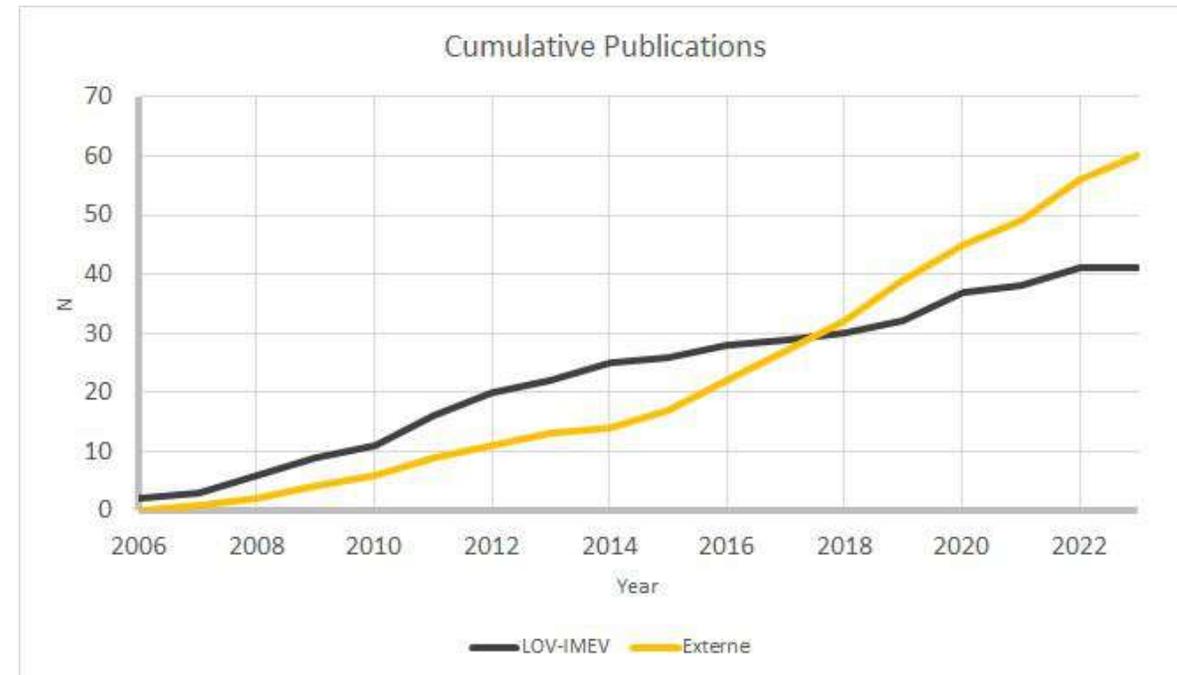
**Overview of cruise data availability:** Select year to see lists of cruises by year  
 (for some reasons, a few cruises don't appear in the summary table below; so, in any case, check availability of cruises in the yearly tables below)

Year	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2001	--	--	--	--	--	--	1	--	2	3	4	5
2002	7	8	9	10	11	12	13	--	14	15	17	--
2003	--	19	20	21	22	23	24	--	26	27	--	28
2004	30	--	--	32	--	33	34	--	--	36	37	--
2005	38	--	40	41	42	43	44	--	45	--	47	48
2006	49	--	51	52	53	54	55	--	56	57	58	59
2007	60	--	62	63	64	65	66	--	67	68	69	59
2008	71	72	73	74	--	76	77	78	79	80	81	--
2009	83	84	85	86	87	88	--	--	--	91	92	93
2010	--	94	95	--	98	99	100	101	102	103	104	105
2011	106	107	108	110	111	112	113	114	115	116	117	118
2012	119	120	121	122	123	124	125	126	127	128	129	130
2013	131	132	133	134	135	136	137	138	139	140	141	142
2014	143	144	145	146	147	148	149	150	151	152	153	154
2015	155	156	157	158	159	160	161	162	163	164	165	166
2016	167	168	169	170	171	172	--	174	175	176	177	178
2017	--	180	181	182	183	184	185	186	187	188	--	190
2018	191	192	193	194	195	196	198	199	200	201	--	203
2019	--	205	206	207	208	--	209	211	212	--	--	215
2020	--	217	218	--	--	--	--	--	222	223	224	225
2021	226	227	228	229	230	231	232	233	234	235	236	237
2022	238	239	240	241	242	243	244	245	246	247	248	249
2023	250	251	252	253	254	255	256	257	258	259	260	--

- ~5000 jours de données multiparamètres H24 acquises jusqu'en 2023
- ~5000 profils (radiométrie+CTD+IOPs)
- ~15000 échantillons (HPLC, ap, CDOM..)

## Accès données

- site web obsolète (2006)
- accès partiel à la base (pe: absence radiométrie hyperspectrale)
- recherche web non fonctionnel
- besoin de pérennisation des données



# Spin off

- finalisation QC
- *doisation* sur bases externes par subset de variables
- développement d'outils de visualisation et téléchargement de données (GITHUB en collaboration avec B. Gentili)
- update ODATIS

